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ATTACHMENT BOOKLET 1

ORDINARY COUNCIL MEETING

TUESDAY 23 MARCH 2021

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9.1 OUTCOME OF THE PUBLIC EXHIBITION OF THE DRAFT RATES HARMONISATION

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Community and Stakeholder Engagement Report

Rates Harmonisation and Associated Policies (Stage 1 of 1)

Impact level: One

Report date: 16 March 2021

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1 Summary[1]

Rates Harmonisation and associated policies	
Impact Level	1
Stage(s)	1 of 1 stage
Report Period	Monday 18 January 2021 – Sunday 28 February 2021
Version	1.0
Status	DRAFT
Related Projects	N/A

This report outlines the community and stakeholder engagement conducted as part of the Rates Harmonisation project. The consultation period documented is from Monday 18 January until Sunday 28 February 2021. An extension of time was granted until Monday 1 February 2021 for Manly Chamber of Commerce to lodge an addendum to their submission.

Individuals making submissions didn't comment on all proposals placed on exhibition.

In general, those with properties in former Pittwater and Warringah were supportive of harmonisation of rates as they felt it was more equitable and would deliver lower rates.

While owners of properties in former Manly opposed harmonisation, they were more supportive of gradual harmonisation to ease the financial impact.

A summary is below:

- Support for rates harmonisation was balanced (47% support v 46% don't support) – 428 responses. However, harmonisation of rates is required by legislation.
- 41% support harmonising rates based on the weighted average of the former Councils' minimum rate, however the majority 50% don't support this methodology – 164 submissions. Suggestions and support for an alternate methodology was limited. The majority of feedback objected to the unimproved capital value of land being the basis for calculating rates.
- Gradual harmonisation over four years was supported by the majority (52%) including the proposal to start in 2022/23 (49%) - 120 comments. There were strong responses from former Pittwater and Warringah owners who feel they will be financially disadvantaged if harmonisation is delayed.

Fewer comments were received on the remaining issues:

- Overall, there was support for a stormwater service management charge across the LGA, the draft Hardship Policy and Pensioner Rates and Charges Concession Policy

[1] Community and stakeholder views contained in this report do not necessarily reflect the views of the Northern Beaches Council or indicate a commitment to a particular course of action.

- Eleven submissions commented on the introduction of rural residential rate, three were in support and three were not in support, and four were unsure
- 10 submissions commented on business rates with support for maintaining the strata storage units rates, but the majority don't support maintaining the Warringah Mall and Manly CBD rates or increasing the Warriewood Square rate.

2 Engagement snapshot

Total submissions received	474[1]		
Have Your Say	Visitors: 13,548	Visits: 17,748	Av. time onsite: 55s
Rates calculator	Visits: 21,029		
Social media	Post: 1 27 Jan Post 2 9 Feb		Reach: 7245 Post Clicks: 639 Link clicks:124 Reach: 10,109 Post Clicks: 825 Link clicks:177
Videos	Webinar 1: Rates 101 Webinar 2: Residential Webinar 3: Business Animation		Views: 151 Views: 356 Views: 57 Views: 864
Print media and collateral	Pittwater Life: 1 editorial / 1 ad Peninsula Living: 1 editorial / 1 ad Peninsula Living (south ed.): 1 editorial / 1 ad Northern Beaches Review: 1 editorial Manly Daily: online editorial Digital signs: Yes Collateral availability: 3 Service Centres & 6 Libraries		Circulation: 32,000 Circulation: 87,000 Circulation: 57,000 Circulation: 65,000 Circulation: unknown Number: 6 Circulation: unknown
Addressed letter LGA wide [3] [2]	Residential letters Business letters		Distribution: 91,271 Distribution: 5,536
Electronic direct mail (EDM)	Community Engagement (fortnightly) newsletter: 3 Council (weekly) E-News: 4 Stakeholder email: 6		Distribution: 20,000 subscribers Distribution: 150,000 subscribers Distribution: 15,570

Face-to-face information sessions	Information session: 7[4]	Attendance: 15
Key stakeholder engagement	Meetings: 6	Attendance: 23

[1] Excludes 18 duplicate submissions
[2] Each ratepayer, business and residential received a notification letter regarding Rates Harmonisation
[3] Letters sent to rate payer property owner / not individual properties
[4] Nine sessions scheduled – two cancelled due to lack of registrations. Two meetings registered attendees did not show.

3 Background

This report outlines the community and stakeholder engagement conducted on the Rates Harmonisation project.

Council is required by the NSW Government to harmonise the rating structure of the former Manly, Pittwater and Warringah Councils by 1 July 2021[2]. In order to achieve harmonisation of rates in the most fair and equitable manner, Council modelled a range of options using the rating structures of the three former Councils, as well as an approach featuring a weighted average. Changes have also been proposed to the Northern Beaches Stormwater Management Services Charge, Pensioner Rates and Charges Concession Policy and the revised Rates and Annual Charges Hardship Policy as part of the harmonising the rating structure. A comprehensive report was prepared and discussed at the Council meeting on 15 December 2020, before the project was opened for an extended community engagement period between 18 January and 28 February 2021. An extension of time was granted until Monday 1 March 2021 for Manly Chamber of Commerce to lodge an addendum to their submission.

4 Engagement objectives

- Build community and stakeholder awareness of participation activities (inform)
- Provide accessible information so community and stakeholders can participate in a meaningful way (inform)
- Identify community and stakeholder concerns, local knowledge and values (consult)
- Communicate to community and stakeholders how their input was incorporated into the planning and decision-making process (inform)

[2] The NSW Government is proposing to introduce legislation which will allow for a gradual harmonisation approach to implementation.

5 Engagement approach

Community and stakeholder engagement for the Rates Harmonisation project was conducted over a six-week period, from 18 January until 28 February 2021 (42 days), and consisted of a series of activities that provided opportunities and platforms for community and stakeholders to contribute.

The engagement was planned, implemented and reported in accordance with Council's Community Engagement Matrix (2017). A documented engagement approach is outlined in the Rates Harmonisation Community and Stakeholder Engagement Plan (October 2020).

A project page was established on our Your Say digital platform with information provided in an accessible and easy to read format. This included an animation explaining how rates fund the delivery of services and facilities; three webinars (rates 101, residential and business rates) explaining the options and implication of harmonisation and an online rates calculator so ratepayers could identify the proposed impact on their individual property.

The project was promoted through our regular email newsletters (EDM), advertising, print media and social media. Letters were also sent to all property owners (business and residential). Meetings were held with key stakeholder groups including local chambers of commerce, resident associations and other key community groups.

A series of information sessions were open to the community to attend in person or online. Feedback was captured through online submission forms embedded into the Your Say project pages. Separate forms were used for residential rates, business rates and related draft policies and charges.

Each submission form allowed respondents to rate their level of support for each proposal as well as explain their reasoning. Open-field boxes in the forms provided community members a space to explain the reasoning or elaborate on their support, not support or neutral sentiment as well as any other feedback they wished to contribute.

Email and written submissions were also invited.

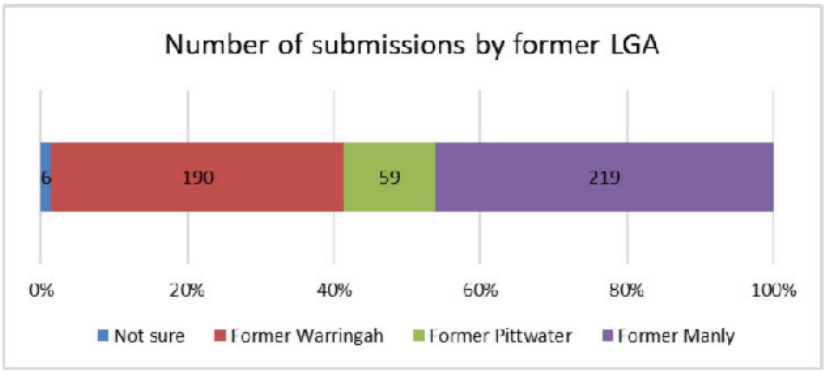
6 Findings[3]

Council received 491 submissions in total across residential and business rates, and related draft policies and charges. This included 442 via Your Say Northern Beaches engagement platform and 50 emails/letters. Four of the submissions received by mail/email were supplementary submissions. 14 of the submissions received via the online submission forms were addendums to original submissions. Therefore a total of 474 individual submissions were received. Respondents were invited to provide feedback on one or more of the following:

- Level of support for rates harmonisation - 428 responses
- Level of support for scenario 4, weighted average methodology - 164 responses
- Level of support for gradual harmonisation over four years - 120 responses
- Level of support for gradual harmonisation commencing in 2022/23 - 120 responses
- Level of support for business rates subcategory - 10 responses
- Level of support for rural residential sub-category - 11 responses
- Level of support for stormwater management service charge - 25 responses
- Level of support for the draft pensioner rates and charges concession policy - 21 responses
- Level of support for the draft rates and annual charges hardship policy - 2 responses

Those making online submissions across residential and business rates, and related draft policies and charges, nominated the former local government area their property was located in, and those who made written submissions were able to be identified by Council.

Figure 1: Total number of individual submissions by former LGA – (474 submissions)



In the online residential form 88 percent of survey participants identify as a ratepayer with a single property, and 11 percent were people with multiple properties. 1 percent of survey respondents selected 'other'.

The public was invited to provide feedback on the harmonisation of rates across the local government area (LGA) along with proposed changes to a range of associated policies. An overview of the feedback is presented under separate headings below. It shows the number of

[3] This report represents what Council has heard as accurately and transparently as possible by using consistent quantitative and qualitative analysis techniques.

responses and quantitative and qualitative (summary) feedback. Written submissions (including email) were reviewed and added to the quantitative assessment. Where the writer's position was not clear it was counted as 'unsure'.

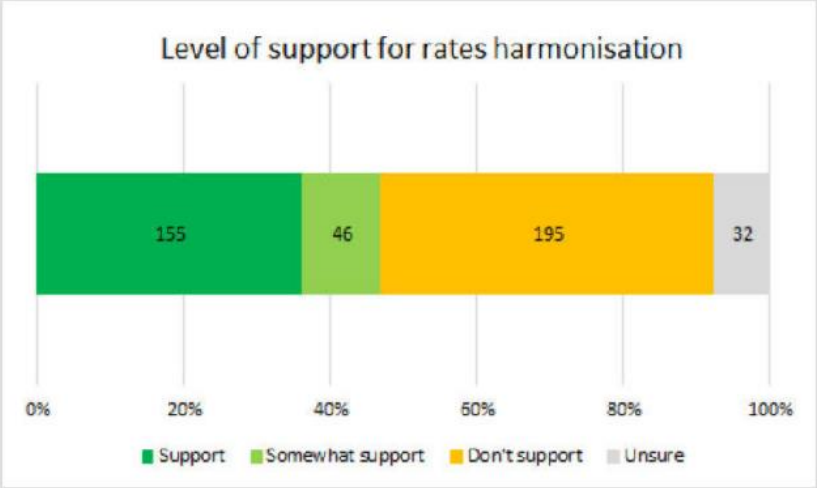
6.1 Level of support for rates harmonisation

A total of 428 submissions addressed this question online and in writing with 47 percent support or somewhat support for harmonisation.

82 percent of participants that responded 'don't support', were ratepayers of the former Manly LGA. 92 percent of the participants that support rates harmonisation are from the former Warringah and Pittwater LGAs.

The majority of people who are in support of rates harmonisation see it as a fair and consistent way to charge people with similar land values the same amount of rates right across the Northern Beaches.

Figure 2: Level of support for rates harmonisation



Unsure includes 13 submissions where the response did not specifically state a position. The level of support for rates harmonisation was not asked in the business survey.

A summary of the qualitative issues in submissions is below:

Issues - Harmonisation	No of times raised
Comments supporting harmonisation including but not limited to: • It is fair and equitable • Everyone should pay the same if they have equal land value • We are now one Council and charges should be shared equally	104
Comments where harmonisation is opposed, including but not limited to:	146

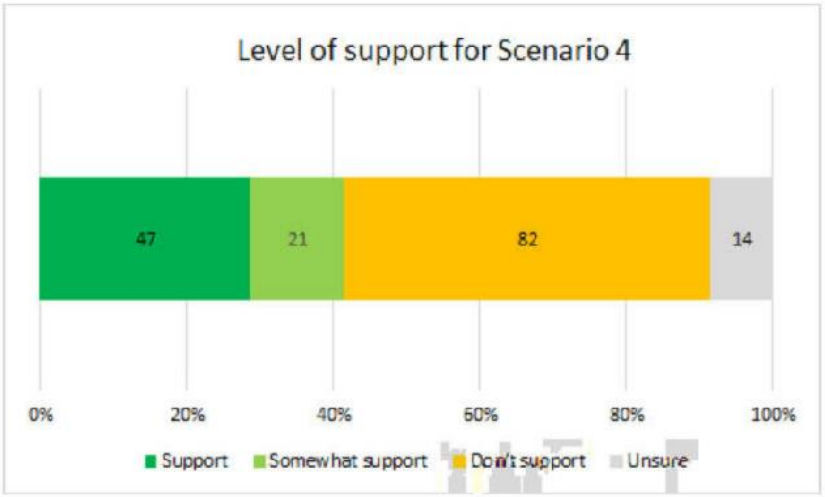
• Concerns about equity and fairness of increases to some • Concerns about service levels from Council • Concerns about affordability of increases • Perception of diminishing services to Manly • Previous Manly Council was more efficient • Opposition to increases in Pittwater	
Merger delivering lower rates to residents	119
Other	18

6.2 Level of support for Scenario 4 harmonising using a weighted average methodology

Scenario 4 is the preferred option for rates harmonisation that has been recommended to Council. It sets the minimum rate for the residential rating category at an amount equivalent to the weighted average of the former Councils' minimum rate. It also contains an ordinary rate for business properties and retains the existing business sub-categories.

A total of 164 submissions addressed this question with 41 percent support or somewhat support for Scenario 4 as the preferred methodology for harmonising rates. 50 percent don't support Scenario 4 of which 63 percent are ratepayers of the former Manly LGA.

Figure 3: Level of support for Scenario 4



Unsure includes three written submissions where the response did not specifically state a position.

The graph above includes five responses from the Business Rates survey, one was in support and four don't support Scenario 4.

A summary of the qualitative issues in submissions is below:

Issues - methodology for implementing rates harmonisation	No. of times raised
Opposition to the use of unimproved capital value as the basis for rates calculation	77
Suggesting alternative calculation methodologies, for example: : • User pays • Charge landlords of tourist facilities more • Higher rates for investment properties • Calculate rates on lowest average land value	48
Support for Scenario 1, Manly rates are used as the average	4
Lower the rates to the Manly minimum and ad valorem	3
Other	3

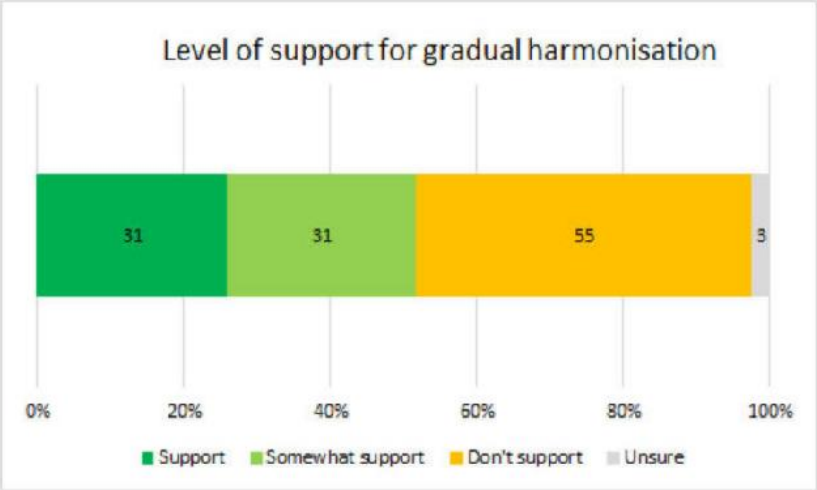
There were no submissions that mentioned Scenario 2 (using existing Pittwater minimums) and Scenario 3 (using existing Warringah minimums).

6.3 Level of support for gradual rates harmonisation

The state government is proposing to introduce legislation to allow for gradual rates harmonisation of rates over a four year period (completed by 30 June 2025). Respondents were asked whether they supported gradual rates harmonisation.

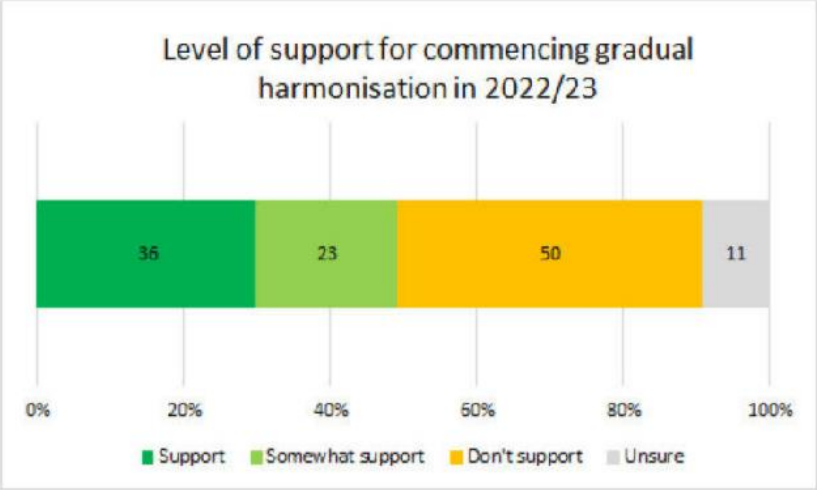
A total of 120 submissions were received with 52 percent supportive or somewhat support this approach. Of the 46 percent of respondents that do not support gradual harmonisation, 66 percent were ratepayers of the former Warringah LGA.

Figure 4: Level of support for gradual harmonisation of rates over four years



A further question was asked on whether respondents support deferring the commencement of gradual harmonisation to 2022/23. There were 120 responses to this question with 49 percent supportive or somewhat supportive of deferred commencement. Of the 42 percent that don't support deferral to 2022/23, 60 percent are ratepayers of the former Warringah LGA.

Figure 5: Level of support for commencing gradual harmonisation in 2022/23



There were seven online submissions on business rates that responded to this question and 71% support or somewhat support harmonisation commencing in 2022/23.

A summary of the qualitative issues in submissions is below:

Issues – gradual harmonisation	No. of times raised
Harmonisation should occur immediately	54
Harmonisation should occur over a shorter period	4
Gradual harmonisation - Support from 2021/22	1
Gradual harmonisation - Support from 2022/23	2
Gradual harmonisation - Support from 2023/24	1
The total subsidy ratepayers from the previous Warringah LGA have paid since amalgamation should be published.	2
Other individual comments: - Ratepayers from former Warringah LGA should receive a refund - Subsidy paid by ratepayers from previous Warringah LGA should be spent in previous Warringah area - Harmonisation should take place over a longer timeframe	4

The majority of participants in the Business Rates survey either 'support' or 'somewhat support' commencing change in 2022/23.

6.4 Level of support for business rates subcategory

Ten submissions were received on the business rate sub-categories. While the numbers were low increases for Warriewood Square rates were not supported, nor was maintaining the Manly CBD rates subcategory. Respondents were divided on maintaining Warringah Mall rates subcategory but supported maintaining the strata storage unit rating subcategory.

Figure 6: Support for the business rate subcategories



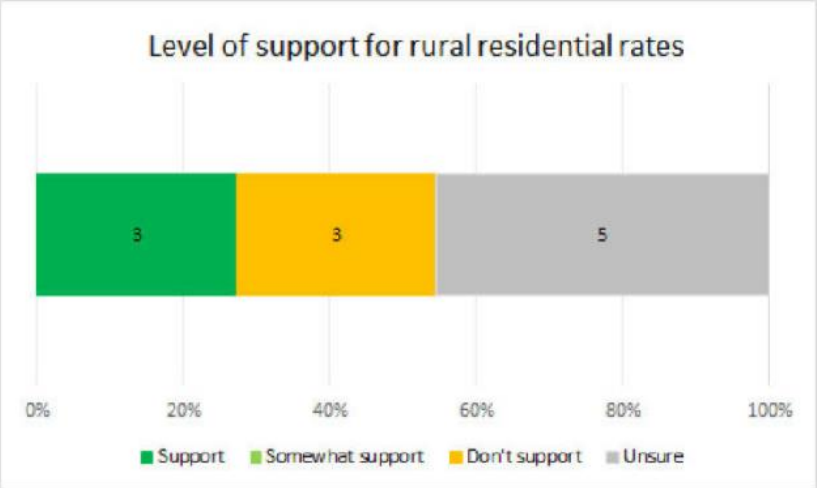
A summary of the qualitative submissions related to business rates is below:

Issues - Business rates	No. of times raised
Incorporate Manly CBD into the ordinary business rate category	2
Acknowledge and remove the Manly CBD special rate	2
Objection to business rate rises in the former Pittwater LGA	2
Impact of rates rises on businesses struggling with the COVID-19 recovery	1

6.5 Level of support for rural residential subcategory

Council currently does not have a rural residential rating category and took this opportunity to canvas community views on the introduction of one. Eleven submissions were received with three in support and three against. The remaining five are unsure, several needing more information and one being unsure where the rural residential lands are.

Figure 7: Level of support for introduction of a rural residential rating category

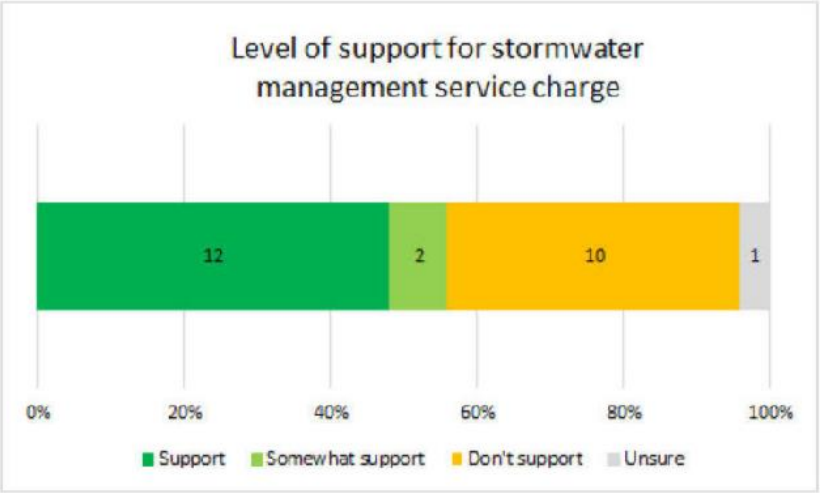


6.6 Level of support for stormwater management service charge

A total of 25 submissions were received, of these 22 were from ratepayers of the former Warringah.

Respondents rated their level of support for Council to extend the Stormwater Management Service Charge to all properties on the Northern Beaches. 56 percent submissions expressed 'support' or 'somewhat support' for the extension of the charge, 40 percent don't support and one was unsure, as illustrated in the Figure 7 below.

Figure 7: Level of support for stormwater management service charge



A summary of the qualitative issues in submissions is below:

Issues - stormwater management service charge	No. of times raised
Council should utilise the existing budget to fund stormwater management	4
Implement charge only once the residential and business rates are harmonised	2
Other individual reasons opposed to charge, include but not limited to: • Council should utilise savings from the amalgamation to fund stormwater management • Current economic environment with COVID-19 • Perceived inequity between single dwellings and unit blocks • Rate rises have already been significant • Rates are already too high • Should be Federal Government responsibility	12

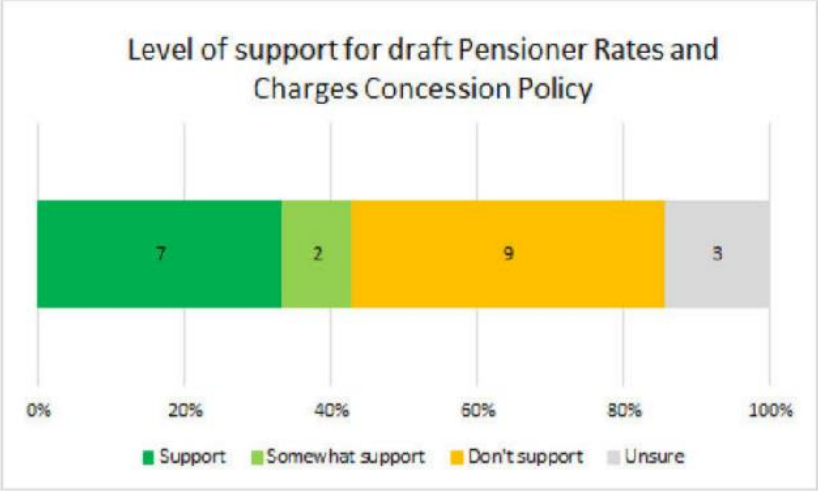
Issues - stormwater management service charge	No. of times raised
Other individual reasons to support charge, including but not limited to: - Enhanced climate change risks - Important to adequately fund stormwater - Fairness across the LGA	19

6.7 Level of support for Pensioner Rates and Charges Concession Policy (draft)

A total of 21 submissions were received on the draft policy. 38 percent from the former Manly LGA, 14 percent from the former Pittwater LGA and 48 percent from the former Warringah LGA.

Respondents rated their level of support for the draft Pensioner Rates and Charges Concession Policy. There was an equal number of respondents in support or opposed to the proposed Policy (43 percent) with the remaining 14% unsure.

Figure 8: Level of support for the draft Pensioner Rates and Charges Concession Policy



A summary of the qualitative issues in submissions is below:

Issues - draft Pensioner Rates and Concession Policy	No. of times raised
Additional measures needed for all recipients of Centrelink	2
Additional measures needed for retirees	5
Aged pensioners should not be excluded from Council's voluntary concession policy	2
Defer implementation of policy until harmonisation is completed i.e. Manly residents should not receive more generous discounts until rates harmonised	2
No subsidy for Domestic Waste Management Charge i.e.. everyone should be encouraged to reduce their waste, including pensioners	2
Increase pensioner subsidy with increased cost of living	1

6.8 Level of support for draft Rates and Annual Charges Hardship Policy

There were two online submissions received in support of the Rates and Annual Charges Hardship Policy. Both commented that the Hardship Policy provided the mechanism for assisting property owners impacted by rates harmonisation, there was no need for a gradual harmonisation approach and it should be implemented in full in 2021/22.

7 Other issues raised during the engagement

Eleven miscellaneous comments were received for service requests such as footpaths, weeds, road and stormwater drainage, environmental compliance and domestic waste. These are addressed in the attachment at Appendix A.

There were eleven comments on the community engagement process around provision of information and transparency for this project and these are also addressed in Appendix A.

8 Issues and responses

The 72 issues from submissions along with a response from Council is at Appendix A.

9 Appendices

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Appendix A - What we heard and responses

What we heard - harmonisation	No. of times raised	Council response
Comments supporting harmonisation including, but not limited to: • It is fair and equitable • Everyone should pay the same if they have equal land value • We are now one Council and charges should be shared equally	105	Noted. Council progressively harmonised Domestic Waste Management Services Charges with full harmonisation being completed by 1 July 2019.

What we heard - harmonisation	No. of times raised	Council response
Equity or fairness of rate rises for Manly residents due to higher than average land values Perceived inequality in land values for similar neighbouring properties	66	Land values are determined in line with the Valuation of Land Act 1916 and the Valuer General's policies. Council must rate each individual property on the land valuation provided by the Valuer General in accordance with s61 of the Valuation of Land Act 1916.
Merger delivering lower rates to residents	49	The annual recurrent benefits generated by the formation of Northern Beaches Council are estimated at $29.5 million. The savings are being reinvested back into the community through improved service levels, priority infrastructure and lower Domestic Waste Management Charges for ratepayers. The Long Term Financial Plan (LTFP) also includes efficiency saving targets of $2.75m per year, which the Council is investing in capital expenditure projects.

What we heard - harmonisation	No. of times raised	Council response
Review current service levels and budgets, including suggestions such as: • Freezing Councillor wages • Cut spending on low priority projects • Avoid spending on projects that benefit only a few • Avoid spending on assets that create more maintenance in the future • Operate with fewer staff numbers	39	The Council's budget is prepared to support our existing service levels, renew assets based on our asset management plans which includes prioritising assets in a poor condition and delivery of new assets set out in Council's various plans and strategies. Submissions are welcome each May as part of the development of the Operational Plan and Delivery Program for the following financial year. An interactive map is available on our website to see what is planned for your area: https://www.northernbeaches.nsw.gov.au/council/current-works-and-projects/capital-works-program
Concerns about Council service levels	27	Northern Beaches Council has retained the service levels of the former Councils and in many cases aligned these across the Northern Beaches with the highest level of the former Councils.
Concerns about affordability of increases for: • Struggling families • People on COVID-19 support • Under and unemployed • People on fixed incomes • People whose businesses are in crisis	24	A revised Rates and Annual Charges Hardship Policy has been prepared for exhibition which has been reviewed and amended in order to ensure ongoing compliance with legislative requirements and with the Office of Local Government's Debt Management and Hardship Guidelines. It enables Council to provide appropriate hardship assistance to ratepayers suffering genuine financial hardship due to a variety of different circumstances, including rates harmonisation.

What we heard - harmonisation	No. of times raised	Council response
The efficiency of the former Manly Council was the reason rates remained lower than the other former LGAs. By increasing rates for Manly residents Council will be effectively subsidise the other less efficient areas	12	The former Warringah area is currently contributing a higher income percentage as a proportion of unimproved capital land values with the former Pittwater area next and the former Manly area contributing the lowest income percentage as a proportion of land values. This is not an indicator of efficiency of one former Council over another, but it does indicate the challenges the Council faces in determining one harmonised rating structure. Northern Beaches Council was required by the NSW Government to maintain the former councils' rating structures and existing variation approvals for five rating years, from 1 July 2016 to 30 June 2021. Rates income from the former Manly area has not grown at the same rate the former Council had projected in their Long Term Financial as the former Manly Council 10-year Special Rate Variation (SRV) expired in 2017/18, resulting in a 2.02 percent reduction in rates. The average Manly residential rates notice is 4.8 percent lower in 2020/21 than it was before the merger due to the reductions in the waste charge and the expiring SRV mentioned above.
Harmonise expenditure and spend rates income within the Ward or locality from which rates were collected	6	The Council's budget is prepared to support our existing service levels, renew assets based on our asset management plans which includes prioritising assets in a poor condition and delivery of new assets set out in Council's various plans and strategies. An interactive map is available on our website to see what is planned for your area.

What we heard - harmonisation	No. of times raised	Council response
Trust in council to prioritise spending	3	The former Warringah Council had received approval from IPART prior to the amalgamation to increase rates income to support the Long Term Financial Plan of the former council. The Council publishes detailed service and financial performance reports every three months. These are reported to Council and available on our website.
Stop spending on unnecessary street signs	2	The new street signs are funded under the 'New Council Implementation Fund' - a grant from the NSW Government.
Opposition to Council using this opportunity to increase its revenue base	1	Council will not collect any additional rates income through the harmonisation of our rating structure. This process aims to collect our current rates income more evenly across the whole Northern Beaches area. It's about ensuring those within each category or sub-category with the same land value pay the same for the same level of Council service.

What we heard - harmonisation	No. of times raised	Council response
Affordability of rates in combination with land tax	1	In the 2008–09 Budget the Australian Government announced a comprehensive 'root and branch' review of Australia's tax system. The aim was to create a tax structure that will position Australia to deal with its social, economic and environmental challenges and enhance economic, social and environmental wellbeing. The Panel conducting the review was chaired by Dr Ken Henry AC, (Secretary to the Treasury) and the report produced is commonly known as the Henry Report. This report noted that raising revenue should be done to do least harm to economic efficiency, provide equity (horizontal, vertical and intergenerational), and minimise complexity for taxpayers and the community. The key taxation principles of efficiency, equity and simplicity have been used in developing Council's harmonisation strategy. Council's revised Rates and Annual Hardship Policy has been developed to assist people in genuine financial hardship due to a variety of different circumstances.
Affordability in combination with the Northern Beaches tunnel - request that Council delay harmonisation until the work on the tunnel is completed as there will be disruption to some people	1	Comments noted.
Rationalise office and depot properties	1	The former Council's did not rent their office premises. The Council continues to operate from the offices and depots of the former Councils and manages the efficient optimisation of its plant and equipment. Council is exploring options for the future use of Manly Town Hall.

What we heard - harmonisation	No. of times raised	Council response
Allow ratepayers to opt out of services such as parking stickers	1	Rates are based on your land value and categorisation and are levied in accordance with NSW legislation. The Council provides a range of services to meet the needs of our diverse community. We are not able to change the amount of rates payable based on which services ratepayers use.
The revenue lost by Manly when the single parking sticker was implemented is a contributing factor in the rate rise in Manly	1	Amalgamation efficiencies have funded the cost of the Northern Beaches Beach Parking Sticker. The rates harmonisation process will not result in additional income for the Council.

What we heard - methodology for implementing rates harmonisation	No. of times raised	Council response
Opposition to the use of unimproved capital value as the basis for rates calculation	77	Land values are determined in line with the Valuation of Land Act 1916 and the Valuer General's policies. Council must rate each individual property on the land valuation provided by the Valuer General in accordance with s61 of the Valuation of Land Act 1916.
Suggesting alternative calculation methodologies, for example: : • User pays • Charge landlords of tourist facilities more • Higher rates for investment properties • Calculate rates on lowest average land value	48	Currently, NSW councils are required to use the unimproved land value (UV - the value of the land without improvements) of a property to calculate rates. This is the value of the property without any buildings, houses or other capital investments. The NSW Government in its response to IPART's Review of the Local Government Rating System notes that many residents and property owners do not support any change. It also noted that a change such as introducing CIV within the current rate pegging framework will bring about a redistribution of the rating burden rather than an increase in rates and therefore council income. It will also come with significant disruption and because there is no overall database of CIV data within NSW , it is not possible to model the impacts on different types of property owners. Implementation would take several years before a potential improvement to the equitable distribution of rating revenue would be evident. The draft Bill - Towards a Fairer Rating System proposes to allow councils to create different rating subcategories for residential land in contiguous urban areas, while also continuing existing provisions that allow different residential rates to be set by 'centre of population', as used by regional and rural councils. Under the proposal, a council may only set different residential rates in a contiguous urban area if there is on average, different access to, demand for, or cost of, providing services and infrastructure. In initial modelling carried out in planning for the harmonisation process Council considered the implementation of a base rate and ad valorem rate structure. This base rate structure resulted in significantly greater impacts

What we heard - methodology for implementing rates harmonisation	No. of times raised	Council response
		on ratepayers and as such did not provide alignment with the taxation principles as outlined in the Henry Report. As part of modelling Council also considered the impacts and benefits of both lower and higher minimum rates. A minimum rate applies on properties whose land valuation is equal to or lower that the land value cut-off threshold. The land value threshold to determine whether a minimum or ad valorem rate applies is determined by a ratio of the minimum rate and the ad valorem rate being: Minimum rate divided by the ad valorem rate = land value threshold. Properties with valuations equal to or lower than the land value threshold will pay the minimum rate and properties whose land value is greater than the threshold will pay the ad valorem rate. Whilst a lower minimum amount provided a benefit to those ratepayers paying the minimum amount it also results in a considerably higher ad valorem rate in order to maintain rates income yields required to fund and maintain Council services and financial sustainability. In addition, a lower minimum amount combined with a higher ad valorem amount results in a lower land valuation threshold for determining eligibility/applicability of the lower minimum rate. In some cases, a lower minimum (such as the maximum minimum amount specified in the Regulation 126 of Local Government (General) Regulation 2005) resulted in a 33% reduction in the number of residential ratepayers that would pay the minimum rate and a 48% reduction in ordinary business ratepayers that would pay the minimum. In addition, this also resulted in considerable increases for those paying the ad valorem rate with increases up to 39% for some residential ad valorem ratepayers and increases up to 58% for some ordinary business ad valorem ratepayers.

What we heard - methodology for implementing rates harmonisation	No. of times raised	Council response
Support for Scenario 1, where Manly rates are used as the average	4	A minimum amount which is a fixed charge applies instead of the ad valorem amount, when the rate per dollar of land value is less than the minimum amount. A minimum is applied from a fairness and equity perspective in relation to the overall distribution of rates amongst ratepayers. The use of a minimum amount enables the rate to be set at a reasonable level for the provision of facilities and services on the rationale that in many respects ratepayers receive the same benefits from the council regardless of the amount of the rates paid.
Lower the rates to the Manly minimum and ad valorem	3	An ad valorem rate of 0.14 with a Manly minimum rate would result in a $13.7 million reduction in residential rates income. Expenditure would need to be reduced to offset this reduction in income. The annual recurrent benefits generated by the formation of Northern Beaches Council are estimated at $29.5 million. The savings are being reinvested back into the community through improved service levels, priority infrastructure, lower Domestic Waste Management Charges for ratepayers and the repayment of loans. The Long Term Financial Plan (LTFP) also includes efficiency saving targets of $2.75m per year, which the Council is investing in capital expenditure projects.
Rates calculation methodology for units	2	A minimum amount which is a fixed charge applies instead of the ad valorem amount, when the rate per dollar of land value is less than the minimum amount. A minimum is applied from a fairness and equity perspective in relation to the overall distribution of rates amongst ratepayers. The use of a minimum amount enables the rate to be set at a reasonable level for the provision of facilities and services on the rationale that in many respects ratepayers receive the same benefits from the council regardless of the amount of the rates paid.

What we heard - methodology for implementing rates harmonisation	No. of times raised	Council response
Calculation of the weighted average minimum	1	The weighted average is determined for each of the categories by calculating the total income currently collected from minimum rates and dividing this by the total properties currently paying a minimum.

What we heard – gradual harmonisation over four years	No. of times raised	Council response
Immediate harmonisation of rates across the LGA citing: • Fairer and more equitable approach for all residents • Ex-Warringah residents are subsidising the rest of the LGA. • All residents have been affected by COVID-19, not only ex-Manly residents • Rate reduction should be passed on immediately and rates increases introduced gradually over four years • Most people should be able to accommodate the changes immediately • Residents whose rates will raise have had almost five years of savings • Council has had four years to implement harmonisation • Gradual harmonisation will cost ratepayers more in Council budget	54	Council is currently consulting with the Community in relation to the harmonisation of rates and the measures proposed are subject to State Government legislative changes and adoption by the elected Council.

What we heard – gradual harmonisation over four years	No. of times raised	Council response
Support for gradual harmonisation for reasons including: • Current economic environment e.g. Impact of COVID-19 • Assists ratepayers who will face an increase in their rates	11	Support for gradual harmonisation noted.
Support gradual harmonisation over a shorter timeframe	4	Measures proposed are subject to State Government legislative changes and adoption by the elected Council.
Comments on support for gradual harmonisation commencing in 2022/23	2	Support for gradual harmonisation, starting 2022/23 noted.
Council publish the extent of the subsidy paid by ex-Warringah ratepayers for former ex-Manly and ex-Pittwater	2	Rates income is currently calculated based on your land value, category and area, with all rates income consolidated to provide services to the Northern Beaches community. The Council's budget is prepared to support our existing service levels, renew assets based on our asset management plans which includes prioritising assets in a poor condition and the delivery of new assets set out in Council's various plans and strategies, rather than a target expenditure for each ward or former Council area.
Support gradual harmonisation over a longer timeframe	1	Measures proposed are subject to State Government legislative changes and adoption by the elected Council.
Rates reduction for ex-Warringah residents should be higher	1	Council must rate each individual property on the land valuation provided by the Valuer General in accordance with s61 of the Valuation of Land Act 1916.
Support for gradual harmonisation commencing in 2021/22	1	Support for gradual harmonisation, starting 2021/22 noted.

What we heard – gradual harmonisation over four years	No. of times raised	Council response
Query whether ex-Warringah residents will receive a refund for subsidy	1	The NSW Government amended the Local Government Act 1993 which allowed the Minister to require that the former councils rating structures stay in place for 4 rating years, from 1 July 2016 to 30 June 2020. This enabled the government to achieve its policy that there will "be no change to the existing rate paths for newly merged Councils for 4 years" (The Rates Path Freeze). The NSW Government subsequently amended the Local Government Act 1993 to provide for an additional year for amalgamated councils to harmonise rates by 1 July 2021.
Comments on support for gradual harmonisation commencing in 2023/24	1	Support for gradual harmonisation, starting 2023/24 noted.
Subsidy paid by ratepayers from previous Warringah LGA should be spent in previous Warringah area	1	Rates income is currently calculated based on your land value, category and area, with all rates income consolidated to provide services to the Northern Beaches Community. The Council's budget is prepared to support our existing service levels, renew assets based on our asset management plans which includes prioritising assets in a poor condition and delivery of new assets set out in Council's various plans and strategies. Recent and upcoming significant projects include Long Reef SLSC, Lionel Watts / Glen Street precinct works and a significant investment in new footpaths. You can view projects in your local area on the interactive map on our website: https://www.northernbeaches.nsw.gov.au/council/current-works-and-projects/capital-works-program

What we heard - Business rates	No. of times raised	Council response
Incorporate Manly CBD into the ordinary business rate category	2	The former Councils created separate subcategories or business 'centre of activities' to replicate the demand and use of council services from individual businesses through targeted differential rating. We are not proposing to change the basis or amount of rates levied as part of the rates harmonisation process for these sub-categories, however, we recognise that further assessment will need to be undertaken in the future to ensure the rates levied reflect the demand and use of council services and fairness and appropriateness of the rates in terms of the benefits principle and the ability to pay principle.
Acknowledge and remove the Manly CBD special rate	2	The former Manly Council had created a business sub-category for the Manly Business Centre, The Corso and ocean beach front due to it being a high intensity shopping and tourist precinct as a reflection of the demand and use of council services. There is both a business sub-category for this precinct and a special rate the uses of which include the provision of ongoing and proposed capital and maintenance works. Council is not proposing to remove the Special Rate. The Special Rate is used for the provision of facilities and services specifically for the area designated for this rate.
Objection to business rate rises in the former Pittwater LGA	2	All proposals are subject to State Government legislative changes and adoption by the elected Council.
Impact of rates rises on businesses struggling with the COVID-19 recovery	1	A revised Rates and Annual Charges Hardship Policy has been prepared for exhibition which has been reviewed and amended in order to ensure ongoing compliance with legislative requirements and with the Office of Local Government's Debt Management and Hardship Guidelines. It enables Council to provide appropriate hardship assistance to ratepayers suffering genuine financial hardship due to a variety of different circumstances, including rates harmonisation.

What we heard - Rural residential rates	No. times raised	Council response
Unsure – not enough detail	4	Rates harmonisation is a complex issue and Council has made every effort to simplify the explanation to assist ratepayers in understanding what is required.
Support	3	No Council in Sydney or on the fringes of the metropolitan area have a Rural Residential Rating Sub-Category like the one Council has asked the community to consider. IPART recommended councils be able to set different residential rates in contiguous urban areas, but only where there is on average, different access to, demand for, or cost of, providing services and infrastructure. It proposed that councils use geographic markers to define these areas, including postcodes, suburbs, geographic features (e.g. waterways, bushland) and/or major infrastructure (e.g. arterial roads, railway lines). In the Towards a Fairer Rating System Consultation Guide it noted for this purpose, 'contiguous urban area' will capture a portion of an area that is urban in nature and comprises residential land where the properties within that area, taken together, are not entirely separated by land that falls within other rating categories.
Do not support	3	No reasons given
Where are the rural residential properties on the Northern Beaches?	1	Council has farmland properties in the former Pittwater LGA.

What we heard - stormwater management service charge	No. of times raised	Council response
Support for Stormwater Management Service Charge for reasons including: • Enhanced climate change risks • Important to adequately fund stormwater • Fairness across the LGA • Charge is small for households to contribute to stormwater projects	19	Former Manly and Pittwater ratepayers currently pay the stormwater charge. Continuing this charge across the Northern Beaches will provide a sustainable source of funds for improvements to the stormwater management system. The additional funds raised are exclusively for improvement to stormwater management in addition to the Council's existing services.
Opposition to Stormwater Management Service Charge for reasons including: - Current economic environment with COVID-19 - Rate rises have already been significant - Rates are already too high - Should be Federal Government responsibility	7	Former Manly and Pittwater ratepayers currently pay the stormwater charge. Continuing this charge across the Northern Beaches will provide a sustainable source of funds for improvements to the stormwater management system. The additional funds raised are exclusively for improvement to stormwater management in addition to the Council's existing services.
Council should utilise the existing budget to fund stormwater management	4	Former Manly and Pittwater ratepayers currently pay the stormwater charge. Continuing this charge across the Northern Beaches will provide a sustainable source of funds for improvements to the stormwater management system. The additional funds raised are exclusively for improvement to stormwater management in addition to the Council's existing services.

What we heard - stormwater management service charge	No. of times raised	Council response
Implement charge only once the residential and business rates are harmonised	2	Former Manly and Pittwater ratepayers currently pay the stormwater charge. Continuing this charge across the Northern Beaches will provide a sustainable source of funds for improvements to the stormwater management system. The additional funds raised are exclusively for improvement to stormwater management in addition to the Council's existing services. The proposed stormwater charge is not proposed to be introduced to properties in former Warringah until 2022/23. This would align with the gradual harmonisation of rates and for residential ratepayers this charge would largely be offset by a reduction in the residential rate.
It is inequitable that residents in a single dwelling are only charged double what strata residents will be charged.	1	Councils has adopted a reasonable approach to determining the charge for strata lots, on the basis the charge does not exceed the lower of the cost of providing the service or half (50%) of the residential upper limit (i.e.. $12.50). Residential strata lots may only be charged up to 50 percent of the adopted charge as applied to standard residential properties. This effectively caps the charge to residential strata units at $12.50 per unit.
Suggest decrease in Stormwater Management Service Charge from $25 to $20	1	Former Manly and Pittwater ratepayers currently pay the stormwater charge. Continuing this charge across the Northern Beaches will provide a sustainable source of funds for improvements to the stormwater management system. The additional funds raised are exclusively for improvement to stormwater management in addition to the Council's existing services.
Improved outcomes for stormwater required. Drains are full of leaves.	1	Former Manly and Pittwater ratepayers currently pay the stormwater charge. Continuing this charge across the Northern Beaches will provide a sustainable source of funds for improvements to the stormwater management system. The additional funds raised are exclusively for improvement to stormwater management in addition to the Council's existing services.

What we heard - stormwater management service charge	No. of times raised	Council response
Warringah had an Environmental & Stormwater Special Rate levy (ESSR) which became a permanent full rate increase when the levy finished.	1	The former Warringah Council's special variation was implemented to fund environmental and drainage works and services. Council may levy a SMSC under s496A of the Act on all eligible properties on the Northern Beaches, including properties in former Warringah LGA as: 1. Warringah Council's special variation for environmental and drainage works and services became part of Warringah's general revenue in FY 2006/07. 2. The funding of drainage works and services from the special variation was an incidental purpose of the special variation and in accordance with the Stormwater Management Service Charge Guidelines (2006) a council may retain the income derived from the incidental purpose of a special variation and implement the new stormwater management service charge. 3. No ongoing obligations were inherited by Northern Beaches Council on 12 May 2016 from former Warringah Council in respect to instruments from the Minister for Local Government under section 508 or 508A
Utilisation of savings from the amalgamation to fund stormwater management	1	The Stormwater Charge is set in accordance with legislation and has not changed since the charge was introduced in 2005. The annual recurrent benefits generated by the formation of Northern Beaches Council are estimated at $29.5 million. The savings are being reinvested back into the community through improved service levels, priority infrastructure, lower Domestic Waste Management Charges for ratepayers and the repayment of loans.
Request for properties not currently connected to the stormwater are connected if needed	1	In certain circumstances a property may be exempt from the Stormwater Charge - more information is available on our website. https://www.northernbeaches.nsw.gov.au/council/forms/stormwater-management-services-charge-request-exemption-checklist

What we heard - draft pensioner rates and concession policy	No. of times raised	Response
Support for Draft Pensioner Rates and Concession Policy for reasons including: • Do not want to see reduction to Warringah pensioner concessions • Budgeting is difficult for pensioners and self-funded retirees on fixed incomes • Hardship provisions in current economic environment are fair	10	As part of this process, Council is proposing to offer all eligible pensioners the most generous concession scheme of the former three council areas (the former Warringah scheme).
Additional measures needed for retirees	5	A revised Rates and Annual Charges Hardship Policy has been prepared for exhibition which has been reviewed and amended in order to ensure ongoing compliance with legislative requirements and with the Office of Local Government's Debt Management and Hardship Guidelines. It enables Council to provide appropriate hardship assistance to ratepayers suffering genuine financial hardship due to a variety of different circumstances, including rates harmonisation. As part of this process, Council is proposing to offer all eligible pensioners the most generous concession scheme of the former three council areas (the former Warringah scheme).
Additional measures needed for all recipients of Centrelink	2	As part of this process, Council is proposing to offer all eligible pensioners the most generous concession scheme of the former three council areas (the former Warringah scheme). Extending the voluntary concession to aged pensioners would cost approximately $1.3m.
Aged pensioners should not be excluded from Council's voluntary concession policy	2	As part of this process, Council is proposing to offer all eligible pensioners the most generous concession scheme of the former three council areas (the former Warringah scheme). Extending the voluntary concession to aged pensioners would cost approximately $1.3m.

What we heard - draft pensioner rates and concession policy	No. of times raised	Response
Defer implementation of policy until harmonisation is completed i.e.. Manly residents should not receive more generous discounts until rates harmonised	2	Noted.
No subsidy for Domestic Waste Management Charge i.e.. everyone should be encouraged to reduce their waste, including pensioners	2	The proposal is subject to adoption by the elected Council.
Increase pensioner subsidy with increased cost of living	1	The proposal is subject to adoption by the elected Council.

What we heard - Other	No. of times raised	Response
Environment and Waste		
Service increases requested: • More money for the environment • More rangers	2	The Council's budget is prepared to support our existing service levels, renew assets based on our asset management plans which includes prioritising assets in a poor condition and delivery of new assets set out in Council's various plans and strategies. Submissions are welcome each May as part of the development of the Operational Plan and Delivery Program for the following financial year. An interactive map is available on our website to see what is planned for your area: https://www.northernbeaches.nsw.gov.au/council/current-works-and-projects/capital-works-program
Council needs to prevent overfull red bins	1	Council's contractor place tags on overfull bins to educate the resident on correct usage of the domestic waste bins. If the problem persists Council's waste team contact the properties to discuss why their bins may be overfull and help them work to reduce their waste or help them order a second service. This may include a visit to the property to visually audit the bins contents to ensure recycling is been carried out correctly to have a positive outcome.
Recycling - cups, clothing and beach bin sorting - Council do better	1	Clothing can be recycled in charity bins located around the LGA or donated to local charity shops. Council is also currently working with two start-up businesses and a number of schools recycling end of life school uniforms. Paper cups have a plastic lining to avoid leakage and it is very difficult to separate the paper and plastic for recycling. Public Place Litter Bin signage has been upgraded in Manly and other beach reserves to provide clearer messaging to improve recycling.

What we heard - Other	No. of times raised	Response
Insufficient street sweeping services in Manly	1	Council's mechanical street sweeping program in Manly area is carried out on a 4-6 week cycle. Some streets that have on-street parking prevents mechanical sweeper from reaching the gutter. In such instances, the work is done manually on an 'as needs' basis. Pacific Parade Manly is serviced on such basis. A manual service has been scheduled to be carried out in the next two weeks. The best way to request a manual service is through Council's customer service team and lodge a street sweeping request.
Opposition to coastal erosion management	1	In the case of Collaroy Beach, affected residents have been offered 10% contribution by Council and 10% from State Government toward the costs of constructing coastal protection works. Residents are required to pay the remaining 80%. Council is making this contribution in recognition of the public benefit of improving the existing historic coastal works placed during previous storms that are impacting public access and safety.
Management of inter-allotment drainage easements	1	Council is responsible for the management of the trunk stormwater drainage systems throughout the LGA. The Council drainage system caters for the flows from roads and Council lands and provides a safe connection for private property to discharge their runoff while minimising impact to private property. The SMSC funds will cover projects such as maintenance of any Council-owned drainage system which convey flows from the public road network or Council's properties. The maintenance of private inter-allotment drainage lines will remain the responsibility of private owners. The properties who benefit from local inter-allotment drainage systems, will still own and be responsible for their maintenance. All Council-owned drainage in your area will be supported and augmented where appropriate by the SMSC.

What we heard - Other	No. of times raised	Response
Transport and Assets		
Footpath request Brookvale	1	"The segment of footway the customer is referring to is along the street frontages of three existing single dwellings in Brookvale Ave. This surrounding areas have had development in terms of residential flat buildings and have had formalised footpaths created as part of those development activities. Council note there is a missing segment of formalised footpath however it is still a safe verge that is traversable on foot. Notwithstanding Council's maintenance team will undertake inspections of the area and undertake any minor remedial works to the grassed verge if required. It is noted that a formalised footpath is in place on the opposite side of the road to the customers residence and this can be utilised if there are amenity concerns on traversing on the grassed side of the road. In terms of providing a formalised footpath on the area raised by the customer this would be deemed a low priority based on the limited Capital budget for new footpath works and such is unlikely this will be completed in the foreseeable future. Irrespective of this low priority Council does from time to time receive grant opportunities for 'link' projects such as these. As such this missing will be noted for any potential future grant funding to be considered.
Trip hazard – Dee Why	1	Trip Hazard in Dee Why Parade reported to the Transport and Civil Infrastructure team for investigation. Task number T388495.
Tree roots and stormwater drainage, Pacific Parade, Manly	1	Council's current position is to retain street trees and vegetation. It is noted that there is ongoing challenges with mature street trees and their effects on the constructed infrastructure such as kerb and gutters, footpaths and road pavements. These impacts on levels then cause ponding issues with stormwater runoff within the road corridors. Where

What we heard - Other	No. of times raised	Response
		possible and under strict controls some root pruning is undertaken and the replacement infrastructure is renewed to a more effective solution. Irrespective of these impacts by the street trees as part of preventive maintenance processes the road pavement needs to be maintained to a suitable condition to ensure ongoing serviceability to the road users. This includes road re-sheeting of existing pavements. Additionally, in this area there is limited existing stormwater infrastructure to utilise so alternate methodologies must be looked at. With respect to the challenges presented by the street trees and the subsequent ponding issues our Stormwater Engineers are currently building and trialling formalised absorption pits in similar less populated areas to those in this item. If analysis of these new trial pits yields positive performance this may be a solution that could be utilised in future subject to prioritisation and funding availability to improve the ponding matters being experienced.
Parks and Recreation		
Noxious weeds on Pine Street Walkway	1	Regular maintenance is currently carried out in this area. An initial clean-up was carried out mid 2020 and a monthly maintenance contract has been in place since that time, involving weed control. We are aware there is a brush turkey nest resulting in build-up of material in the reserve, adjacent to a resident's fence. The is programmed to be removed, along with additional vine removal, when the nest is not active. Staff will also review the scope of the maintenance contract for effectiveness.
Domestic waste management charge (DWMC)		
Suggestion that Council use merger savings to reduce the costs of domestic waste management.	1	The annual recurrent benefits generated by the formation of Northern Beaches Council are estimated at $29.5 million. The savings are being reinvested back into the community through improved service levels, priority infrastructure and lower Domestic Waste Management Charges for ratepayers.

What we heard - Other	No. of times raised	Response
Community Engagement		
Complexity and ambiguity of information presented as part of the public exhibition, notably: • Ease of usability of submission forms • Lack of information for scenario 4 • Lack of transparency in available information • The exclusion of a map showing land holdings and rates paid and exemptions/reductions.	9	Rates harmonisation is a complex issue and Council has made every effort to simplify the explanation to assist ratepayers in understanding what is required. During the exhibition period, Council telephoned people who made written submissions stating that they did not understand the information on the website, particularly as it related to application of the concession policy and/or how to use the calculator. In addition, the yoursay webpage was updated on 8 February to improve access for people to make submissions.
Integrity of the community engagement process for this project	1	Section 3 of this report outlines the engagement methodology for this project, focussing on distribution of information as widely as possible, as well as seeking feedback on the proposals that have been put to Council. Rates harmonisation is a state government directive that amalgamated Councils must complete. The final proposal is subject to adoption by the elected Council following consideration of the feedback received
Limitation of the submission form to provide details for only one property.	1	A system limitation. We have noted the feedback and will address this in future surveys through additional testing prior to publishing the form.

Appendix B - Verbatim community and stakeholder submissions

Submission form - Residential rates

Level of support for rates harmonisation	Please share your reasons
Don't Support	First, I live in one of the properties (Fairlight) and the other is an investment property in Brookvale (no way to provide that information in the choices above. I suggest you harmonise the three former Council areas to the lowest level, i.e. Manly. Leave Manly unchanged and reduce rates in Pittwater and Warringah. This is not the time to raise rates on anyone, with small businesses closed and more closings to come due to the steps taken to control the pandemic. Reduce total government spending in the Northern Beaches and then review whether it makes sense to return to the previous overall budget level in a couple of years. There are no new programs that are urgently needed. If stormwater management is such a priority, cut something else that is a lower priority. Private enterprise has to do this all the time. It is so easy to NEVER cut spend when you (yes you) are spending someone else's money.
Don't Support	Warringah and Pittwater Councils should be lowered to the level of rate payments that Manly has managed achieve. Its not fair for one third of the Northern Beaches to have to pay for two thirds of the combined rates and any vote to agree will result in the two inefficient councils voting to their own benefit. The Covid virus has damaged the whole of our economy and to ask for this increase in the council rates for Manly residents is a dangerous action. The increase of around twenty percent has not been planned for and any further outbreaks will seriously hurt the finance and savings of the residents. In these times Council needs to demonstrate constraint, harmonisation is wrong and council needs to focus on integrating into on council. Instead of all the real estate of the three wards it needs to be amalgamated to one site, that is if we are one council. So far I cannot see this happening and if anything Manly residents are giving up a lot and getting nothing back. The extra council buildings need to be sold off and amalgamate into one, every effort needs to be put into all residents of the Northern Beaches need to be covered by common rules and practices
Don't Support	The whole basis of the council amalgamation was to save costs and reduce rates. The residential rate in $ being proposed is the same as the Manly council rate in 2015/16, so ex-Manly ratepayers are not getting any of the saving Northern Beaches Council continuously claim to have achieved from the amalgamation. Within the next year, the rate in $ will be higher then previously under Manly Council making a mockery of the cost reduction claims. Council should look at rate in $, or the total rate cost, as the land value changes continuously. Rubbish collection charges should be considered separately as the size of general garbage (red) bins has reduced by a third (120L to 80L) and whilst green bin pickup is now fortnighly, it is limited to the two green bins. Previously the monthly pickup

Level of support for rates harmonisation	Please share your reasons
	was unlimited, including neatly stacked branches up to 1.5m in length which now don't fit in the bins. Your stated "justification" for the rate increase to ex-Manly ratepayers is to bring rates in line with the "minimum" rate "based on the weighted average of the former council area minimum rates." This by definition confirms you are not passing on to residential rate payers any of the substantial cost savings from amalgamation you say you achieved. Overall, this appears to be another example of Council providing less services and demanding more funding. Totally inconsistent with the rationale given by (previous) Council and State government for the merger
Unsure	The whole basis of the council amalgamation was to save costs and reduce rates. The residential rate in $ being proposed is the same as the Manly council rate in 2015/16, so ex-Manly ratepayers are not getting any of the saving Northern Beaches Council continuously claim to have achieved from the amalgamation. Within the next year, the rate in $ will be higher then previously under Manly Council making a mockery of the cost reduction claims. Council should look at rate in $, or the total rate cost, as the land value changes continuously. Rubbish collection charges should be considered separately as the size of general garbage (red) bins has reduced by a third (120L to 80L) and whilst green bin pickup is now fortnighly, it is limited to the two green bins. Previously the monthly pickup was unlimited, including neatly stacked branches up to 1.5m in length which now don't fit in the bins. Your stated "justification" for the rate increase to ex-Manly ratepayers is to bring rates in line with the "minimum" rate "based on the weighted average of the former council area minimum rates." This by definition confirms you are not passing on to residential rate payers any of the substantial cost savings from amalgamation you say you achieved. Overall, this appears to be another example of Council providing less services and demanding more funding. Totally inconsistent with the rationale given by (previous) Council and State government for the merger.
Don't Support	As part of the Amalgamation, financial benefits of up to $72m has been promised. Furthermore, potential of reducing reliance of rate increases has been flagged through SRV to fund infrastructure and a 4 year rate freeze. An increase of over 20% for local residents is hardly "fair and equitable" and whilst these increases has been described as "rate harmonisation", the fact of the matter is that it reflects a significant increase for no additional services provided by Council to some residents. If such amalgamation savings are achieve, why not pass these savings to the residents rather than increases the rates to bring all resident rates to a higher benchmark level pre amalgamation? Council indicated in July 2020 it is on track to double the $76.3 estimated savings from the amalgamation. These savings could be applied to find a fairer way than to propose fee increases of 20%+. I also note that land values has no representation on services provided by the Council so a % of this value is arbitary.

Level of support for rates harmonisation	Please share your reasons
Don't Support	To Whom it may concern: The promises made to sell the amalgamation to us the local resident, was that no one will be worse off than what they were under the de-centralised model of councils. Receiving a 20% increase in my council rates under the amalgamated structure is unbelievable, unrealistic, and shocking plus goes against the promises made off no-one being worse off. $400 extra is not realistic, and creates confusion why we need to harmonise rates, when the expectation and assumption is that amalgamating councils would bring efficiencies and cost savings. The cost savings through amalgamation should be utilised to harmonise council rates or pass the savings on in communities where needed most. I support amalgamation combined with the promise of no-one will be worst off, realising the savings and utilising the savings for the better of communities. Keep the promises made that no-one will be worst off. Regards, [redacted]
Don't Support	The rates harmonisation proposal is wrong and I oppose it in the strongest possible terms. The former Warringah Council was dismissed twice for corruption, just in living memory - which means there were many, many years when Warringah Council was not doing its job properly and not paying attention to its core responsibilities to spend rates income in the most efficient and effective way. No wonder Warringah Council's most recent rating factor was higher - because there had been so many years when Warringah Council was not doing its job, the Council had to play catch-up in more recent years. It is completely unfair to transfer that burden to former Manly Council residents in the form of higher rates. Manly Council residents were promised time and time again that costs would not increase if Manly Council merged with Warringah and Pittwater. Manly Council residents relied on that promise when they voted for the merger. The harmonisation proposal is completely unacceptable and always will be.

Level of support for rates harmonisation	Please share your reasons
	There is nothing fair or harmonious about increasing Manly Council area rates and decreasing rates in the former Warringah Council area.
Don't Support	My reasons are in the attached file Rates Harmonisation Feb 2021.docx
Don't Support	Why should we be penalised just because the Government has decided to consolidate councils? This isn't a harmonisation of rates, this is purely a process fix as a result of consolidating councils - this has no actual benefit or bearing on us. The Government should not penalise us for something they have decided to do, that we had no control over.
Don't Support	We have been screwed by the Liberal Party - Mosman Council won out by NOT merging - We were told that we would not be disadvantaged - immediatley following merger, walking along Manly Beachfront - 85% of the Parking Stickers were Pittwter or Warringah - I don't want to park in Pittwater or Warringah, now due to merger I cannot park , shop or eat in Manly as no parking We were told we would not be disadvantaged by merger, but here we are, rates increase by $711.05 per year - rates are supposed to be based on UCV of property, which means that we are all equal across Pittwater/Warringah/Manly, but not so. We have created a monster of Bureaucrats, who grow individual fiefdoms, that in turn require exponential funding, with no benefit to Ratepayers, but increase the salaries of participants involved - Peter Principle to the nth Degree Liberals You Scfewed Us. A very disheartened Manly Council Ratepayer
Don't Support	Manly Council was run as a highly efficient Local Council until amalgamation and we are now looking at an increase in our rates by close to 20% and that does not include the annual rate increases. Under Harmonisation we will be paying for the other Councils that have had a very poor history when compared to Manly. Warringah Council has been a failed council and had to have an administrator appointed and I think Pittwater hasn't don itself any justice. Over the time I have lived in manly we have had a number of projects that have had to be payed for above the normal rats such as the Staurt Sommerville Bridge at Queenscliff. As a self funded retiree, we get absolutely NO support from any level of government that you would call helpful and the only solution that my friends and myself would have would be to sell up and leave an area that we have funds for over 40 years and I think that is disgusting.

Level of support for rates harmonisation	Please share your reasons
	Instead of increasing the rates we should harmonise to the lowest level of the three councils and fund it by selling off the properties of two council buildings and properties. I think its incredibly wrong when the world economy has been virtually shut down and the Northern Beaches Council has been working on ways to make life more difficult. Mike Baird should complete all of his promises such as fixing the Wakehurst Parkway and make it two lanes in both directions. My solution harmonise to the rates of Manly not to the out of control rates of the failed council - Warringah and Pittwater
Don't Support	Council has had 4 years to have dealt with this and it should have been top 3 priorities as part of amalgamation. To expect Warringha rate payers to continue to supplement two of the most affluent areas in NSW is unacceptable Council should bring this in line 21/22 or at most in 2 years, and be prepared to cut Council budget to facilitate this. In addition to expect Warringha to pay Stormwater while we have paid 10+ % more rates than the Manly & Piwatter and you are advocating we continue to supplement these areas really is a joke ! You have a monopoly and no other Government or Financial Institute would get away with this. It has to be fixed asap.
Somewhat support	I am concerned that even though my rates are going down that Dee Why residents will not benefit. I am concerned that Dee Why is considered the lowest priority area of the entire beaches and as such we are just not getting the infrastructure we need. My elderly father tripped over the footpath outside my house the other week. Why? It's dreadfully uneven. Hazardous. And don't even get me started on the state of the roads or the parking. And yet we're supposed to harmonise with the rest of the beaches. And, of course, there's hundreds of people flooding in all the time to new build apartments. Infrastructure is needed here, urgently!!! Don't leave Dee Why behind!!! We want to see where our rates are actually going!!!
Don't Support	Raising residential rates by 22% is unacceptable, regardless of whether it is branded as 'harmonisation' and 'gradually introduced'. The point in Council's letter referring to the other areas having taken the financial burden for the last five years is irrelevant and a mute point. The rates that these areas may have been paying were 'their' rates. The rates we pay in Manly are relative to us. Once you increase our rates by 22% then we will be paying the increased 22% into perpetuity - NOT for 5 years. Rather, as a Council you need to review your expenses more diligently and reduce them. Rates should be reducing in line

Level of support for rates harmonisation	Please share your reasons
	with the economic climate and general efficiency improvements implemented more widely across businesses and the community.
Somewhat support	I support harmonisation provided it doesn't result in significant jumps in pricing for ratepayers from one payment period to the next.
Support	There needs to be a fair system applied across the LGA as the Council now has the responsibility for the whole LGA as one.
Somewhat support	The level and number of council services per property should also be included in the rates assessment
Don't Support	I would like to lodge my strong objections to the proposed rate increase for the residents of Manly. The proposed increases ranging from 12% to 26% are offensive in the current economic climate. We currently have zero inflation and zero wage growth and you are asking the ratepayers of Manly to pay up to 26% more? The economic situation will not improve next year or in the coming years. The NSW Independent Pricing and Regulatory Tribunal has set the 2021-22 rate peg for NSW councils at 2.0% and yet you are asking Manly ratepayers to pay an increase of up to 26%.
Support	Lower overall rate for my property, consistency across the LGA, I strongly support implementing the Stormwater Management Charge to increase revenue to fund upgrades to the stormwater network (including stormwater quantity and quality management measures).
Somewhat support	Concern is that on the calculator my rates go up in the second year before going down. It is a concern about will the decrease in rates in year 3 happen or will it be re-examined and suddenly left on the even higher rate???
Don't Support	Now you have brought it to our attention that as a former Warringah ratepayer we are paying a higher rate for the same services I think that it should be made equal straight away. Merging councils was supposed to make coun cil more cost effective but we are still using old boundaries with as yoiu pointed out Warringah residents paying more. The equalizing is being delayed due to covid what about warringah residents dealing with hardship from Covid and still subsidising the other two former council areas.

Level of support for rates harmonisation	Please share your reasons
	Make it equal accross the three former councils.
Support	It is only right and fair that all residents carry the same burden proportionally. Warringah residents should no longer be penalised to the benefit of residents in other areas - this change should be done immediately - not phased in over a number of years
Don't Support	I strongly object to the rates harmonisation. As a resident of the former Manly Council I think it is grossly unfair that residents should be financially impacted with such a STEEP and unjustifiable increase. This increase will place additional undue financial pressure on a large percentage of residents in that live in the Northern Beaches Council at a time of unprecedented economic, emotional and social upheaval due to the worldwide Covid pandemic. I also strongly object to paying increased rates when we have clearly seen a drastic deterioration of Council services following the amalgamation of the councils across Northern Beaches. If absolutely necessary it would only be appropriate to stage the increase of the rates over a series of years given the huge increase to our rates.
Don't Support	Rates for residents in my area will be higher with harmonisation. This is unfair because: * amalgamation was supposed to lead to more efficiencies and lower rates--not higher rates. * this area is frequented often by people from other areas, so residents should not have to pay extra to support their use.
Don't Support	To increase the average rates of Manly residential landholders by 26% in order to decrease equivalent rates in the other wards by the trivial 3% and 6% is both unfair and unnecessary. Rates should be harmonised by meaningful reductions in the ad valoram of other wards toward that of Manly paid for from amalgamation and other savings.
Don't Support	Since the amalgamation of Councils the services to the Manly area have significantly reduced, so now we are faced with higher rates and less services. Currently Manly is underserviced particularly with rangers being non existent. We are a Tourist destination, and have very different needs to the other area's, we need rangers based at Manly with at least 5 on duty most of the time. Perhaps spend less on Consultants and more on services Also we have no parking, along the beachfront with 4 hour parking for" one Northern beaches" make it 2 hours so everyone

Level of support for rates harmonisation	Please share your reasons
	has a chance to park, and increase revenue lost by parking. Frankly we should go back to Manly Council a stand alone Council.
Don't Support	The rates were in existence when I bought into the Manly Area some 13 years ago. The services provided remain pretty much unchanged. The amalgamation of the 3 Councils wasn't my choice and I had no input whatsoever. To now increase my Rates by 26% for harmonisation is not fair - it's like robbing Peter to pay Paul!! I'm not getting a 26% increase in services .
Support	The sooner the better
Support	This is a supplementary submission to explore the merits of the 4 residential rates harmonisation scenarios. Harmonising rates is a NSW government directive for amalgamated councils and should be completed on schedule in 2021/22.
Support	The sooner the imbalance is rectified the better
Support	We all get the same services, using the % calculation system makes it a fairer system.
Support	Sounds like a fair system
Support	As we are now one council area the charges should be shared equally.
Somewhat support	It is very unfair that rate payers in the former Warringah Council area pay higher rates than Pittwater and Manly, both of which have a much higher average land value. I have to wonder though if the small decrease in rates at the end of the harmonisation period will be swallowed up by potential water and sewerage increases over that time.
Somewhat support	I support the overall intent of the harmonisation. I don't agree with a rate payer, who is ultimately going to get a reduction, to have to face an initial increase. Especially if they have already had an increase in their waste disposal fees as a result of the harmonisation of that service.
Don't Support	As Manly rate payers we consider that proposed rate increases based on Ad Valorem percentage of land value is totally unfair and not in the spirit of state laws. Council needs to take all factors into consideration and review its thinking to a more equitable solution based on Manly land values being higher than other council areas and therefore should be "averaged" with

Level of support for rates harmonisation	Please share your reasons
	adjustments made (plus and minus) and for services which are provided equally across all areas. We ask that a solution be reached by Council that satisfies all rate payers.
Don't Support	While acknowledging that waste costs have been materially lower since amalgamation, the idea of joining Manly, Warringah and Pittwater was to provide greater efficiency and better services across the board in the new Northern Beaches Council area. This should NOT be achieved at the expense of the residents of the former Manly Council area. The suggested harmonization will see my rates go up substantially above what we were paying as a Manly Council ratepayer prior to amalgamation, amounting to a 20% hike. I am absolutely against this as I do not see such an outcome as being equitable for the residents of the former Manly Council area who benefitted from lower rates under the old regime and are now being asked to subsidize the residents of the former Warringah and Pittwater Council areas. I want to additionally dispute my properties harmonization schedule based on land valuations for my property that do not equate with valuations of other properties on my street - we don't have the best block of land on the whole street, and therefore debate the basis upon this harmonization calculation has been made.
Support	I was in favour of council mergers on the basis of efficiency and ability to achieve savings on account of scale and, hopefully, improved service as a result of scale with more efficient optimisation of resources. Rates optimisation is a fair allocation of costs.
Don't Support	Rates based on vg are wrong. Rates should be based on previous 3 years costs to council adjusted for state payments plus additional voted programs. This cost should then be divided by the total number of rated properties.
Somewhat support	Manly rates should be raised immediately - there should be no reduction in rates as I don't believe the Northern Beaches Council is fully covering its current level of ongoing expenditure
Somewhat support	I supported the amalgamation of the 3 councils into Northern Beaches to improve productivity and reduce duplicated administration costs and I also believe that all ratepayers should be charged the same rates for provision of the same services. However I see no justification in your advice that supports the proposed increased rates for the former Manly council area as the only 'evidence' seems to be the percentage comparison of rates to assessed land values...I have never quite understood how, at least for residential properties, the provision of council services to 2 reasonably identical dwellings would be charged different amounts depending on the assessed land values of those properties which can vary significantly throughout the Northern Beaches. I would like the following points to be considered: 1. the proposal seems to infer that residents of the former Warringah area are paying more for services than their counterparts in the former Manly and Pittwater areas but provides only the relative comparison of rates collected compared to land values, ie income, with no detail at all provided on the relative costs for the provision of services in those former council

Level of support for rates harmonisation	Please share your reasons
	areas. It could therefore be perhaps assumed that the Council is proposing to collect more rates from Manly and Pittwater residents to offset the higher costs involved in servicing the Warringah area. 2. One of the 'justifications' in your letter is that average Manly ratepayers are paying less for Council rates and charges now than they did prior to the amalgamation of the 3 Councils. But isn't that just evidence to support why the Councils were amalgamated rather than evidence that Manly ratepayers are being undercharged currently? The proposed rate increases on my property, even if they are introduced gradually over 4 years are a significant annual percentage increase but if that is needed for a fair distribution then I would have no concerns. However, as stated, above I do not believe that the information in the letter dated 25 January 2021 or on the Council web site provide sufficient justification for the proposed 'harmonisation' of rates.
Don't Support	Considering there is no additional services offered or even get effective response from the council on environmental issues I do not want to pay additional charges to the council. The council should effectively manage its budgets rather than asking the residents to pay for the inefficiencies. Besides Manly area is more commercial than other suburbs and has to deal with additional traffic so a consideration should be given to the residents for noise pollution and additional traffic. Manly area should not be compared to the rest of northern beaches.
Don't Support	Yes it should be one system for determining rates but not at one area. Manly was sold the amalgamation that it would be cheaper to run the council as one. Since amalgamation Manly has suffered it is has never looked shabbier it is the gate way to the northern beaches. We are privileged to have top surf beaches as well as Sydney Harbour. The walk Manly to Spit Is a disgrace with dead trees, grass growing up through the trees and weeds. As a proud Manly resident I would pay more for my domestic waste service to go back to what we had before almagamation. It was all finished by the morning of pick up day and residents didn't have to go and clean the road after the trucks have been through. I feel that Manly and surrounding suburbs have missed out since almagamation plus we are informed to pay more. WHY

Level of support for rates harmonisation	Please share your reasons
Support	I strongly support the proposal to harmonise rates - it makes no sense having some areas paying more than others, when everyone gets the same service. And as a former resident of Warringah we have been profoundly disadvantaged under the new NBC.
Support	I support the harmonisation due to equity over the LGA
Don't Support	I do not support an increase in my rates as canvassed through "Rates Harmonisation". Data and prior submissions in relationship to council amalgamation strongly contested that there would be no increase in residential rates for ex manly ratepayers, and moroever rates would decrease as shared synergies were realised across prior council areas. To date all areas within Northern Beaches have benefited from council consolidation with lower rate charges. I do not accept that "rate harmonisation" is warranted, fair, nor in the interest of manly ratepayers such as myself. Further it represents a departed from prior promises of no rate increases provided by Northern Beaches Mayor, Councillors and Council Customer Service channels. In reality I am uncertain as to whether NSW government or councils themselves were / are the original proponent of the "rates harmonisation" process - it appears to be driven by amalgamated councils themselves and thus self serving. Certainly iPART in its many guises has been proven to be an unsatisfactory custodian of pricing formula. Couple with land valuations provided by arms length state entities I for one do not see this process of providing a transparent and equitable outcome for all rate payers.
Don't Support	Rates harmonisation claims to offering a fair mechanism to allocate costs based upon rateable property values. I strongly disagree that property value is a fair mechanism. It stands to reason that the closer to the city a property is on the northern beaches then the higher the property value becomes. The allocation of costs is therefore going to be borne unfairly by residents through no other reason than where they live. Services provide by the council are available for all residents regardless of their property value and a much fairer basis of allocation is to recover costs based simply upon the number of registered properties regardless of the location or size of the property. I am recently retired having been made redundant in my late 50's. A 26% increase in my rates is not unacceptable.
Don't Support	My primary reason is for opposing Rate Harmonisation is that shortly it appears almost certain that the proposed Beaches Tunnel Link will proceed, despite very strong opposition from very many Balgowlah, Balgowlah Heights and Seaforth residents. This will result in extremely adverse conditions for some 5-10 years with: * 24 hour noise, dust, dirt and fumes pollution from works trucks as well as workers cars, * A huge increase in already increasing rat runs along our streets despite the 'No Entry 6-10am' signs along with Audrey Street and the street where we live - [redacted].

Level of support for rates harmonisation	Please share your reasons
	* A major reduction to street parking on our local streets as hundreds of tunnel workers come in the very early hours to gain parking for themselves. * Slower home entry and exit times for local residents, * Destruction of the local green environment (mature trees and other native vegitation) and long term reduction in size of any green space and the subsequent loss of native flora and fauna. * Increased high rise demanded to fund/justify the cost of build, * A negative and long term health impact, particularly the very young, the elderly and those who suffer forms of respiratory illness. due to the use of two "unfiltered smokestacks" pouring out air polluted with petrol, diesel, tyre, tarmac dust as well as other pollutants. * Slower access to the city and south for residents of the previously named suburbs if we choose or need to use the tunnel because of the need to head north through traffic lights along the Link Road. * Slower access to the suburbs of Mosman, Cremorne and Neutral Bay. * Slower access to suburbs north of Balgowlah and Seaforth, particularly along Ethel, Maretimo and Wanganella Streets which are already chaotic at peak times. All of the points just made, of loss and suffering caused by the Beaches link, will be borne by the residents of Balgowlah, Balgowlah Heights and Seaforth and for the primary perceived benefit of those who live at the northern end of the Peninsula. We loose and those to our north win! That certainly says to we locals that to increase our rates in order to support those 'winners' is demonstrably and totally unfair as well as unwarranted. We most strongly object.
Don't Support	The costs should be attributed by the allotment type - that is a standard rate for a torrenstitle property (eg house or otherwise) and a standard rate for a strata property. All residents in the whole of beaches are getting the same service so should pay the same- the land value argument doesn't add up. It can unfairly target older property owners that happen to be in an expensive property. If we want it to be fair, we have to say that everyone in similar type of properties (not value of property) pay same rates. Otherwise there is an argument that people paying more for rates should get more Of course the waste services should be a user pay based on value produced
Support	support equality

Level of support for rates harmonisation	Please share your reasons
Don't Support	We have lost services since the amalgamation - our waste collection is appalling these days. Bins left over the neighbourhood - and for some reason we have up to 8 truck movements?
Support	I'm in Dee Why. It's fair that we pay the same rates as other areas in the council. Also would be good to get a refund as we have been a council for a few years now.
Support	The information provided clearly explains why this is necessary, it is fair and my personal rate increase of less than $30.00 per quarter is reasonable. Thank you.
Don't Support	This is absurd. There is no need to "harmonise rates so ratepayers with the same land value within each category or sub-category pay the same for the same level of council service". The service of street lighting, bin collection etc does to cost more just because the house values are more. The funding of Community services should be funded more in proportion to the community that uses them. You absolutely are disguising fund raising for Council as "harmonisation". The end result being that Manly residents will end up subsisdising Community services to other parts of the northern beaches. So much for the Council amalgamation saving money and being better for all residents. This is absolutely penalising all former Manly residents. And all your PR spin and "we would value your comments on" is simply a means to distract from the basic decision to hike Manly's rates, 1) the options for harmonisation are not harmonisation they are penalising Manly residents and trying to disguise it as something else. 2)Phasing of the changes - we don't want a change.
Somewhat support	I don't really think we have any say.
Support	A fair cost across all property owners. Should be done ASAP as all property owners, in particular self funded retirees do it tough due to Covid. I had to give a substantial rent rebate to the tenant where this rental income forms my retirement income.
Don't Support	More than 50% of former Manly ratepayers will see a 26% increase in their rates, while the balance of Manly ratepayers will see a significant increase in the minimum rate. The former Manly and Pittwater ratepayers are being asked to fund a reduction in the rates of the former Wsarringah ratepayers. There is no justification for this redistribution of the rate burden.

Level of support for rates harmonisation	Please share your reasons
	The system is clearly unfair, and merely reflects the higher average UV's in these areas and not the cost of providing the services (which were done by the previous Councils at the existing ratesa
Don't Support	Council is not taking into account the reality that land values in Manly are higher than in the other areas and therefore Manly residents will be paying more for services which are provided equally to all. Manly home owners will be paying substantial increases to fund reductions elsewhere. It is highly unfair to impose this so called rate harmonisation on home owners in the Manly area who in the majority did not want the amalgamation of the councils and now will be punished for its inadequacies. Also with so many still suffering the fall out of the pandemic with job losses and lower expectations of income how could the council even contemplate major increases in rates when times are stressful and uncertain at best.
Don't Support	It seems the council is increasing services in the former Warringah and Pittwater council areas disproportionately to those in former Manly while increasing their rates. Of the 9 specified capital works included in Councils budget 7 ($32m value) are in the previous Pittwater/Warringah areas and the other 2 are roads, paths and stormwater works which I assume are shared. There are NO specified capital work improvement projects in the ex-Manly area yet the only area in which rates will be increased is Manly. While the council is on track to more than double the State Government's $76.3 Million estimated savings no reduction in rates seems to have been considered. Another method of harmonisation is to reduce Pittwater and Warringah to the level of Manly.
Don't Support	We don't see any value for our rate money, so raising our rates is certainly not seen as a positive thing. Unfortunately for us, the new garbage contractor is nowhere near as efficient as the old contractors. Our roads that council is responsible for, are not in a good state of repairs, with constant potholes and poor patching. We didn't want an amalgamation of councils, the NB is just too big. We now have to have our rates increased because through no choice of our own, we were pushed into one big council.
Somewhat support	Cncl Rates increased yearly my 2020 to 2021 by $33.48 not to mention the previous years prior. I am a self funded retiree I do not hold a pension card I hold a health care card which I feel should be accepted as part of the cheaper retiree rating system. Since Covid19 back in Feb19 my bank interest and dividend payments have dropped sharply to less than half which has caused me to watch every $1, I now spend my living standards have dramatically changed and its not for the better constantly watching my budget and what can I go without in order to pay my incoming bills.
Don't Support	We object to the substantial rate increases in the Manly area.

Level of support for rates harmonisation	Please share your reasons
Don't Support	We were told that amalgamation would save money for all, so I am incredulous as to why we now need to increase our rates. There are only two logical reasons to put up rates for Manly residents; firstly to subsidise those in the other areas; and secondly that the rationale for amalgamating the councils in the first place was flawed, and no money has been saved. In both respects you are treating residents of the Manly area with contempt and reneging on your promises. Its plain offensive. I am not alone in my thoughts and if you proceed, those that are responsible will bear the consequences at the next elections.
Don't Support	The promise of council amalgamations was to deliver greater efficiencies, reduced costs for ratepayers, and better services. The "Rates Harmonisation" proposal will see our rates increasing by around 25% for no discernible improvement in services. The question must be answered as to why ANY rates need to increase - the amalgamated council should be enjoying greater efficiencies, lower costs and improved purchasing power than the sum of the 3 previous entities. With property prices also increasing there is a natural uplift to council revenues. So why are any rates increasing as a result of the "harmonisation"?? In the absence of any better explanation one can only assume it's either revenue gouging or administrative mismanagement (or both). If it was a proposal by an energy retailer we would simply move to an alternative provider. Sadly we don't have that luxury with council rates but we do vote, and we have channels to make ourselves heard. I strongly urge the council to reflect on the outcomes proposed and they need to make a VERY good case (publicly to their constituents) as to why ANY ratepayers should be paying more given the arguments of amalgamation efficiencies.
Don't Support	Dear Mayor Regan, In our main home we are facing a 25% out of the blue increase for rates and no increase in services. This cash grab is a disgrace. I was in favour of Council merger as I expected a rates REDUCTION. You should be far more efficient than 3 councils, clearly you are not. You should have fewer suppliers, better bargaining power, less systems and software to update with huge scale efficiencies for updates etc and across the whole of council area far less duplication than you had before and you should either have massively reduced the workforce to reduce rates or possibly not reduced as much but given better services. You lack of being able to do this smacks of incompetence and inefficiency. I demand that you STOP this eggregious cash crab from Manly residents, who you think are wealthy and can afford it? I am disgusted by this approach to servicing your residents. I expect you to STOP this asap and reconsider doing a better job. Also I have JUST found out about this and note that you have NO consulting sessions open, even if the consultatoin is mean to finish next week. Suggest you open up more in person face to face sessions for March and April please so we can discuss with you in person.

Level of support for rates harmonisation	Please share your reasons
Don't Support	We were told that the council amalgamation would lead to lower rates. This is the opposite. The council must look for efficiencies. This increase of $1000 is totally unacceptable. This is not a reasonable way to run a council. They need to look internally to sort out this mess, not simply throw the burden onto tax payers.
Support	Even after the stormwater additional charge my rates fall by 75 dollars over 5 years before pegging increases.
Somewhat support	Similar Rate charges fair if Similar Services provided!
Somewhat support	A fair & equitable system for all is OK provided we all are provided similar services.
Don't Support	I have no issue about fair rates. However equalising rates across separate sub council areas without clear expalnation of the rationale is not acceptable. If the case the Manly was well run and maintained a solid balance sheet and P/L in prior years to amalgamation and was therefroe in a bette position to manage rates then there is no reason to penalise Manly. A full audit of costs and expenses should be undertaken to comply with our requirements to ascertain what the baseline cost requirement is for maiantaining the area as a whole. Then resources checked and allocated accordingly so that we are clear about the overall requirement for funding. At this point then some calculation can be made based on the relative value of land. I for one am unable to afford a large serios of increased costs over and over again. I cannt see any rationale presented other than the local councils are required to rationalise rates (whihc makes sesne). However a 30% increase is simply ridiculous.
Support	It is demonstrably fairer. Neither the former Manly or Pittwater Councils appear to have been adequately depreciating their assets .
Somewhat support	The Council has not been honest in the way they have presented the changes. Please refer to the submission
Don't Support	We do not accept the proposed rate adjustment. The previous Manly Council appears to have managed both functionally and financially at the current level of rates. In our case the proposed change represents a 26% increase in ordinary rates. Regardless of the phased approach, such an increase is unacceptable. As self funded retirees such an increase is a significant burden and we believe a more equitable approach should be explored. The amalgamation to form the Northern Beaches Council was expected to generate an economy of scale and it should be the benefit from this that is applied to adjust rates, not to simply burden the residents of the previous Manly Council. The current

Level of support for rates harmonisation	Please share your reasons
	rate structure is a legacy and could be left alone, or funded from the benefits noted above. But it is completely unfair to expect the minority of the population (Manly residents represent
Don't Support	Services have decreased since the amalgamation, we were promised a decrease in our rates and that's why we amalgamated. Council pick up takes months to book, parking is out of control. Resident parking stickers sold online, traffic in manly is terrible and council proposed decreasing parking even further and traffic flow. I totally do not support an increase
Don't Support	It's outrageous the increase your asking for in Fairlight for zero additional services. I've owned here for over 20 years a small apartment your asking another $107 with zero benefits. We have no parking people selling permits online and you do nothing about it and unless you can show me value in this increase I'm outraged. Garbage is worse they leave bins everywhere and if anything our service has gone down. We were promised a decrease in rates with the councils coming together
Somewhat support	Rates harmonisation is a good idea, particularly as I live in the high rated Warringah area. However, your focus is misplaced. Manly council delivered their services at a lower cost, rather than penalising Manly rate payers for their efficient former Council practices what you should be doing is adopting the Manly Council rating system for ALL areas and then delivering services as efficiently as Manly Council did ie you should be charging everyone Manly level of rates and Council should find savings (that we know can be done because Manly were doing it) to cover the reduced rates.
Somewhat support	By doing the rates harmonisation over 5 years, where my rates will decrease, I won't even notice that they will decrease as it is a very small decrease anyway.
Support	Rate harmonisation is a fairer option for all NB residents
Don't Support	My reasons are set out in the document attached.
Don't Support	* TREE ROOTS - Pacific Parade, Manly, has an ongoing problem with tree roots from Council trees that have lifted and broken the curb and guttering restricting/blocking the flow of water during periods of heavy rain. This matter has been brought to Council's attention by residents many times but sadly, to date, the problem still exists. Regarding Council's 'Road Re-sheeting Program 2020/2021' letter of 4 August 2020, I am at a loss to understand the benefit of this initiative, not to mention

Level of support for rates harmonisation	Please share your reasons
	the waste of money, unless the tree root problem is addressed as the first priority. * STREET SWEEPING - Gutters and the kerbside of the road are not regularly cleared of silt build up and leaves that accumulate from the street trees and that clog the gutters. The large street sweeper truck that has been used and drives down the centre of the road is of no use in this street, all it does is scatter the leaves to the side of the road which then end up in the gutter. * NOXIOUS WEEDS - The Pine Street Walkway which adjoins the rear of my property is not regularly cleared by Council of noxious weeds, including Madeira Vine and Privet, allowing the weeds to infiltrate mine and neighbouring properties. * The above matters have been raised by me with Council previously and as a ratepayer I consider them to be a small ask in consideration for the rates paid. The Harmonisation Calculator is currently showing a projected rate increase for my property of 22.09% and as a self-funded pensioner, this would be a considerable drain on my resources, particularly in a climate of low interest rates.
Somewhat support	I have previously lodged feedback via this portal however wish to add a few comments after attending a Feedback session at former Manly Council chambers on 18/2/21. I understand why we need to harmonise rates for the minimum rate and the ad valorem rate HOWEVER I do not support the proposed calculation that penalises Manly residents with a 26% increase. It is evident that the expected number and $ value of cost savings and synergies from merging Council has not occurred. If council could have better managed cost reductions over the past three/four years perhaps the impost on Manly residents could have been much lower.
Don't Support	As land values in Manly tend to be higher, it means that Manly residents will be paying more for services that are provided equally to all. This isn't fair.
Support	I have used your on line rates calculator for my home in Collaroy. It indicated that my rates would be slightly less over the harmonizing period. I have no objection to the process.
Don't Support	Land values in Manly are higher that in the other areas and as a result those Manly residents will end up paying more for services which are provided equally to all at present. Understanding the logic behind rates harmonisation, but Manly ratepayers want a better deal that is more fair and equitable rather than a circa 30% price hike . . . even if it is over four years, while former Warringah and Pittwater residents will see a decrease. How is that fair? And, it's through no fault of Manly residents that this has occurred in the first place but we are the ones being penalised.
Don't Support	My wife and I are self-managed retirees who live in Balgowlah Heights and also own an investment property in Seaforth. The rental income from the latter provides us with just sufficient income to make a living.. The proposed Harmonisation of rates will increase the combined Council rates of our properties by approximately $1,000.00.

Level of support for rates harmonisation	Please share your reasons
	This increase will be detrimental to our standard of living specially as we needed to reduce rents to assist and retain our tenants who have suffered considerably due to Covid-19 . We, self managed retirees have contributed to the welfare of the community by reducing and deferring rental payments. Councils should also show some empathy and possible reduce rates instead of planning to increase them! If the Northern Beaches Council is not able to retain current costs, we the residents of the old Manly Council should demand the return of our previous Councillors and our old Manly Council that provided us with a better service at lower cost.
Don't Support	The rates harmonisation will cause us financial hardship as we have invested in property to fund our retirement, and in the Manly area, with property prices higher, so to our our borrowings and mortages. The service we receive from Council is the same as those living in lower cost properties in other areas, and hence we are to be penalised by council - paying a greater cost per person / property for the same service by Council. Wages are not higher to live in Manly. This is hardly harmonisation based on services delivery and cost of service or benefit to the community. The cost of providing services in parts of Pittwater and Warringah must be higher than Manly with lower density of population, so does not pass the "pub test" on a user pay basis
Support	I feel that rates harmonisation is the fair and equitable way to charge now that we are one municipality. I support the proposed changes.
Don't Support	Basically rating system is based on land value. As a consequence Manly single dwelling owners get a substantial increase, in excess os 20%, simply because they have higher land values. As the owner of a modest dwelling on a valuable block of land I get a huge rate increase whereas a multi million dollar apartment elsewhere in the northern beaches council area gets a small increase or even a reduction. Even if i sold my home of 45 years it is unlikely i could afford one of these premium apartments. There is no equity in this system. Manly had a lower ad valorum rate than the other areas because the land values were higher. Now charging the same ad valorum rate across the whole council region means a substantial cross subsidy flows to the non Manly areas to give them a rate decrease. A bit hard to swallow. When we purchased our home, 45 years ago, it wasn't in a particularly desirable area and the land value was in the order of $40,000. Over the years the desireability of the area has changed and land values have increased enormously. This doesn't mean we suddenly have more disposable income to pay substantial rate increases to offset reductions for other ratepayers who already pay less in dollar terms. Now that we've retired this is even more of an imposition.

Level of support for rates harmonisation	Please share your reasons
	Basically the assumption that ownership of an expensive block of land where our home is situated means we are better positioned to pay more rates is incorrect and inequitable.
Support	It makes sense to bring rates in line across the northern beaches area
Don't Support	I don't see an exchange in value here. The point of council amalgamations was too save money, why would rates therefore need to be increased to support this. Asking money from the tax payer is a very poor policy that lacks any context. Surely there have been other measures through the merger that have brought savings. This really challenges low income earners, particularly during a tough COVID time.
Don't Support	I don't believe in the outdated Latin English term Ad Valorem. It's so outdated and the times, way of living, planet requirements call for new calculations and pioneering ways for looking at things. There is a need for innovative change and a removal of terms and ways of doing things just because that's the way it's always been. Harmonisation is still a new adaptation on an old outdated mode.
Don't Support	I don't believe rates should be based on land value. The size of the land has nothing to do with the take up of services across council and doesn't compute correlate to the general costs and:or the cost of maintaining infrastructure in the suburb. And shouldn't be a driver for spending more in the council budget.
Don't Support	The basic concept of relative calculation of rates for the former 3 council areas is flawed. Agree that the value of property in Manly is higher as it is closer to the CBD and has better transport options. However Manly has disadvantages of being more urbanized with less green space etc. Because it has a higher density of units spread over a smaller geographic area compared to the 2 other former councils the rates will be lower per property but a higher cumulative take by NBC compared to other areas. It is unfair to mix apples and oranges in trying to work some form of harmony. Manly is again being penalized in combining council areas just like the harmonized parking system.
Support	Bring it on. The sooner, the better! It's only fair and equitable that across the whole of the Northern Beaches council area rates are applied on an equal basis to all land/property owners. It's not fair for Warringah residents to subsidise the rest of the council areas, without receiving any extra or additional services. If we all receive the same services, we should all pay the same amount.
Support	Old Warringah residents have shouldered the rates for the entire Northern Beaches it is now time to spread the load fairly

Level of support for rates harmonisation	Please share your reasons
Support	True sharing of council charges throughout the new Northern Beaches Council precinct
Support	Currently living in ex-Warringah and will receive a small fall in rates, however the harmonisation will even out inconsistencies in the rate base across the Northern Beaches and ensure that everyone pays the same level/value - which is especially needed for the Manly area where everything was left to fall into disrepair and needed major refurbishments due to low rates.
Support	Sharing the costs makes a great deal of sense, provided that the moneys collected are distributed fairly across the northern beaches.
Don't Support	Concerned that the rate increase over 5 years is not aligned to pension increase.
Don't Support	Changing the rate in Manly will unfairly impact long term , low income families in houses. The extreme increases in valuations in the last 15 years means that Manly values have become far higher than the other northern beaches areas. Existing families will be forced to pay more than $80 per week of after tax income! This will be a crippling amount, for the same council services. This will mean that ordinary families will be forced out of Manly, and community will suffer. Land values are arbitrary and do not equate to extra use of council services.
Don't Support	1. We were happy with the level of services we received from the previous Manly council. We thought it was commensurate with the existing rates we have been paying. 2. We can't see what the extra rates we would pay would deliver to us in additional services. It seems that we are just paying more for nothing. 3. On the basis that we are paying more for no additional services, it follows that we must be subsidising for the additional costs of servicing the former Pittwater and Warringah councils. This is quite an unfair outcome. Surely we should be paying for what it costs us, mot be subsidising others? 4. Generally land value in former Manly council is generally higher than the other councils. Higher land values do not equate to higher cost to service. Rather, it is more likely that land size or something else is the driver of cost to service. Harmonizing rates unfairly prejudices high er land values without reflecting cost to service or value delivered. 5. The purpose of merging councils was to increase efficiency and reduce costs overall. Really this should mean that Council should be able to reduce revenue from rates overall. If Council is requiring us to pay more in order to allow others to pay less, this suggests that these reduction in costs/increases in efficiency have not materialised. This raises some serious concerns.
Don't Support	The NSW Government's 2015 decision on Council amalgamations I recall was, among other things, premised (and sold to the public) on the basis of improving the efficiency and reducing the costs of Council operations including, particularly, reducing the cost of annual rates to residents. As a long time Manly resident and retiree, I would contend that a projected 26% percent

Level of support for rates harmonisation	Please share your reasons
	increase in my annual rates (through the proposed "harmonisation" process) hardly meets that original aspirational objective. Indeed, before imposing additional costs on local residents, I think it absolutely incumbent upon the Council to publicly demonstrate how it had increased efficiency and reduced costs in its various areas of operation, and what savings had been realised from those endeavours. In that regard, increasing annual rates should, I suggest, be the point of last resort in such an overall fiscal review and analysis. In relation to the proposed "harmonisation" methodology, I think this is little more than cute public relations nomenclature created to "sell" , as plausible, a methodology for imposing unjustified, unpalatable and unacceptable price increases on local residents, which one might muse reflects little more than "putting lipstick on a pig!" I am also moved to ask, as a retiree whose financial circumstances have been adversely and significantly impacted by Australia's poor overall macro-economic situation how, in the current environment, the Council can justify any increase in annual rates, let alone the 26% increase that is projected for me in the Council's on-line modelling device - it just beggars belief! I can only ask - give local residents the full, big picture of the Council's financial position, including the effects of all of the efficiency and cost reduction initiatives that the Council has implemented since the amalgamation process began, and let this provide at least some understandable basis and justification as to why increases in annual rates are required - just moving to "harmonise" between the previously separate Council areas is, I suggest, a very poor basis for making fundamental changes in cost structures. In that regard I, and I believe the public more generally, are heartily fed up their elected representatives using PR "spin" (such as the proposed "harmonisation" process), as opposed to the use of good quality empirical data, to justify their policy objectives and decisions, and I don't think a system of simply "robbing Peter to pay Paul" holds much credibility as a basis for setting rates.
Don't Support	With the changes our rates will increase by ~20%
Support	As there is currently inequity in the rates charges- to the disadvantage of the former Warringah Council residents- Council needs to address this issue ASAP.
Support	If a community considers everybody to be treated equitably then it will continue to be a community.
Support	Everyone should pay their fair share of rates on an equitable playing field. Why should one area subsidise another?
Unsure	In theory we should all pay the same. For the same services but services are not the same - access to transport, sports facilities, cultural facilities. If, as promised, rates were lower for everyone it wouldn't be an issue. Where are the savings?

Level of support for rates harmonisation	Please share your reasons
Support	I think it's fair that everyone pays the same amount for the same land values. This seems to achieve this. So I'm in favour.
Don't Support	I do not support rates harmonisation as it will have a disproportionate negative impact on Manly council area property owners while only resulting in minor improvements or little change in rates for individual property owners in Pittwater and Warringah. This means that a relatively smaller number of Manly owners will see marked increases of around 25% in rates while a much greater number of property owners in Pittwater and Warringah will only see modest or no reductions in rates. On a more general note, why are rates tied to land value in any case? Surely it's more fair and equitable that we all pay the same for the same service? Simply because you have an "high value" piece of land in Manly doesn't mean that you have greater disposable income than people with "lower value" pieces of land in the rest of the Council area.
Support	I support Rates Harmonisation, but I do NOT SUPPORT the proposed method of delivering that harmonisation as outlined in the full proposal, as it is UNFAIR and INEQUITOUS.
Don't Support	Although the Manly community benefits from infrastructure due to it being the focus of visitation to the Northern Beaches, however that infrastructure is then utilised by those outside of Manly - quite often at the times when the community needs it the most. Often, residents have a diluted access to the resources that other parts of the Northern Beaches have access to only for the benefit of their local area. Parking is a good example. Picnic and recreations areas another. Manly generates a large proporation of income for NBC, which should be considered in the form of a 'weighting' in rate contributions, to acknowledge that the community takes on a certain burden by sharing so many resources with the tourists that generate funds.
Don't Support	Please accept that judging by the number of submissions this is a hot topic Ratepayers in the Seaforth area are active in objecting to the idea. We are in a pandemic Folk are out of work/have financial worries/are anxious. Higher rates will depress property values
Support	Rates should be equal across the whole northern beaches
Don't Support	The size of the rate increase isn't fair - $500 extra a year for no extra services. The harmonisation should result in NO rate rises - so those council areas that were paying more should have a reduction not

Level of support for rates harmonisation	Please share your reasons
	the way it's being done by making other council areas pay more. We've also lost services recently - such as rubbish bin sizes reduced - both red and green bins.
Support	Thanks to the Council for convincing the State Government to phase in the rates increase over four years. Harmonisation seems fair to me, especially with the improved services we're enjoying compared with those provided by the old Manly Council.
Support	Support same system across LGA
Don't Support	We here in Manly receive less services including ranger support, continues garbage collection. creating congestion and noise in narrow streets but reduced flexibility in bulk general rubbish clean ups. Loss of control over local building and development processes. Massive expansive of privatisation of public spaces for example, Manly Kiosk proposal. Loss of disability access due to poor interpretation and implementation of standards.Reduction of staff in Manly Library. Parking is now impossible due to the large number of resident permits form all over the Northern Beaches. Reducing business permits is no solution. Small business is struggling in Manly. Park benches have been replaced where there was no need. This corporate branding is costing residents undue money. We gain no advantages of the amalgamation with councils.
Support	I am a full time Foster Carer, so not working & surviving on job seeker + carers payment from foster care agency and know how important it is to keep my expenses down and have always felt I was having to pay more than I should have to on council rates. Therefore I think rates harmonisation will make it fairer for everyone.
Support	I was unaware that we were still on a 3 phase rate assessment. It would seem better all round that all rates are averaged out, as It would seem that Warringah residents have been providing most of the money for the other 2 area. With that in mind, spending should be available to be shared over the whole northern beaches. I am in favour of the rate harmonisation with proposal 4.
Support	Our rates are significant and all rates with same land value should be rated the same across the beaches
Don't Support	It makes no sense that individuals pay more because of some organisational/structural changes by a set of councils. We did not vote for this, our land values have not changed, and given the COVID impact on our livelihoods this is a tone-deaf, vulgar proposal. An increase to our rates of 25% because of adminstrative changes within council structures with zero benefit to individuals is totally unreasonable.

Level of support for rates harmonisation	Please share your reasons
Unsure	I have 3 industrial units 2 at Belrose and 1 at [redacted] North Curl Curl I support properties that are at risk of storm damage close to beaches and at risk from rising sea levels should pay extra rates to cover costs of sea walls and other preventative measures and for any damage occurring, These costs should not be bourn by rate payers in higher areas away from these risks.
Don't Support	The proposed system of rates 'harmonisation" is flawed as it is based on allocating Council costs/services on land value - not the cost of the actual service provided and enjoyed (benefit) by individual land holders (rate payers) irrespective of the value of their property. To provide a simple illustration - if each land holder enjoyed a pickup service for general rubbish, paper recycling, bottle recycling and vegetation, the cost of providing these 4 services is the same irrespective of whether their land value is assessed at $0.1m or $10m. Would it not be more accurate (and fairer) to allocate the costs based on service provided? Allocating these costs on land values inherently means that ratepayers living in higher value areas (Manly Council) will be allocated more of the rates than other areas - despite having the exact same pickup benefit. How can this be fair? The above illustration holds true for many of Council's services - libraries, roads, parking, environment etc. There may be other areas of Council's costs and overheads for which a different allocation method is required. In that case, perhaps a two-tier system may be fairer - one based on actual services provided and perhaps one based on land holding size. A one step system as currently proposed is lazy and simplistic - it ignores the efficiency principle in favour of the vertical equity principle.
Don't Support	Based on Michael Regan's letter of January 25, residents of the former Council area pay lower rates per $ land value than Warringah and Pittwater. The explanation offered was domestic waste service "harmonisation", whatever that means. The only change for me has been a reduction in the garbage bin size and an increase in the frequency of the green bins from monthly to fortnightly. How does this result in a reduction of rates for the former Manly area? As a ratepayer who is facing an increase in rates without an increase in services I am not happy. My street has just as many potholes and areas of crumbling asphalt as it did before amalgamation. Mr Regan's letter makes no mention of the substantial parking income generated in the Former Manly area. It also doesn't explain the impact of the large number of apartment buildings in the Manly area. This is disappointing. Finally, if the former Manly council could deliver services with lower rates why not use this as the standard for the rest of the Northern Beaches Council. It is unreasonable that Manly area should have to subsidize the inefficiencies in the rest of the Northern Beaches Council,
Support	It seems only fair that rates are applied evenly across the new amalgamated Council area.

Level of support for rates harmonisation	Please share your reasons
Somewhat support	Although I support the rates harmonisation, I DON'T support the covid related delay. Everyone is impacted by Covid and as much as it may be difficult for some rate payers to accomodate an increase, we have been subsidising these lower rates. The delay in decreasing our rates puts further pressure on our finances whilst we continue to subsidise other rate payers who have been informed about the changes for years
Somewhat support	It unduly penalises us as a ratepayer in the Manly area and a lower ad valorem rate shoiuld be applied, such as 0.14.
Support	The variation is not a lot for any residents other than Manly so it is appropriate for all to be equal as soon as possible.
Somewhat support	In general I am in support of rates harmonisation, My concern is that it does not go far enough, specifically with the waste disposal charges. As the system now stands, each household is charged a flat rate, irrespective of the number of residents in any one household. As a result, a residence with one resident is levied exactly the same amount as a residence with more residents. This inequity needs to be addressed as well to arrive at 'harmonisation'. Otherwise the single resident, (with a single source of income) is left in the position of subsidising the multi-resident household (one which likely has more than one source of income) while at the same time not being compensated for putting a lesser burden on waste management centres.
Support	I think that people who have the same land value on the Northern Beaches should be paying the same rates regardless of address.
Support	The high council rates in Queenscliff compared to Manly is completely unfair. We do not get anything in return. In fact, the council has not even assisted local residents with our concerns about safety on and around Crown Road. Decreasing our rates by $145 is great start. Manly's rates should most definitely be increased (compared to Queenscliff) to represent the increased cost of land in Manly. Thank you.
Support	Fairness

Level of support for rates harmonisation	Please share your reasons
Don't Support	Timing is the main reason. We are in a pandemic. .People out of work/anxious/short of funds Council elections in September,,,.....,,worried resentful residents and ratepayers will make their feelings felt. Abandon this foolhardy proposal now
Somewhat support	Whilest I somewhat support this, I believe council should also clearly articulate in its next update to all residents, what council has done and plans to do in the coming years to reduce or maintaine a net zero operational cost model.
Don't Support	Having multiple properties in Manly, where land value is higher already than both Pittwater and Warringhah-we are already paying a premium contribution. It should not be equal, per $100,000-its should be equal based on $$$ contribution and usage.
Support	One could strongly argue that the old Manly Council was under valuing all properties in the Manly Council area and that rate harmonisation is bringing the burden of running a huge Council area fairly to all rate payers, residential and others. I understand that the NBC has had 4 years to bring out this rate harmonisation to all areas which could have been phased in. With rate harmonisation Council should now have the funds available to undertake essential works along the whole NBC Region.
Support	Fairer and more equitable system. Legacy rates from the former council areas should be harmonised across the current council area
Support	Fairer system
Support	Now that the Northern Beaches council areas have been successfully merged, all rate payers should pay rates based on the same methodology without some areas subsidizing other areas.
Unsure	This is [redacted]. I am living in Warringah area. I bought a one-bedroom apartment in a 2-store building at Brookvale about 10 years ago. There are [redacted] apartments in our building. Our compound [redacted] BROOKVALE. This land is now having one building with [redacted] apartments. It is was only having 4 individual lot with 4 properties before our building being built by developer around 10 years ago. I am trying to say: 10 years ago, from this land that council was only collecting 4 individual council rates and now council is collecting 34 council rates from the same land. Unfortunately I don't think we 34 residents here are receiving council services as good as others. So, I don't think our council rates should be increased.

Level of support for rates harmonisation	Please share your reasons
	Because there is no pedestrian walkway on side of the road for us and it has been without walkway for about the 10 years already since. The current little pathway is muddy and uneven and only about 30mm wide. Also it is very slippery when raining days. Please refer to photos attached. While ago, I heard about said, northern beaches council has a CEO and he is getting paid about 400,000 a year, is that true? (I wish it is not true). Such a high wage even higher than prime minister, so what he was doing? Because I am wondering, he should done better job, if get high paid, isn't? I would like to say to our northern beaches' mayors: please, think about that: if you have to walk on muddy and slippery path every day when you are going out or back home, how about you feel? Would you like to show us that what are you home current surrounding look like? We need pedestrian walkway now, please. Thank you very much for your time. Regards [redacted]
Somewhat support	Residences who are based in a Community Title area should have this factored into a reduction of rates as well. By enforcing developers to build communities under these terms council is washing its hands of its responsibilities and forcing residents to foot these costs on top of rates.
Support	We are one LGA now, so I support the move to harmonise
Don't Support	This is an unmitigated action to increase our ex Manly rates. This proposed course of action was hidden from us when the unification was being promulgated and sold to us and this action by our (ex Warringah - whose rates will substantially reduce) Mayor are a downright misuse of power to grab more funds. The fact that rates in other parts of Northern Beaches will be reduced, is not acceptable to Manly residents. I don't support this action at all and NOT ONE of my Seaforth friends accepts the move. We will take every action possible to have the matter thrown out and we will consider moving out of the area if this rate hike for more funds from ex Manly occupiers goes through. I heard Wendy Harmer on the radio yesterday morning saying that her rates will be reducing - it's not acceptable that I and other Manly residents should be paying for their rate reduction. This is beginning to sound like communism.
Unsure	While I have some support for the harmonisation of rates, the submission is very unclear around the equitable distribution of said revenues into services for the various areas, and how the council will allocate funds to areas. It feels like this model will results in a massive cross-subsidisation of expenditure across different areas, with differentiated basic services.

Level of support for rates harmonisation	Please share your reasons
	For full transparency, I would like the submission to state how the revenues will be 'equitably' and 'harmoniously' shared in consistent services across the paying electorates. For example, maybe small, but symbolic - will our street gutters now get swept by the council as a result of paying higher rates? They do not now, where as they are in other areas. If these small things are not equitably catered to, then will the big things. I would hope that the council would be prepared to commit to a list of basic services that will be equitable provided across whole of northern beaches council, as support for harmonisation.
Support	The documentation in the analysis seems fair. However, I note that rates will inevitably increase due to increases in land value and other charges. The harmonisation changes are just a point in time.
Support	Fairness to all means that for equal value of property on the same council area we should expect to pay equally. The plan numbered 4 seems very reasonable. Delay in implementation is not popular but understandable.
Support	Thank you Council for devising a fair and equitable approach to rates collection in the Northern Beaches - I'm fully in support of the outlined approach.
Don't Support	The services supplied to any household, and the facilities used by any resident are the same regardless of the value of the land. It is unfair to be penalised based on land value as this value is NOT accessible until the land is sold. Many people living in the Manly area are already challenged due to covid reductions in work etc. We do NOT support this significant rate increase for MANLY. It should be shared equally throughout all households.
Don't Support	When the council amalgamation was forced on to Manly against the wishes of Manly rate payers the justifications were that rates would become lower due increased efficiencies ans economies of scale. Turns out this was a lie; not that surprising from a liberal state government with a talking history of deceitful behaviour. How can you possible expect any Manly rate payer to actually support this proposal ?
Unsure	When the three council areas were about to merge, we were told that it would create greater efficiencies and that my rates would go down. That was a lie. My rates went up. Almost straight away. And when I called to enquire why my rates went up instead of down as promised, all I got was a lot of gibberish and no real answers. Hence I am extremely sceptical about the council telling me that this is good and that once again my rates will supposedly go down. My fear is this is yet another way to

Level of support for rates harmonisation	Please share your reasons
	manipulate rate increases across the board, despite what you claim. Your track record for doing what you promise is not great.
Don't Support	This proposal has resulted from the 26% increase Mayor Regan voted through on Warringah residents in 2015. It is clear that Council has a one way thought process and that is to only have INCREASES, like the increased employee and on costs at a rate above inflation (at around 3% yoy since amalgamation). There were approximately 1800 employees at the time of amalgamation, has that changed? If Council had control of its expenses and achieved the synergies/economies of scale from the Council mergers, there will be less need to increase rates at these high levels. Your proposal indicates that 6196 Manly residents will face an increase in their rates >$400 - that is outrageous especially at a time when salaries and wages (for non council) workers have had minimal increases and rents charged by landlord have been under pressure for no increase over the past 18 months. Council Financial Statements for the past 3 Financial Years reported the following Employee benefits and on costs YE June 2020 $135,555,000 YE June 2019 $132,461,000 YE June 2018 $124,306,000
Support	Greater fairness in the property rate - Warringah residents are still subsidising other areas, so a drop in the property charge is warranted Greater fairness in stormwater charge - Warringah residents should pay towards the stormwater costs, especially as we have the most catchments and land area. So adding this new charge is warranted
Support	I support the rates harmonisation to ensure land owners across the LGA pay an equal proportion across the LGA. Rates spending needs to be also equally distributed across the LGA. Support the idea of implementing the change over 4 year period to reduce immediate burden on those that will face a rate increase.
Don't Support	Now is not the time to be increasing rates when some people are struggling financially. This will have an impact on landlords, renters and home owners. Best to leave things as is for now.
Don't Support	I am opposed to a significant rise in rates. We have an adequate level of service paying the rates we currently pay and so it would appear that the other council areas that amalgamated should lower their rates rather than increase our rates. The

Level of support for rates harmonisation	Please share your reasons
	merging of councils was supposed to lead to efficiencies and cost savings so to sign increase rates is a perverse outcome and contrary to how these amalgamations were sold to the public.
Somewhat support	Theoretically by harmonising the rates you should be reducing administration, logistics and multiple service providers however rates are increasing!
Don't Support	Dear Council We are honestly shocked to see just how much you are taking our rates up by. A 26% increase is a huge amount to expect young families in the area to be able to afford. Your notes state 74% will experience a decrease yet it seems like all of us in the former manly council area are experiencing a huge hike up. How is this balanced/justified?
Don't Support	I've been trying to rectify a storm water issue out the front of my property for 2years. I have not had one call back or email from the council. I have been calling the council regularly now for 2 years to try and get the broken pipe replaced. The problem is still not fixed. Once the council show that they can fix issues and provide quality customer service I would be happy to pay more for my rates. Until then, I will not support this initiative.
Support	Services across the new Northern Beaches Council area have now been aligned following the council merger. Rates harmonisation is the only way to equitably charge all residents for these services across what is now one council area.
Don't Support	This is an increase of over $400 which my family cannot afford as we are currently surviving on jobkeeper which is ending soon. We do not know what will happen after that. My business may not survive. This couldn't be worse timing. You buy a family home to live in and raise a family not as an investment. I'm not in control of what someone else determines my land or house value is. To me it's my family home, and a base to live in. This sort of price rise forces ordinary hard working families our of the area. I don't know how you can justify this?
Support	Everyone should pay the same rates based on the property or propertys
Don't Support	The timing is poor. We've lost jobs, found ourselves in financial hardship and you want to increase our rates by 10%. Not all of us are wealthy middle aged bankers driving around in German sports cars. Please consider the impact on people at a time when this really does hit hard!

Level of support for rates harmonisation	Please share your reasons
Somewhat support	I'm single with a mortgage. My unit is 37sq metres, yet I pay the same rates as a large family with many more bedrooms and backyards. Where is the justice in that?
Support	I think that all being equal we should pay the same rates for the same property value.
Don't Support	You give no reason for the differences in the past rate levels in the 3 areas or a comparison of per-capita costs between the three former Council areas. If Manly Council has been operating more cost effectively in the past, why should Manly based rate payers now be expected to subsidise the costs incurred by the previously less cost effective Councils. One of the expectations from the consolidation was an overall reduction in costs. All former Manly ratepayers will see as a result of consolidation is an increase in their rates. Surely the first priority of the NBC should be to analyse why the other Council's costs were higher and to demonstrate how they are getting overall costs down to the benefit of ALL ratepayers, rather than merely spending time and money on justifying a re-sharing of the pot.
Don't Support	I recently bought in the area. I will not see any reduction in waste collection; just an increase in rates. Why show it over 5 years of the change is all in one year. It's not not harmonisation; it's just an increase. What will I get in return for this increase?
Don't Support	Equity based on land value is a nonsense concept. Money to provide council services does not double if land values double. Land area/ number of residents are stronger correlations to provision of council services. Obviously Manly could historically be serviced based on current rate levels. The fact that land values are on average higher than other wards should not result in cross subsidisation to other wards.
Somewhat support	As long as My Beacon Hill Rates DO NOT increase. But feel we should all be on an equal level. Why should Pittwater (affluent area especially Palm Beach etc.) & Manly pay less than me in BH. As a recent pensioner I thankfully will receive a PART reduction on MY 3rd & 4th instalment in my rates as house in 2 names and I WILL pay $1683.37 for 2020/2021 Rate Year. 2019/2020 was approx $1874. As a ONE person household I only need to really place my garbage bin out less than weekly but DO put out due to smell and my neighbours who have the same silly small bin for a household of 4 do use my bin weekly.

Level of support for rates harmonisation	Please share your reasons
	My vegetation bin I do try to put out fortnightly but could easily go monthly. My paper & recyclable bin are lucky to be placed out every 2nd month.
Don't Support	I cannot believe that my rates will increase by 18.94% because I live in Manly. This rise is both grossly unfair and ridiculous. I guess what this proves to me is that the old Manly Council were far better managers of the ratepayer funds and other revenue than the new "streamlined" Northern Beaches Council and certainly proving to be far better than the old Warringah Council achieved under the leadership of Rate Rise Regan. I guess when you harmonise efficiency with inefficiency then inefficiency wins. So Bad.
Don't Support	It is time that the Northern Beaches Council delivered an efficiency dividend to residents impacted by Covid-19, and the general lack of salary increases, rather than always seeking to raise rates, never mind turbo charging the increases via the so called Rates Harmonization process!
Support	Of course I support rates harmonisation but I don't support council's scenario 4 which locks Warringah ratepayers into higher rates than the other areas for longer
Don't Support	The most populated areas need more services and create more rubbish, waste and recycling. If we use less services then we should pay less.
Don't Support	I find it difficult to understand why I will have to pay more for receiving the same le vel of service in the manly area because another council was amalgamated and they were paying more in their precinct. Why should my rates change because the previous administration in another area were inept. Both my wife and I are retired and receiving no income and we now look forward to paying more for the product we receive
Don't Support	Suggests a rate increase of over 8% on current rates. If you live in the northern beaches area where unimproved land values are higher, eg; Pittwater etc , then you should pay the higher rates.?
Don't Support	The Rates Harmonisation does not look to take into account how quickly some Manly land areas have increased in value vs Warringah land values. We bought our property in 2012 and the land value was sub 600k. We now sit in the 900k land value bracket, capital growth doesn't equal income growth.... What's not clear to me is whether the people in the 900k land value bracket in Warringah have had the same level of increase over this period as people in Manly 900k bracket. If they have then rates harmonisation would seem fair. I think the rate of increase over the last 5-10 years is a relevant factor to assessing affordability ie if someone could afford the rates 10 years ago in Warringah and they had lower land value appreciation over

Level of support for rates harmonisation	Please share your reasons
	that time vs Manly then I would argue this increase could be putting more people into financial hardship . As an example my rates have gone up around 30% since we bought and now you are proposing a further 30% increase.
Support	I live in Church Point, I feel basic infrastructure in this area is appalling, no basic footpaths, lighting, no street cleaning, no basic maintenance of council verges or trees been pruned back regularly to stop damage to powerlines, the road is very narrow but is expected to cater for on street parking, rubbish bins, cyclists, walkers, runners, inadequate markings on the road.
Don't Support	I understand the need for harmonisation and wavered between the somewhat support option and this one. I believe you need to address a few things. The first is the honesty of the calculation. There is this general statement we in Manly have picked up a benefit re garbage delivery (as an aside a much worse service than previously, requires all day for collection resulting in people using residential bins (full and emptied) as public garbage bins (in particular for dog waste!)) and therefore on a net basis we are not (as badly) worse off. Please amend the calculator to show the difference overall rather than just the rates change plus some additional amount that is not 100% clear. In addition, following amalgamation services are worse - we are being asked to pay more for less or lower quality services. Just focussing on weeds alone - road are overgrown and walking paths substantially so - this may have occurred in a haphazard way previously but now it appears as though there is no pride in maintaining the neighbourhood.
Don't Support	I enthusiastically supported the amalgamation of the local councils because I believed the intention would be that rates would be lower as there would be a cost saving benefit to all the councils involved. These savings being through the removal of redundant human resources, removal/consolidation of redundant administration systems and optimised service contracts. I do not remember conversations at the time about residents of the Manly area eventually paying more by joining this amalgamation group; and I was fully expecting to see lower rates. I still support the amalgamation of councils to save cost and deliver better services. However, on the outset if one party is going to end up paying more (not less), then that must be made public knowledge on the outset. I think most people thought that our rates would be lower because there is a large pool of funds and an ability to optimise expenses. I am sure you are expecting this, but we feel disappointed and little let down. The underlying message that seems to come across, is that because our land values are higher than other areas, we are going to pay more for the same services - maybe we should have stayed with our own local council in hindsight. Also, it is not clear that Council(s) have exhausted all avenues for cost optimisation, or considered reducing services to a level that is affordable.

Level of support for rates harmonisation	Please share your reasons
Don't Support	I can't understand how council can say that the rate payers of the old Manly Council area are paying 25% less than the other council areas. Currently 17,704 Manly rate payers $24,726,790 which average out at $1400 per rate payer which is 3.6% less than Warringah. With Warringah 54,395 rate payers pay $78,979,984 which average out at $1,450 per rate payer. With Pittwater 23,563 rate payers pay $39,520,070 which average out at $1,680 per rate payer which would be 16% more than Manly. N.B Council say the old Manly area would pay up to 25% more in rates which would be $30,908,487 which would average out at $1,746 per rate payer. With the council gross income from 95,662 rate payers is $143,226,844 which would average out at $1,500. there must be a lot of rate payers paying less than $1,500 as there is a great number paying up to three times or more than that amount. I would like to know how council calculates how much rates unit owners pay compared to a single home on the same size block next to the units where the unit owners would receive exactly the same council benefits. This is how I worked it out but I may be wrong.
Support	We are one and as such need to pay the same rate across the rating area regardless of private or business, people in Warringah are not here to support the Manly or Pittwater areas. One for all and all for one
Don't Support	Firstly, a fair expectation of the merger of the three councils should have provided rates savings for all residents, not council levying the same gross amount and robbing Peter to pay Paul to look good. Further, rates aren't the appropriate form to levy an asset or wealth tax on residents. Although their does need to be some allowance for disadvantaged residents, rates should be more closely aligned with services provided and services consumed. There is no data to support the notion that fixing a pot hole in Cromer costs any less than one in Manly. It looks like this is a attempt at popular politics where those with greater land values get robbed to provide reductions for others. 9800 former Manly Council properties will get whacked with a 26% increase with the balance of 7900 getting whacked with a 12% increase. What services and gold plated facilities will they receive for these substantial increases?
Don't Support	It was clear from the outset that the amalgamated councils have different rates. To my knowledge, it was never made clear that the outcome of council amalgamation would mean a harmonisation of rates. Indeed, cost savings overall with potential rate reduction or reduced need to increase rates was a key reason for amalgamation. Just a few years in, suddenly this need seems to come up and the needs aren't properly argued for. Other than a flat "rates must be harmonised" there is no real reason presented. Having the Same Land Value, while an easy KPI, doesn't necessarily

Level of support for rates harmonisation	Please share your reasons
	provide the best argument for the same rates. Other effects, such as potentially higher density or other reasons for lower costs to serve in certain areas of this larger council than in others are not explored in the policy. Hence, the argument isn't sufficiently presented that Manly residents need their rates increased. The only reason to increase rates beyond CPI in my view can be that a substantially higher service level is provided to these ratepayers. Council needs to find other ways to harmonise rates than penalising one specific area of council.
Support	Residents of old Warringah are subsidising those from old Manly and, to a lesser extent, Pittwater and have done so for the past four years
Support	I support the harmonisation in principle as long as it is completely fair and doesn't favour the Manly end of the council area. One of the reasons Pittwater wanted to become a separate council was that the original Council spent more funds in the southern part of the peninsula and Pittwater ratepayers footed the bill. That was always patently unfair. I also understand there is a 'hop skip jump' service in Manly - why can't there be a similar scheme in other parts of the Council's jurisdiction? Another point: as rates cover waste collection and recycling, could we not ALSO have a food waste bin collected weekly? The resulting compost could be collected and sold by Council as a further source of income. This would also be great for Council's environmental credentials and reduce waste in our area.
Don't Support	The promise of the amalgamation of Manly, Pittwater and Warringah has been largely unmet. The services we use have been reduced and now to add insult to injury the council is proposing to increase our rates by 25%. Clearly the more affluent suburbs of Manly with its mostly higher land values, due in part to its closer proximity to the city has been a big loser. How have our services been reduced? Well we live on a large corner block in Seaforth. In addition to a number of mature trees on the block, we maintain a large nature strip. Now I have to cut up vegetation such as palm fonds to place them in the bins, instead of bundle them up. Now once every few months I have to make a trip to Kimbriki to offload the excess of hedge trimmings that don't fit in the bins provided.

Level of support for rates harmonisation	Please share your reasons
	It seems Manly would have been much better to have been merged with the more affluent Mosman council. I now understand why the residents of Mosman fought so hard against amalgamation. And the final insult... your letter of explanation of the rates changes cherily announced 76% of residents will receive a rates reduction, financed by the 24%, including my neighbours and myself. The large disparity in land values across a municipality has resulted in an unfair distribution in the rates. I trust if these changes go ahead that the council looks to increase its provision of services in those areas that a financing the council. I very much doubt any Manly councillors who have supported these changes will be re-elected, everyone who I've spoken to locally is ropeable. The reaction on the various community facebook groups is similarly animated.
Don't Support	During a pandemic when many people are feeling insecure and unsure punishing those who live in Manly is simply unkind and stupid. What you should have done was bring down the rates from Pittwater and Warringah to bring about harmonisation. Second each elected councillor should have made a statement and that is available on your web platform for all to see. How can you justify treating Manly ratepayers as second class citizens.
Don't Support	Using land value to determine what residents pay for council services in their area is flawed. How can you justify two houses in the same suburb or a different suburb in the Northern beaches side by side eg one being 500sqm and the other 1000sqm and tell me the larger property by land size (and value) is getting a greater service from the council or enjoying the use of community facilities more (rates pay for) just because it has more land. A fairer system is to have a flat rate per household, apartment and possibly number of residents living in a dwelling. Appreciate this would cause an uproar in those paying well below what they should for getting the same service/offering. The point made around council waste costs going down in Manly, only highlights the previous contractor was charging to much and a retender/greater scale across Northern Beaches area has improved pricing. My rates across the 3 properties I own in Manly are going up close $1600 a year with harmonisation.

Level of support for rates harmonisation	Please share your reasons
	I think the whole system needs an overhaul, rather than just taking more and more based on a flawed system - what does land value have to do with the cost of running a council - nothing.
Support	Rates boule be calculated fairly and evenly
Support	Any change that leads to lower rates for residents is welcome. I checked the calculator and for my property it is only a $50 difference. If the council can offer residents a difference of $200 a year that would be really good. Having said that any lowering of rates is great. I think it is kind and reasonable to offer pensioners a concession as they do not get much on the pension and this would be beneficial to them. It would also be beneficial to people facing hardship.
Don't Support	I would only support any action on rates harmonisation once Council stops wasting money on hundreds of useless services and just "stick to its knitting"..... maintain roads, collect rubbish. All other functions should be handled by the State Government and hopefully minimise or abolish Local Government.
Support	One (1) Council area, one (1) rating structure.
Somewhat support	The rates calculation is based on gov Land value but this one is incorrect since it doesn't deal with land specifics and mainly m2 land. My property is worth much less than others since I have a battleax property with 250m2 of driveway! I take up my bins the 50m of driveway every week so don't add extra cost for council.
Don't Support	Rates shouldn't be determined on the value of your property it should be based on the size of your property. Do the residents of bower street manly get better service from the council because their property is worth more than mine in Balgowlah Heights?? What extra service are you providing me in Balgowlah Heights because my land is valued higher than Balgowlah next door??
Don't Support	The proposed Council rates harmonisation that is due to become effective from 1 July 2021 is nothing more than a wealth tax on former Manly Council residents. Some 9800 former Manly Council residential property ownersLand value Greater than $ 600000 will see a 26 per cent increase in rates under Scenario Four. The four scenarios presented lack rigour and are certainly do not accord with the criteria of economic efficiency in terms of Pirate Principles. Other approaches should be considered such as the UK Council Tax Regime which has multiple components and does not largely rely on a straight AdValorem Tax on unimproved capital value of land.

Level of support for rates harmonisation	Please share your reasons
	The inequalities of the proposed rate increase facing former Manly Council residents is grossly unfair. The NSW Government in December 2015 based on KPMG consultancy advised that the benefits of Council amalgamation would be a saving of $1.80 to $2.00 Billion. Clearly as a resident of the former Manly Council area we are not getting any savings but a massive rates increase. Something is fundamentally wrong in the approach being considered by Council.
Don't Support	All apartments/units have a rate increase in the Pittwater area but all houses have a decrease.
Support	Fair is fair
Support	I believe all properties should be assessed on land size, value etc and should be charged rates accordingly. I am in favour of consolidating this process across all 3 former council areas.
Don't Support	I don't feel that at my age and these difficult times that our rates would go up. I would like to know what extra I am getting for the extra money. I feel that council should cut their costs instead.
Support	Seems fair.
Don't Support	See letter
Don't Support	See our letters attached
Somewhat support	I understand that rates should be set according to the value of your land but I think, given the greater population density and comparable lack of services in the Manly area, that population density should be factored into the weighting.
Don't Support	My rates have increased by $500 per annum. What will I see in addition as services for the $500 extra paid? I think nothing will change and this is pure greed.
Don't Support	Why bring former Manly people up why not cut staffing costs and bring the other 2 areas down i understand the CEO earns more than the NSW Premier
Don't Support	We have lived in the Manly Council area since 1957. We are not getting value for our council rates. We had an amalgamation of councils forced onto us in 2016. Since then, customer service has deteriorated, and our garbage collection is second rate

Level of support for rates harmonisation	Please share your reasons
	compared to what we used to have. We also have substantially reduced capacity in our general garbage bins. It is therefore misleading and incorrect to tell us we pay less for garbage now. Our street has constantly got potholes, and when repaired are poorly patched. We do not have footpaths on both sides of many of our residential streets. Manly Road outside Balgowlah Boys High has a dangerous and uneven pathway which is also covered in vegetation and rubbish. Council is failing to look after its Manly area residents and we wonder where our rate money is going. It is alarming to hear that you are wanting the residents of Manly area to now pay more for rates when the expected service from Council in our area is not forthcoming. Council rates since 2016/2022 has increased by +20.17%, an avg of 4.03% since amalgamation. The proposed rates for 2021/22 vs the new exorbitant "harmonised" rates is an increase of 23.84%. How can this be justified when the Australian CPI since 2015/2020 was an average of 1.63%?!
Don't Support	When the N Beaches amalgamations were announced, we were told it would result in massive savings - which it has. We presumed we would all therefore benefit from these savings. It appears we won't. According to your media release last July, your projected 10 year saving was more than $160 million, nearly double that initially anticipated. According to that same release, you'd already saved $6.03 million in staff costs, $2.07 in consolidated insurance premiums, $11.27 million in materials and contracts and $10.13 million in staff efficiencies. The Manly rate rises will mean an annual average increase of between $300 and $450 a year which is steep to say the least - 25 per cent. I doubt anyone in Manly has enjoyed a wages rise of 25 per cent, especially during COVID. You say that the instruction to harmonise rates comes from above so why not harmonise down? Warringah was hit by a massive rates rise just before the merger and the increase if they will see if your proposals go ahead is around 10 per cent so it doesn't even take them back to where they were before. In the meantime, if you want an idea for additional savings, why not ask rate payers if they'd like to opt out of receiving mailed out paper letters which has a sizeable environmental and financial impact.
Support	it makes it fairer
Support	I own [redacted] BROOKVALE. It's floor area of [redacted] is only 33 sq. metres. It's valuer generals valuation is approx $150000. I am paying rates of $1280 which is way over the valuer generals value times your normal cents in the dollar. My son [redacted], owns [redacted] and he is suffering the same imposition. Now that you have rates harmonisation I expect you to adjust this discrepancy to a fairer amount. Yours [redacted]
Support	fairness

Level of support for rates harmonisation	Please share your reasons
Don't Support	Rates are incredibly high already and to raise them again is grossly unfair
Don't Support	Manly council was more efficient than the other two councils. Warringah council was corrupt and run by administrators for years. The merger was sold on it would make rates cheaper. WHY IS NBC CHARGING MORE WHEN it SHOULD BE AIMING TO BE MORE EFFICIENT THAN MANLY COUNCIL WAS AND LOWER THE RATES IN THE OTHER AREAS? If this goes through it is an example of how the local and state government are deceiving people. I am going to vote for the shooters party or dope party across all levels of government for the rest of my life if this goes through? How come we have such idiots running each level of government.
Don't Support	Council says it will not be collecting more rates - but using the calculator shows that you will be collecting MORE rates from me! At $1426.45 p/a for a land value of $89930 that is 1.6%. I know of other areas nearby where rates are well below 1%!! NOT HAPPY AT ALL
Don't Support	Hello, I'm curious how are my rates for a small apartment going up but a house with a land value over 3 times larger than mine getting a reduction? Both are in the pittwater area. Looking at the rates I pay only 25% less than a property that is 3 times the size as mine. That doesn't seem to be harmonising the rates, it feels like I have the smaller property yet I'm the one getting an increase while they are getting a reduction. With the increase in cost of living and stagnating wages please reconsider this model, because as it stands at the moment it doesn't seem fair. Thank you.
Support	It is fairer system
Don't Support	When you were talking about "amalgamation" you were saying that Manly was going to pay less. We didn't believe it and we were right. We were against this "amalgamation" and we were right. Now we have to pay more so it will be fair for everyone else. You call this "rates harmonisation". We are elderly who live in Manly for 35 years. It doesn't mean that we are rich. We are against our rates going up. Our semi is on noisy and dirty Pittwater Rd, will we get a discount for it?

Level of support for rates harmonisation	Please share your reasons
Don't Support	Council should have saved money through the merging of the different councils so why are rates going up now. We don't get more service at all but just a rate increase which isn't justifiable.
Support	Efficiency and equity across the Northern Beaches
Support	Our experience is that the amalgamation of the councils into one LGA has been excellent as we feel more work has been done and we are more than happy to bring the rates in line across the LGA.
Support	Living on Scotland Island I feel we pay a substantial amount in rates and we don't have the same luxuries or facilities given to mainland residents. We don't have surfaced roads, we don't have regular weekly green garden collection, we have to pay for our own water access areas in terms of paying fees for the use of our own jetties, we have to pay for our own sewerage management and also pay to have council check them, we have far less volume of recyclables collected, and we have no running town water. Yes we have chosen to live on an island but the lack of these amenities should be reflected in our rates, which I do not believe it is.
Don't Support	Our property will see an increase in excess of 19% for our rates. So a 19% increase and still the Council offers a very poor service. It cannot be justified and using 'harmonisation' treats us like fools.
Don't Support	I'm paying $22000 in rates and I save 200 but of a joke
Don't Support	I feel that Manly residents will be subsidising other properties in the Northern Beaches with increases all across the board for all properties in Manly mainly due to the increase in land values compared to others in the beaches.
Support	I support it because it is fairer for all Northern Beaches rate payers. Besides Manly ratepayers on the whole having more valuable properties have a greater capacity to pay the increase.
Support	It seems to be a fairer system
Support	I think we all should be paying our fair share of rates, no matter what "old" council you were in.
Somewhat support	During the discussions on rate harmonisation did the question of fairness of application of rate charges being based on land values without taking into account low income families on valuable blocks of land,pensioners & the disparity between unit owners& home owners charges. How can it be fair that owners have to pay vastly different rates for the same services. Whatever happened to the user pays system.

Level of support for rates harmonisation	Please share your reasons
Support	It is fairer for everyone
Don't Support	Your letter dated 25 January 2021 talks about a "fair and equitable approach" to charging rates. Your proposed harmonisation is anything but fair and equitable. To be fair and equitable every rate payer should pay the same for the different Council services. If Council provides a service to remove say 1 bin of garbage from my property, I should pay exactly the same as my neighbour if they have 1 bin removed. In other words we should pay the same amount for the same service . How is it fair that I pay a higher or lower rate than my neighbour for the same service just because my house is less or more valuable than theirs? The value of a property has nothing to do with the services provided by Council. Instead, the costs are based on the particular services provided to each household. Consequently, to be fair and equitable, the rates should reflect the cost of the services provided and not the value of the property.
Support	Rates calculations should be equitable. Currently they are not, as we now all know.
Support	With the councils merged and based on me also enjoying the areas outside of Warringah, harmonisation for services seems fair
Somewhat support	I would generally support rates harmonization if I could trust the Council to actually spend the money in the Manly area. Since the Council's combined, Manly has been badly neglected. Our Streets and footpaths are in extremely bad repair. The Streets are never swept properly, the footpaths are filthy. There are weeds growing in the gutters and from Median strips all around the Manly area. We rarely see Parking Rangers, in spite of the fact that parking permit fees were raised to provide more Rangers. So the question would be what is the council actually spending money on in the old Manly Council Area. Changing all the street signs to ones with the Northern Beaches Council was a total waste of money, as no one cares what logo is on a street sign. So if the money comes into Manly then happy to pay more rates.
Don't Support	As a single person living in Avalon, my rates will increase. If the calculation is based on land value (as stated in your letter to my address dated 25th January 2021, received 9th February 2021), this does not take into any consideration of the number of people living at the property. I just purchased my property from a family of four, and now as a single occupier owner I am expected to pay the same amount and potentially more. In addition to the comment around the staggered approach, per your calculator the hit comes 100% in Yr 2 and is not in my view "staggered".

Level of support for rates harmonisation	Please share your reasons
Unsure	We are concerned that with the harmonisation that we will end up subsidising for areas like Manly which has extra associated costs like tourism, walkways etc that have to be maintained. They have extra street rubbish collections - all the extras that “normal” residential areas don’t incur Thx
Support	Harmonisation of services and associated rates and charges is a fundamental element of merging the three former LGAs into one Northern Beaches Council.
Don't Support	Please explain why the rate costs for individual units within an entire complex still remain so high when the land size is often the same as single dwellings next door. I appreciate the waste or storm water usage is a lot higher but it cannot equate to 20 or 30 times the rates fees for services provided to single dwellings. I have owned in a complex comprising of 26 units, we each paid approx $340 per quarter in rates per lot. I have many family and friends in the same area paying $400approx per quarter for their single home. Same land size yet our unit block pays you $8840 per quarter.... please don’t tell me that waste or stormwater costs warrant that level of charges? Where is the rate harmonisation in that?
Don't Support	Whilst my personal position as a local ratepayer is a reduction in my rates I am very concerned at the lack of rates charged on commercial and retail premises on the Northern Beaches. Warriewood Square should be charged at over $200,000 per annum. I know this because I currently manage a shopping centre for JLL at Leichhardt (a smaller centre then the Square) and the current rates at Leichhardt are $190,000 per annum and Inner West Council is moving it to $316,000 with rates harmonisation. Can you please ensure businesses are charged accordingly providing more relief for residents.
Don't Support	Manly LGA is more heavily populated therefore, we pay different rates. I am opposed to such a huge increase in council rates -approx $400 a year for us. How can you do this at this time?We are still in a pandemic, many have lost jobs, have reduced hours at work and are struggling to survive. We are still in recession. It will take some of us some time to recover financially- ie more than 5 years. How about not wasting $ instead? ie why is council about to spend $170,000 of rate payer $ on a niche, small group of "jump bike riders" ie the Grove at Seaforth, when Bear Creek has just opened at a cost of $6 million!!!! Bunch of entitled males.! How about a wage freeze for councillors? Look at other ways to reduce costs, don't hit up people who are doing it tough. Reduce the rates for those paying more in other areas / LGA's-now that would be called "reasonable" . Harmonisation-HA!
Support	It seems fair
Don't Support	The whole system is grossly unfair. Rates should be based on the value of the property not the land it sits on. For example a luxury apartment at 3/15 Marine Parade sold last year for more then $6million, its harmonised rates are $1675. My semi is

Level of support for rates harmonisation	Please share your reasons
	worth less than half that amount but my harmonised rates are almost double at $3183. Could someone please explain the fairness of that.
Don't Support	I live in Clontarf and one may assume that we have a lot of money, but we did not. This new 'Harmonisation' will no doubt see our rates being increased and we struggle as it is. Thank you [redacted]
Support	Equitable payment of rates is supported.
Unsure	Why should council rates be based on land value ?, should be bases on services provides by council , land value has no basis on services provided?
Don't Support	We oppose the 20% increase in rates for the Manly Area for no increase in services provided by the council. we feel the rates are already expensive enough and any increase will cause severe financial stress. The council expenses are far too high and should be managed with more efficiency.
Support	I suspect that rates in the three former Council areas are not equivalent, for historical reasons. I support movement now in the direction of levelling the situation.
Unsure	Hi Northern Beaches Council, Thank you for the letter about the upcoming rates harmonisation and also the 101 video I have watched. The main question I have due to my lack of understanding and not seeing it explained anywhere is this: What does land value have to do with the calculation of rates? Thinking (admittedly selfishly) on the house my wife and I own: The only direct Council use we have related to our property is via the weekly emptying of garbage bins. I have the same size bin and number of them as most of my neighbours and am not charged per kg of waste our dwelling contributes. Therefore our land size/value has no bearing from my direct use of Council services and anything done to the land value is driven by market factors outside of the Council and my control. I realise the Council must also charge a "basic" rate of some sort in order to fulfil its remit to the LGA but regardless, I am unclear what the nexus is between an individual land size/value and the rates being calculated from them. Can you please explain this to me? Thank you.
Support	1 Council should equal 1 rate structure for many reasons including stopping any claims to unfairness.

Level of support for rates harmonisation	Please share your reasons
Somewhat support	I support the use of a uniform rating system throughout Northern Beaches Council area. I support full implementation in preference to a gradual implementation of rates harmonised but I object to the currently proposed inclusion of a new Stormwater charge being applied to my property as part of the new system.
Don't Support	$850.00 increase is calculated on my property. I am now 60 years old and hoping to retire soon after copping a series of increases constantly for the 20 years I have been a rate payer. The gouging of residents is outrageous. At the same time, if I try to go to the beach at Manly I cannot get a park any longer as people from all over the beaches now park along the beach, go out to dinner and the pubs and then leave their cars there overnight. I have turned around and went home without getting out of the car at least 6 times this summer including twice as early as 6.30 on a Saturday. The roads around Manly are constantly gridlocked, and the trip that a few short years ago took 6-7 minutes now takes 25 minimum. And yet you continue to allow the population on the beaches to grow through all of these developments and you are turning Manly Vale into Dee Why 2. The whole NBC amalgamation has been a nightmare for Manly residents. We have lost all the benefits, we have lost the village atmosphere, we have lost access to our own beaches, and now you want us to pay more. At the same time, public areas such as Clontarf Reserve is frequented by thousands and thousands of nonresidents every weekend and they leave an absolute mess - who pays for it? We see council waste money on development after development - such as the Manly Oval fiasco, the development of Grahams Reserves new amenities without toilets, the decision to run angle parking on Kenneth Road that just creates gridlock. It is time that you start representing the needs of your residents, find some decent town planners and cut our costs instead of increasing them. The residents have had enough.
Somewhat support	Everyone in the area should be paying based on the same formula. However it should not be based on land value but land size. In other words, x dollars per square meter. Obviously someone with waterfront property in Palm Beach will have a higher land value than someone on Pittwater Road. But does that justify charging more for the same exact services? No.
Support	At our Queenscliff apartment of [redacted] units we have 7 red bins and two yellow and two blue bins (bottles & paper) and No green bin. We are entitled to 7 yellow and 7 blue bins and one green bin. So we don't receive any discount for the URM pickup each week. Are we entitled to any discount as we pay a lot more rates than Manly and Warringah.
Support	Former Warringah residents should not be subsiding former Pittwater and Manly properties. There should be no phasing. It should have happened years ago and former Warringah properties should be back paid for the difference since the amalgamation. Services have certainly not improved.

Level of support for rates harmonisation	Please share your reasons
Don't Support	Services have diminished since the amalgamation and now we are expected to pay $500 a year more for fewer services. We were told the merger would result in cost saving so use those savings. $500 a year is a lot of money in the current environment. Extremely unfair.
Support	Based on land tax seems to me to be a fairer way to collect the rates.
Don't Support	There was a reason for there being three different Councils prior to amalgamation. The previous Council areas faced different and, in many areas, conflicting issues. Amalgamation promised savings in the tens of millions of dollars which one would expect given that we have only one Mayor, one highly-remunerated General Manager, one Waste Management Contractor. One would expect that savings would be ongoing not temporary. I think we, the voters were sceptical and now with the "harmonisation" mantra our scepticism is realised. Council rates are struck based on Land Value. The previous Manly Council is heavily populated, contains I would suggest more residences than either of the other two areas many of which sit on extremely expensive Land. Hence by "harmonisation" you are essentially introducing an element of socialisation into the rating structure - let the "perceived rich" pay more. I am a member of a number of Clubs, both sporting and social within the Manly area and this "rate-grab" is a very hot topic. There is growing disquiet, anger perhaps. How serious - if this "harmonisation" proceeds the next Council Elections will reveal
Unsure	Rates are only one small part of living in the former Pittwater LGA. Of far greater significance is the sensitive maintenance of our bushland and beaches, reducing private car trips in the area, reducing vehicle speeds (preferably by landscaping the road environment) so that pedestrians and cyclists are less likely to be injured and feel safe on the road, and maintaining services, eg the council shopfront at Avalon. Also of critical importance is council's response to climate change.
Support	I dont see what i get for my rates. Also bills keep going up and up and money is wasted. But i have just looked at my decrease $42 WOW thats pathetic, i wont even notice im saving $10 a quarter. I was expecting something substantial. Hardly worth it. Also i dont understand the modelling options and the explanation at all in the letter.
Somewhat support	While I understand the need for rates harmonisation, especially if I was located in the former Pittwater or Warringah council areas, I feel that in the current climate, with the added financial pressures that have resulted from Covid-19, I would be more willing to support the gradual implementation for the increases that I am expected to be hit with, and would also welcome the proposed delay in this harmonisation process to begin in 2022/23.

Level of support for rates harmonisation	Please share your reasons
Support	As a resident of the former Warringah Council, I don't want to subsidise the rates of the former Manly Council residents. I support the rate adjustment immediately particularly as the formation of the Northern Beaches Council was in May 2016, so I've been subsidising Manly residents for close to 5 years already. Do you think that's fair?
Support	Fairer and easier for council to harmonise all of council region
Don't Support	As a Manly rate payer, I object to the proposed "harmonisation" of rates based upon; - having to pay to an annual fee to park outside my property (a NBC road responsibility) because i live within a Council designated parking area. NBC was not agreeable to "equity" in parking costs but now wants "equity" in rates. All NBC rate payers can now park in Manly for free upon conditions (which I support) thereby reducing previous revenues from fees/fines/charges. These previous revenues enabled the previous Manly Council to manage its expenditure and provide lower rates. NBC would not agree to sharing the cost of my parking across ALL ratepayers. My suggestion is that NBC recognise the "un-equitable" basis of these parking fees and therefore deduct these costs from all future rates. All residents of NBC should share the costs currently carried by manly residents. This would be fair and equitable. - Why the assumption that the NBC expenditure budget does not change? Why were Warringah Council rates higher? I do not believe WC services are better than other areas in NBC area. The history of WC's incompetence and wastage is well documented. Therefore it incorrect to include old WC rates as an average benchmark. My suggestion is to use the average of Manly and Pittwater as the basis for proposed rate revenues and NBC reduce its expenditure budget to reflect a "fair and equitable" budget in accordance with reasonable expenditure. - The base premise that NBC expenditure remains the same is incorrect. The amalgamation of the 3 councils (which I support) has been successful and enables a regional approach. However, I do not see any recognition of cost savings (duplication of staff and asset sales, asset sales/leasing, NSW Govt contributions etc) being passed on to rate payer costs. - NBC needs to assess its revenue raising in a hollistic manner across all revenue streams (grants and contributions etc) and not in the simplistic rates and charges silo only. Increasing rates and charges is a lazy solution. With the proposed rate harmonisation and rate increases, there is no recognition or any mechanism for the benefits of other revenue increases to be passed onto rate payer in the form of rate reductions. My suggestion is for NBC to incorporate an approved mechanism within the rate calculations to enable rates to be reduced in the event of increased revenues from other non rate and charges sources. Thank you for the opportunity to respond.

Level of support for rates harmonisation	Please share your reasons
	- Its a fair assumption that as the capital of the Northern Beaches area, manly residents and businesses will contribute more as a percentage of NBC's $375 million overall revenues. This may continue to widen as property values in the Manly area exceed middle and northern areas. My recommendation is for NBC to recognise the inequity of ratepayers in one area contributing apply some form of - There is no NBC commentary associated with "fair and equitable" NBC expenditure.
Support	It appears my rates would stay roughly the same or reduce slightly so assuming a consistent level (or improved) of services and quality provided, I believe harmonisation makes sense.
Support	If we are all deemed to be one local council area, it is only fair that our rates percentage is equal. We all contribute to the maintenance, improvement and support of Council services and projects. If everyone is benefiting, everyone should be paying equally.
Somewhat support	Like most Northern Beaches residents I supported council amalgamation in the belief that a larger council would result in significantly lower rates (as promised) due to economies of scale (staff reductions, sale of unnecessary council chambers etc). To learn that as a Manly resident I'm now expected to pay higher rates is a betrayal of the promise and benefit of the amalgamation. I do believe rates for all residents of the Northern Beaches should be equitable. That being the case, the council should pick the lowest current structure (apparently Manly's) and levy all rate payers accordingly. This will result in lower revenue for the council which will drive much needed efficiency. I for one would be happy to live with fewer services with lower rates.
Support	At present I own 2 properties, one in North Sydney Council and one in Northern Beaches Council. Both have the same land valuation within a few thousand dollars (just a fluke). My rates in the Northern beaches are $1173.10 a qtr, while North Sydney is $833.85??
Support	It is only fair that all areas pay the same per land value.
Support	It will be fairer.
Support	I will see a rates decrease.

Level of support for rates harmonisation	Please share your reasons
Don't Support	Unfair on all Manly residential ratepayers. Reduce all rates across the council areas to what Manly residents currently pay. Make concessions available to all Centrelink recipients, not just selected aged pensioners. And give one concession amount, no differing discount as it's too expensive for council to administer. Make it simple so it's least costly and most effective for all people.
Don't Support	1. Merger of Councils was meant to reduce rates - clearly this does not apply to ex Manly Council residents, 2.Former Manly Council ratepayers were neither told about this substantial (20%+) increase in rates and were not provided with the opportunity to vote on the merger, 3.The level of services in Manly have gradually declined since the NB Council merger. 4.Manly Council area lost a large amount of parking revenue from its beach parking which is heavily utilised by residents from Warringah and Pittwater. The result is that they get free parking and we ex Manly ratepayers get higher rates!!!!! The Council needs to review this carefully.
Don't Support	I am very disappointed with this proposal. I have been a rate payer in the Manly Council / Northern Beaches area for 21 years, and in particular Seaforth for all of that time. I was not in favor of a merged Council, and feel that Manly council provided so much more support and rigor to their residents. This has been lost with the one huge Council of the Northern Beaches. The amalgamation was supposed to bring efficiencies to Rate payers, not additional costs. Just because land values on the lower end of the Northern Beaches may be higher than some other parts, should not justify residents having to absorb additional rates. This seems entirely unfair. The increment for my property is 28% which is enormous. Why should I have to pay for someone else's property, when they are already paying their rates. This is completely unpalatable to me, and does not seem fair at all. Again, this goes entirely against the rationale of combining Councils for efficiencies for Rate payers. The suggested approach and system does not support those Residents in Manly, who purchased their properties, knowing what the rates would be. In a recessionary economy, how could you possibly enforce such suggested enormous increases on families. It is dispicable. The old Manly Council area has many aged residents who have been here for decades, and bought their homes when they cost very little, and should not be penalized because land values have improved better than other areas. It does not mean that we are receiving a premium service to another area, by being asked to swallow such an unfair suggested increment. Quite infuriating that this has been suggested. All the best. [redacted]

Level of support for rates harmonisation	Please share your reasons
Don't Support	The calculator reflects a 20% increase for my principal property. This significant change needs to occur over a longer period. 5 years would be more empathetic to owners.
Support	Manly and Pittwater residents are capable of paying their equal share. I had no idea I was subsidising Palm Beach and Fairy Bower. I realise not all residents are well off, but the residents of the Northern Beaches need equity, not excuses or historical norms.
Don't Support	The amalgamation process was at least in part sold to us on the basis of the savings that would accrue from the larger LGA. Proposed ordinary rate increases of 25.7% and 12.2% on my properties does not seem to reflect any savings. Justification please.
Somewhat support	I live on Scotland island and we pay the same domestic waste charge and storm water charge as the people that live on the mainland, yet we are on septic tank and our storm water goes straight into Pittwater. In regards to the septic tank we get no services for the waste charge, we have to pay ourselves for getting it pumped out when needed, I pay to have someone inspect my septic tanks quarterly to make sure they are working properly. I get no waste water support from the council yet I am expected to pay for waste services. We also, from what I understand, have our rates calculated the same way as the mainland, yet we have some of the worst roads in NSW, pay some of the highest prices in Pittwater for parking our cars and commuter boats, if we can even get a spot, in the area. In fact we have to pay extra to park our cars at church point, when everyone else in the northern beaches gets to park there car on the road side etc with use of the northern beach parking sticker, which I know as a house owner I get, but doesn't allow me to park where I need to park to access my house, again, that is if you can find a parking spot at all. Also we pay a premium to park at church point and the car park is rubbish, poorly lit, poorly maintained and not enough spots to park for people on the island. The same goes for the commuter wharf, again island residences pay a premium to park there and there are not enough spaces for everyone to park there when needed. Don't get me wrong, I am happy to pay my part, but I feel that the island is being taken advantage of for very little gain. So according to the calculator, my rates will be increasing, so I will be paying more than some people on the mainland for less services and less maintenance provided by the council.
Don't Support	Servicing my property should not cost more than a similar-sized one anywhere else on the northern beaches. Paying more because your property is worth more is certainly not 'fairer' as you're trying to portray it. Council recovering cost based on land size is fair. The 'average rates per $100k land value' statistic in isolation is misleading. Why not also show 'average rate per property' in

Level of support for rates harmonisation	Please share your reasons
	absolute terms for the 3 former council areas? That should show the extent Manly will subsidize other areas under your proposal. Stormwater changes have no relevance, unless it's being suggested those savings should be considered an offset to this proposed increase. Hopefully not.
Somewhat support	I think Council if it was bold and innovative, it would not just merge 3 rating systems into one and find a semi fair way to do things. I would like to see that through the process, Council could change minimum rates to also be fairer. Afterall, Council rates are based on land value. With extensive planning and future projects being developed within strategic vicinities, others will benefit in astronomical valuations yet pay the same rates? For example, Brookvale Ave apartments are much more desireable in terms of location and prime position to reap rewards of future developments in Dale Street etc. Compare this to apartments in Shackel Ave, land value is significantly less and any development wouldn't increase values compared to Brookie Ave. If this can't be done then I hope to see Scenario 1 implemented as Manly Residents have long been paying the lowest rates yet property values are higher. This would be compounded with years of savings and growth.
Unsure	i just dont trust council. to be honest... history has proven that you actually dont live up to your word. I am a rate payer and have been for my property for over 30 years. there are still roads in our suburb that arent even kerbed and gutted and many many streets provide NO FOOTPATHS to utilise. the roads are narrow, curvy and drivers use the roads at dangerous speeds. when the councils combined you promised no rate rises.. and yet thats exactly what happened . then you got rid of our bins, that were just fine... only now for us to pay EXTRA MONEY to get two bins, as we are 5 people in one household.. now you want to do this harminastion as the WARRINGAH rate payers are paying more than the manly and pittwater ones... does that mean that we will get a refund for you overcharging us... and you say that our rates will decrease... well.. i'll love to see the proof of that. is there even any point to asking for information or will you just go ahead and continue to bleed us dry.....
Support	It is important that rates are applied equitably across the council area and I fully support the change. The council is being extremely generous in applying teh change over four years.

Level of support for rates harmonisation	Please share your reasons
Don't Support	According to the online calculate I'll have just over an 8% increase in rates in a single year. I cannot support this massive increase which is way out of line with inflation and to me unaffordable. I bought my property based on the council rates at the time and this does not factor into any reasonable forecasts to budgeting. It's also way out of line with the Independent Pricing and Regulatory Tribunal setting the 2021-22 rate peg for NSW council rate increases at 2.0 percent.
Support	It doesn't mKe any sense to have different rates now that we are one community. And my reading is that using caps and collars and slowly equalising just means that the inequality lasts for longer- which is far more unfair than larger jumps up. So my vote is harmonise 100% in one go. Otherwise some rate payers are subsidising others, which is clearly unfair.
Don't Support	My proposed rates increase is 27%. When I read the letter sent to me about harmonising rates it went to great lengths to talk about how 'fair' the changes were. I didn't ask for amalgamation of the councils. The only reason I would find it acceptable is if there were great efficiencies to be gained that would be passed on to rate payers. I have had no benefit from the amalgamation or positive changes to my services and yet my rates are proposed to increase by 27% - where's the fairness in this? Please review carefully your proposed changes. You say that 76% of ratepayers will pay less under the changes. The only reason for that is that I, and others like me, would be subsidising them. These changes certainly don't have my support and I will work to ensure I am not disadvantaged by them.
Don't Support	We already pay more for our property - why should we pay more rates dependant on house value. It isn't fair - if we all have the same services we should be paying the same in each area, not different in different areas.
Don't Support	Although i support a fairer rate system, i feel like there are more more parameters to be considered to be really fair, not just mainly based on land value. For example, the unit values are not generally considered based on land values, as the land is shared. So the units dont actually receive the same benefits as houses in the area. Moreover, units already are disadvantaged by reduction of council services, e.g. units dont get kerbside garbage collections which houses enjoy. Then it would be unfair if all of these are not considered as inputs in the equation, but only because the rates are lower compared to others.

Level of support for rates harmonisation	Please share your reasons
Support	It is a more equitable model.
Somewhat support	Using the lowest common denominator to calculate would be better for we manly-ites, specially we pensioners. Seems unfair that Palm Beach rates are coming down and Manly the reverse ...
Support	lower prices on units which occupy a lot less land
Support	It looks like a fair and equitable approach to rates. Basing it upon land value is a good approach.
Support	Make council operations simpler and more efficient
Don't Support	Hi, Calculations do make sense Comparing 2 properties. 2 bed unit: [redacted], Land Value: $435,000 Rates: $1,426.45 ([redacted] Units) 2 bed unit: [redacted] Land Value: $286,000 Rates: $1,426.45 ([redacted] Units) 2 properties same rates. Properties have significant difference in Land value $149,000 and amount of apartments ([redacted] more) [redacted] more apartments require a significant amount more servicing. Why do both properties pay the same rates?
Don't Support	If rates are dependent on services for the area, as a Manly resident, I feel we pay more than enough. UNLESS there is significant and noticeable changes to our environment: - The former Manly council is inundated with more visitors than any other area in the Northern Beaches. As a result, we contend with constant traffic and parking issues, unclean hygiene facilities, bins overflowing, ridiculous notions to changes in traffic, and council continually approving multi-dwelling lots. - What is also disapproving is once looking at the calculator you provided, the rates continue to rise steadily ANNUALLY. - Council should also not back the proposed beaches tunnel as it poses significant health risks via air pollution - near my home and two local schools, thereby DECREASING THE VALUE OF LAND in the area. It also increases visitors to the former Manly council area, NOT former Pittwater or warringah areas.

Level of support for rates harmonisation	Please share your reasons
	- I feel these changes are a slap in the face to Manly council residents who are already in a high population area; paying their rates. Due to the high population and growing multi-dwellings in the area, costs of current council infrastructure should most definitely be covered. - This rate rise should not even be considered until the proposed 2023 date.
Don't Support	Firstly, I don't think that using language calling the proposal fair and equitable is appropriate. While charging "wealthier" residents more may be an established way of taxing in Australia, the fair and equitable basis of charging would be to charge each household for the benefits they receive or services they consume. It is difficult to argue that someone with a higher land value uses the services and infrastructure of the Northern Beaches more than someone with a lower land value. Secondly, the amalgamation of the Northern Beaches councils was supposed to result in efficiencies and economies of scale for residents. Putting aside the reductions in the cost of certain services which are billed directly (and shouldn't be used to offset higher general charges), it doesn't make any sense to me that we will now be paying higher fees than previously in order for other households to pay less. This seems like the opposite of the intention of the amalgamation where all households should have benefitted. I would think there should be some type of better off overall test. If we do need to harmonise rates, we should have a moratorium on increases for those paying a higher percentage of land values and possibly differential rate increases until an equilibrium is reached.
Don't Support	My wife and I have lived in [redacted]. Clontarf since 1968 and raised our family here. As a specialist [redacted] on Manly and Mona Vale Hospitals (the latter for23 yrs.) and retired since 2005, I consider that my contribution to the community(particularly night and week-end on call work) warrants special consideration regarding any potential Rate rise. My retirement savings are earning 1.5% and the cost of living continues to rise. I will turn 80 next month and we wish to be able to afford to stay in our home in the foreseeable future. We are therefore opposed to any rate rise,regardless of our land value. [redacted]
Support	Fairer system and Warringah should not be subsidising rest of Northern Beaches.
Don't Support	Council Amalgamation was supposed to improve council efficiencies. As a Manly resident I will be slugged with a 25.8% increase in rates. Plus the prospect of another tax for storm water management.
Don't Support	My rates are modelled to increase by 19% for no increased value or additional services provided. That is completely unfair at a time where inflation is running below 2%, wages are stagnant and business are earning less as a result of the pandemic. A nearly 20% increase so you can pass on savings to others for some bureaucratic administrative reason is wrong. There is no

Level of support for rates harmonisation	Please share your reasons
	material reason my rates should be increased. I did not ask for the councils to be merged the state government did it and promoted better services and rate stability. Increasing my rates even by phasing is unacceptable and I will not support it.
Don't Support	The point of amalgamating three councils into a single entity was to realise efficiencies across the local government area, particularly in relation to costs. As council realises these efficiencies, it should pass them onto ratepayers in the form of lower rates charges, not higher. Council should consider scaling back rates charges overall to achieve harmonisation, rather than charging more in areas such as Manly, which already shoulders considerable load in terms of usage charges and fees. Harmonisation should not be at the expense of existing ratepayers.
Don't Support	Your notes indicate that the cost of the average rates bill will increase by 26% But there is apparently no change to the level of services paid for by the rates Alternatively, (and acknowledging the stormwater charges)why can't the Council apply the same services / standards / efficiencies (as Manly) to the Warringah and Pittwater council areas? So their rate levels can reduce to the levels of Manly
Support	I support.
Don't Support	What a disgrace. A major reason for amalgamating the three northern beaches councils was that rates overall would decrease. Our rates are due to increase by a massive amount, - $641.00. I suggest you stop squandering ratepayers money and for a start sell unneeded council assets such as the former Manly Council premises. Another reason in favour of amalgamation was the disposal of surplus council property.
Support	Equal and fair rates across NB region is a positive why to start the new fairer rates system
Don't Support	Whilst i am ok with current rate, i am not in support if this increases rate by more then CPI index. note: I find some work in my neighbourhood a waste of money. examples are: 1) new (ugly & expensive) beach signage 2) costly full walkway replacement even if more than 90% of pathway is structural sound, save and would last for the next decade and a minor repair would fix any issue. 3) council planting of large trees in particular under powerlines and nearby walkway knowing that the roots will lift the walkway in the next 10 to 15 years (again repair at cost) and the tree must get cut yearly due to power line

Level of support for rates harmonisation	Please share your reasons
	4) bush or dune regeneration work at our cost but no consequence for adults if they misbehaved as can be seen (nearly) daily on nearly any beaches, parks and bushlands. Why is there not a occasional concil check and fining those people to generate the cash needed to fix up for their mistakes (i can not recall any control/fine in my 20 years living here and i am out a lot). I don't want a police state but...
Don't Support	We already pay $2,000 each year in rates. To increase our rates by $500 seems extraordinary that is 25% extra. We cannot afford to have our rates go up so much. We have health cover to pay and all these other bills this is not what the amalgamation of the councils was suppose to do, our rates should stay the same and the other council areas should gradually fall with inflation not the other way around as proposed. Our street road surface is a mess so unless the council proposes to actually start spending money on our area and the local roads in Seaforth we are totally opposed to any changes in the calculation of our rates.
Don't Support	What extra or additional services will we receive for the 20% increase? If the old manly council was able to keep our rates down and your amalgamated council is not why should we have to pay more for your incompetence? You are unable to provide adequate off leash beach area for dogs in the manly area. Or anywhere in the northern beaches from that matter. You can't even run a proper trial without being overridden by temporary resident not in NBC. I don't see any increased value being offered on the councils behalf that warrants such an increase in rates .
Don't Support	I strongly disagree with this rates hike. Northern Beaches Council has used four scenarios to model changes to rates. All of them result in basically the same average increases for Manly ($301-$310) and average reductions for Warringah ($80-$91) and Pittwater ($16-$47). Given the amalgamation promised efficiencies, I would like to know if total rates are increasing or decreasing, and by what percentage. The Independent Pricing and Regulatory Tribunal has set the 2021-22 rate peg for NSW council rate increases at 2.0 percent. Yet under this proposal the former Manly Council area will experience an average annual increase of 12 percent! This is six times greater than the IPRT rate peg!

Level of support for rates harmonisation	Please share your reasons
Support	I support that every rate payer should pay the same rates at the same percentage of their land value deemed by the NSW Valuer General.
Support	I don't believe it is 'fair' that we in the previous Warringah area continue to pay higher rates in the coming years until the harmonisation is completed. Make that change now. Warringah area had our rubbish service increase at the beginning of the amalgamation without a drawn out period; why are we disadvantaged of a fairer rate compared to the rest of the beaches now with the rates? It is not our need to support the rest of rate payers when a discount now would be of benefit during Covid times. I'm also incredulous rates have raised in the past years despite more rate payers (eg over 9000 new units in Dee Why). I cannot see the costs increasing for servicing being equal to this huge 'new' revenue which grows continually.
Don't Support	It appears that your rates harmonisation process is a way of DECREASING rates for individuals living in prestigious areas such as Pittwater, while INCREASING rates for individuals living in lower value areas such as Balgowlah. Once again it's an attempt to support the financially well-off Liberal Government supporters, at the expense of the harder working, less income earning, Labor Government supporters. I DO NOT support the increase of $108 in my yearly rates, when I will NOT be receiving any additional services to justify this increase.
Support	Seems fair
Don't Support	Basically, before amalgamation we paid X now we are paying 20-30% more, for services that are worse. Most people in Manly were happy to stay with Manly council and this change was foisted on us with the promise that services would be better and ratepayers would realize economic efficiencies. The truth of the matter is that rather than being "fair" you are asking Manly residents to subsidize the rates of other areas because the Council is unable to manage it's budget as well as the Manly council did. In the Manly area recent examples of the poor service we get include massive delays on getting DAs through, instead of waste and recycling being collected at night, it's collected during the day with huge traffic snarls and dangerous tailbacks, lifts in Manly car park constantly fail and public toilets are a disgrace in Rialto Square. Oh, and a parking tax at all the council carparks that prevents you from using local Manly shops unless you are prepared to pay for the privelage.

Level of support for rates harmonisation	Please share your reasons
Support	Rates should be harmonised relative to land values. It is not fair for some ratepayers to pay a greater amount per $100,000 rateable value.
Don't Support	We have not experienced any improvement in Council services since the amalgamation. There is therefore no justitication for a 20% increase in rates, as we would experience under the proposed harmonisation. As self funded retirees on greatly reduced income, the proposed increase in rates will cause us to suffer a material reduction in our living standard. Council needs to reduce the rates in the former Warringah area, without substantially increasing rates in the former Manly area. Council needs to operate more efficiently, following the amalgamation, which was its intention.
Support	Fairness and phased, plus concessions for those more in need
Support	There can be no logical or moral argument against rates harmonisation in the Council area. This should be implemented as soon as possible.
Somewhat support	Seems more fair to me. My rates look like increasing around $400 pa. This is a big jump for some but when I looked at what Warringah were already paying that seemed more reasonable.
Somewhat support	My opinion is that the whole rating system is flawed. The basis of the system is the UCV of the property as determined by a valuer who considers only similar property sales in an area of approximately 1 Km radius from the subject property. As a result it causes the anomoly that the land on which a semi attached property on the low side of the road has a higher total value to the large houses on the high side of the road directly opposite. Thus, the rates charged to the two semi attahed properties are paying rates at a higher amount per square metre of land than substantially larger properies in their immediate vicinity.
Somewhat support	I understand the requirement to harmonise. What would be helpful to sell the significant increase for Manly residents would be some information on what the combined council is doing to drive down costs and achieve savings from the amalgamation process. Also please can you let us know what council requires for storm water management? Again $0.9m to $2.0m is quite a budget increase. Is it required? Why don't you reduce the overall charge from $25 to $20 This all seems one way and at a time when everyone has take a pay hit!?
Don't Support	I have just calculated our new rates and they would increase by $400 per year that equates to 20% increase.. not good enough. We are both over 65 and living off super until we can see if we are eligible for the pension and even then it seems

Level of support for rates harmonisation	Please share your reasons
	you would only get $150 off. It would be like paying for 5 quarters a year. When the amalgamated council came in our rates didn't reduce in amount which is what seems to be suggested.
Support	It seems fair if we are paying for the same servici
Don't Support	As part of the harmonisation process the council should look into decreasing all rates for all ratepayers across all former councils/areas. We were promised the amalgamation would save a lot of money. Time to forward those savings to the ratepayers.
Don't Support	The rate increase represents a $300 increase for us from around $1100 to $1400. That's an increase of almost 30%. We only just moved to the area and already our rates have gone up 30%. I don't feel this is fair at all.
Support	it is one council, one customer service, one maintenance policy, one budget, the budget is to go back to everyone. There is no point for some to ou more than others for the same service.
Don't Support	You are proposing to put my main residence rates up 25%- I'm planning on retiring this year. I pay rates across multiple properties- I would like to see some sort of "mutiple rates' discount applied- otherwise I get hit multiple times in Manly with an uplift. 25% - think about that - how is that fair ?????
Support	I believe it is a fairer system within a Council area.
Don't Support	A 25% increase in rates is simply too much. Wages have stagnated. Cash held gets zero interest. The housing/immigration ponzi scheme has artificially inflated land valuations. How can a 25% increase be justified.
Support	Agree that there should be unity across the LGA for all rate payers
Don't Support	When the councils were amalgamated it was supposedly to reduce costs. My rates will increase significantly because presumably Manly Council was more efficient than the others. I do not think that is fair nor in alignment with the purpose of the amalgamation.
Support	Clearly all ratepayers in the Northern Beaches LGA need to be taxed equally. The sooner the imbalance is rectified the better.
Don't Support	The amalgamation of the 3 previous councils into 1 Northern Beaches Council was meant to - 1. result in decreased rates to ratepapers from efficiency gains & removing duplicate services

Level of support for rates harmonisation	Please share your reasons
	2. maintain and improve council services 3. provide benefits from being 1 council area (such as being able to park with sticker at any beach in the northern beaches) There was never any mention of higher rates for some residents. In my case, the calculator shows my rates increasing by over $400pa - over 20%. This is unaffordable for a retiree such as myself and I'm sure many others on fixed incomes & doing it tough on covid etc. I was a supporter of the amalgamation because I was told that costs would drop overall and rates would be lower - not 20% higher!! I believe rates should be left as they are and not changed at all as what is proposed is blatantly unfair and dishonest. Nobody told me my rates would increase by over $400pa - I was told they would decrease! I'm annoyed that such a big increase is being inflicted on me on the pretence of "harmonisation." The amalgamation was a govt initiative which we weren't given the opportunity to vote on. Why can't ratepayers continue to pay the rates they pay now?
Support	Fairness and it was part of the merger
Don't Support	I believe we should all pay equally for services received. I am not sure why you use land value to calculate this as my understanding is the cost to provide like for like services is the more equitable way of allocation. Eg a house in Avalon on 500 sqm surely receives the same level of service as a house in Beacon Hill or Manly on 500 sqm so why charge based on land value and not on service provided per category of dwelling.
Support	Everyone in the amalgamated Council should contribute their fair share of the costs of running the Council.
Don't Support	I think the proposed system is totally unfair. I don't see the relationship between property value and usage of council services and that is not explained anywhere. A fair system would be where charges were equal for each person living in the area.
Somewhat support	I accept that Manly rates need to rise but I am concerned that in a tough Covid year my rates are jumping 28% and staying that way. That is too big a shock in one year. However a staged increase even if it temporarily reduces rate revenue should be implemented. There needs to be a limit on the annual increase in any given year like in the order of 5-8%.
Don't Support	Why should Manly residents have rate increases just because we are currently lower than the other two areas? This is a ridiculous grab for cash from the previous Manly Council Area residents. I, categorically, object most strongly.
Unsure	The scenarios must be expanded to include options where the ad valorem rate is reduced and the minimum rate is increased. The total income to the Council from rates should not be fixed at the current level but should be reduced to reflect the financial

Level of support for rates harmonisation	Please share your reasons
	benefits of amalgamation. The average Manly ad valorem ratepayer is being asked to pay more so that the minimum rates can be lowered for others, all for the same benefits. The proposal does not conform to the Mayor's vision of equality and justice.
Don't Support	Manly was more efficient than Warringah obviously. Amalgamation was supposed to bring benefits of scale and reduce rates or contain increases. With pandemic I am now unemployed yet 8 years from retirement. Our rates are forecast to increase on your modelling from $580/qtr to $700/qtr but with land value increases and rate pegging this will become $800 to $1000 per qtr before too long. I know the full impact is not for 5 years and only hope that when I reach pension age I can obtain a bigger discount to compensate to ensure that we don't have to sell our home after 30 years of paying local govt rates... Where is the fairness in this An amalgamation forced on us and sold on the basis of better value now costing more. This is misleading and deceptive conduct.
Don't Support	Your rates are based on what you think are fair values of land. There is a massive variation in the land values across the region. While I am lucky to live in Clontarf, my land value is very high as a % of the total house value. My neighbour lives in a house worth $1 + million dollars more than mine. Yet their land value is 60% of mine, and I will be paying $1,000 pa more than them. They have 6 people in the house, we have 2. I wish councils would lower their spending and therefore the rates to us the voters.
Support	It's unclear to me how the current disparities in rates charged have arisen (on the assumption that all ratepayers under the former Manly/Warringah/Pittwater Councils received the same levle of services) but having said that, the proposals seem fair
Support	I think that I should be paying the same rates as other properties with the same land value.
Somewhat support	Why should Warringah ratepayers continue subsidising Manly and Pittwater for another 4 years? Are we being unfairly treated?
Don't Support	Council amalgamation was sold to residents as a way of reducing overall cost while maintaining services. Since amalgamation, quality of services in the Manly precinct have fallen and now Manly residents must pay 30% higher rates to support the other precincts. Unimproved Land value has no bearing on services. A Manly resident living in a $3m 200sq.m house uses exactly the same

Level of support for rates harmonisation	Please share your reasons
	services as an Ingleside resident on a 3 acre block. All residents have access to the same facilities so why not make rates a flat fee based on a per-property basis? Council is squandering ratepayers money. A classic example is the replacement of every street name sign in the area. WHy? street names haven't changed.
Don't Support	We have had to agree to a mega council with the promise of major savings passed on to ratepayers. This has not proven to be accurate. There was a saving on recycling collection but it is eaten up now with increased rates. We are in a unit building, [redacted] units sitting on one piece of land in the Manly area unlike single dwellings on large plots in the former warringah and pittwater
Unsure	I understand from the NBC website that they are required to “harmonise” the rates across the three former council areas. From my understanding of the current proposal that will result in a rate increase of up to 30% for ratepayers in the old Manly Council area and possibly a reduction for the the old Warringah and Pittwater ratepayers. In my case the total rate increase will be $711 in the first year, approximately 25%. This includes the waste and stormwater charges. Back in 2015 when the merger of the three councils was being considered consultants were engaged to calculate the benefits. They identified significant benefits not least of which were cost savings. The amalgamation was “sold” to the ratepayers of the three councils as probable long term savings for the ratepayers. Clearly something got lost in the presentation as it is now being suggested that we will have substantial rate increases. At the time of the amalgamation, the old Manly Council area, where incidentally I’ve owned my home for 45 years as a ratepayer, had well established infrastructure funded by a relatively small number of ratepayers over the years. Clearly ex Manly ratepayers are now to be penalised for coming from an old well established and small Municipality. This is exacerbated by the substantial land valuation increases over my time here leading to a relatively high land valuation in the old Manly area. The current rating system seems to rely too heavily on the single use of land valuation as a means of determining rates for a property. There is sense in having some component of land value used in the rating process to give it a progressive taxation element, but to wholly rely on this method seems somewhat unjust and old fashioned. All ratepayers, and indeed residents, make use of the Council provided facilities and services. I advocate that the methodology in the next paragraph be applied for 5 years during which time the council develops a more equitable rating system. This should be well within the capabilities of the consultants who developed the original amalgamation proposal. During the first five years, while the improved approach is developed, a more equitable approach would be to maintain the current rates for the old Manly ratepayers, subject to land valuation increases, and use the amalgamation savings to provide reductions, if appropriate, in the other old council regions. Over time with standard rate increases being consistently applied across the entire NBC, and if required a new rating arrangement, the harmonisation will be achieved without causing the old Manly ratepayers the significant financial penalty implicit in the current “harmonisation’ proposal.

Level of support for rates harmonisation	Please share your reasons
	If this proposal is accepted I can see that rate harmonisation is appropriate. However, in its current form it is totally unacceptable as it is inequitable and unjust. Submitted for your consideration
Unsure	I do not understand why rates are based on the unimproved value of the land on which I reside. Does the variety, standard and quantity of services vary between addresses? Surely all properties receive and have access to equal services. Basing rates upon unimproved value of land does not even represent affordability. The property market, over which I have absolutely no control, determines land value. Even properties that stand side by side and opposite each other on the same street are rated differently, which is an utter stupidity. The only variable should be in rates collection services and I pay for two bins because there are 5 people in my home. Other homes alongside and opposite have 1, 2, 3 and 4 residents.
Don't Support	Council should achieve the required result by holding Manly rates constant (apart from changes in land value) and reducing Warringah and Pittwater rates through operational savings in line with NSW Government promises prior to amalgamation.
Somewhat support	My points are that Council should not justify its source of income. The Council needs to remove their obsolete legacy day off a fortnight and thereby gain 26 days productivity each year. This productivity needs to be modelled for its financial benefit before rates harmonisation is a foregone conclusion. Has Council closed any business premises since amalgamating? Has Council undergone downsizing as the entire private industry has been consolidating and downsizing for decades. Council needs to remove old ways of culture and focus on lifting its productivity. How much capital equipment sits around partly used at Council depots?
Somewhat support	This initiative may harmonise rates between the areas, but what about looking at having rates harmonised by calculating them on property size rather than value. The current calculation means I pay $200 a year more than our neighbour on the same size block, and more than people who live further west on blocks 3 or 4 times the size of ours, simply because of the value of the land. Our land is valued higher simply because we have a view, which we paid for, and continue to pay for in higher rates, yet when someone nearby builds and block the view, we are told we dont own the view. I get no more in services from the council than anyone else, so why should I pay more. Laying the blame on the NSW Land Values is not good enough. If you want to harmonise the rates, do it on land size not value.
Don't Support	amalgamating the councils was undertaken to consolidate costs and offer better value for the local rate payers. My main property has a near $500 increase per year. Where are we seeing the benefit from amalgamation?

Level of support for rates harmonisation	Please share your reasons
	In the Manly area we also have to pay for parking unlike other area in the Northern beaches. Either charge everyone to park on their street or subsidise the rates to balance this out in the Manly area.
Support	Firstly, thanks for your presentation, which I thought was well done and enlightening. I find it incredible that Warringah has shared its more effective waste system with former Pittwater and Manly council areas (thereby drastically reducing their total rates bill) without commencing the rates harmonisation programme concurrently. And also that you now propose to give them higher pensioner discounts whilst still advocating a slow journey to rates harmonisation. This means that they have already received $100-200 pa waste management cost reductions but you have not started a process of rate harmonisation, thus delivering a windfall to the higher priced (better off) suburb residents for free and opening up the council to their typical legalistic backstabbing when they have to pay a fairer share of the rate bill. It does not sit well as an apartment-owner in Dee Why, that it appears from your analysis that I have been subsidising mansion-owners in Palm Beach, Queenscliff and Fairlight. They can afford to transition to a fairer outcome far more than we can afford to keep subsidising them. I therefore do not see the rationale in dragging out the transition to reduce the annual increases. They've been free-riding for a number of years already, so make the transition in accordance with the NSW government timeline. I also seem to remember that Pittwater brought a heavy debt load into the Norther Beaches council, which is no doubt being serviced and paid off by higher rates in Warringah! As Nike advocate, JUST DO IT and grow some balls to face off to the legal barrage you will no doubt face. If they don't like it, you can perhaps suggest you pass back their historical debts and allow them to secede (with a hard-arsed EU-like stance to their equivalent of Brexit).
Somewhat support	I understand it needs to happen.

Comments on options for implementing rates harmonisation

What is your support for the introduced Scenario 4?	Please share your reasons
Support	We are self funded retirees and we get nothing from any level of government and we definitely wouldn't end up with anything from The Northern Beaches Council. WE have lived in Manly for over forty years and have helped build Manly. Now in our retirement Manly is gone and are not helped at all, I believe we should have our rates reduced to half and should be pro rata of how many years we have paid rates in Manly.
Don't support	Different rating in different areas is appropriate given the different densities and services (infrastructure and repairs) through the region. It is evident from even a cursory review of Council's annual report and minutes that more rates are generated from the Manly area than is spent on infrastructure. It is becoming evident that the amalgamation was not in the best interests of Manly ratepayers and consideration should be given by Manly ratepayers to demerging from Northern Beaches.
Don't support	See comments above.
Don't support	Manly Council ratepayers are being Screwed.
Don't support	My previous comments cover this
Support	This appears to be the best compromise proposed.
Somewhat support	The level and number of council services per property should also be included in the rates assessment.
Somewhat support	If you have identified a problem, why would it take so long to change rate payments? Why does the calculator have my rates go up before they decrease?
Don't support	Don not support rates harmonisation. Please see comments above.
Don't support	Scenario 4 (as well as the others) all result in Manly landholders paying on average 26% more, whether they can afford it or not.
Don't support	Too hard on former Manly ratepayers

What is your support for the introduced Scenario 4?	Please share your reasons
Don't support	Scenario 4 (harmonising collections to a weighted average of current rates) does not take the $29.5M pa amalgamation savings into account, and in fact aims to not just maintain the 2020/21 residential ($143.2M) and business ($29.9M) rates levies, but increase rates collection by extending the stormwater levy to the former Warringah - an additional $1.1M. The proposed harmonised level of rates collection is too high, and will only lead to council frittering away savings on lower priority projects.
Don't support	Scenario 4 is just a greedy rates grab by Council and causes harm to a great many ratepayers
Support	We all have the same financial pressure, why should some pay more than others for the same services.
Support	This is the fairest system
Somewhat support	While I would be pleased to get a decrease in rates instead of paying more than properties of higher value in Manly and Pittwater, by the time the changes are implemented, the small decrease will have little value, and according to the calculations, will increase in the first year of harmonisation before decreasing (don't understand why that is).
Don't support	I don't believe that a rate payer, who is ultimately going to get a reduction, to have to face an initial increase.
Support	The scenario appears to be the most equitable.
Don't support	Why delay the proposed harmonisation? This would disadvantage former Warringah residents for an even longer period of time.
Don't support	For all the reasons previously stated.
Support	Because I'm in Dee Why
Support	Its only fair that each of the areas serviced by same council pay the same way.
Don't support	Manly and Pittwater ratepayers are being treated unfairly, which is not the objective of the harmonisation process

What is your support for the introduced Scenario 4?	Please share your reasons
Don't support	The reasons for change seem just an underhanded way of ripping off Manly rate payers to subsidise for an amalgamation of councils that was not wanted and now is obviously not workable.
Don't support	With a 24% increase in rates I would expect a proportionally equivalent uptick in services or capital works in the former Manly area. It seems the council has only used previous council rates to model the new scenario. There is no recognition that the reason for lower rates in Manly was that we received lower services. If rates are increased services should also. There does not seem to be an equitable balance here.
Somewhat support	Realize the change is necessary however I get annoyed when the council wastes money on unnecessary expenditure which has happened in the past. On calculating for myself it amounts to only $29.99 does that mean divided by the 4 years to implementation that's rounded to only $7.50 per year together with yearly increase added in this period it will clear out any worthwhile gain taking from one hand and paying the other hand.
Don't support	As above, can someone explain why costs have risen such that it requires the raising of additional revenues. I am all for making things fair and equitable but the the logical conclusion of amalgamating the areas to save money would have been to reduce charges to the other areas bringing them down to a level with those in Manly, not increase them?
Don't support	Ratees should be GOING DOWN after amalgamation. This is a joke and eggregious. Your detalled analysis should be looking at how to reduce rates not different sneaky ways to increase them. This is ridiculous.
Don't support	Same as above lack of services and promised rates would go down not up
Somewhat support	It is the best of the options you have presented but it is still misplaced. GET EFFICIENT and deliver in the way the former Manly Council did.
Don't support	I'm sure rates will increase over the 5 years so the decrease in my rates will not be noticed. Pull the bandaid off and just decrease my rates in one go.
Somewhat support	Phase in over four years as per scenario 4. Modify calculation by increasing minimum rate across the LGA and reduce impact on ad valorem component of calc.
Don't support	Refer previous feedback!

What is your support for the introduced Scenario 4?	Please share your reasons
Don't support	AS above is skewed by property price not the cost of service to provide. Land value does not equal wealth, equity or ability to pay.
Support	Common sense says this is the fair way to go.
Don't support	All scenarios result in an unfair and inequitable rating system. Noting that the Council has now promised 76% of ratepayers a reduction at the expense of the old Manly Council Ratepayers, including me, i doubt the council has the courage to make any changes. All ratepayers get similar services from the Council but some perceived as wealthy get to pay a huge increase for no improvement
Don't support	Throw it out the window and come up with a new methodology
Don't support	Don't believe this weighted average cost value analysis computes to the take up of council budget spend or need by residents
Don't support	The results show that all the weighting approaches are biased against the higher density former council area of Manly.
Support	Rates should be applied in a flat calculation across rateable land dimensions. To collect a garbage bin in Warringah should be no more expensive to a ratepayer than to collect one in Manly. To repair a road in Pittwater should be no more expensive than to repair one in Davidson.
Don't support	1. We are not getting any additional services for the extra we are required to pay. 2. We were happy with the level of services we received from the former Manly council and don't see why we need to increase. 3. It seems like we are subsidising the cost to service other council areas. This is unfair. 4. Given there is a wholesale change in the way rates are charged, it seems appropriate to consider changing the model all together to reflect the true driver of cost (e.g. land size, density) instead of relying on land values.
Unsure	Same services, same price.
Support	Seems most fair.

What is your support for the introduced Scenario 4?	Please share your reasons
Don't support	Please see my comments above
Don't support	At the time of amalgamation, the former Manly LGA brought with it $66 million of debt, the former Pittwater LGA brought with it $24 million of debt and the former Warringah LGA came to the Northern Beaches Council (NBC) debt free. Over the last 4 years, the efficiency savings from the Council Amalgamation (which have now reached $29.5 million pa), have been primarily directed towards repaying the debts that were brought in at the time of amalgamation. The Northern Beaches loan report to Council dated 28 July 2020 indicated that by 30 June 2021, the NBC will have paid down $54 million (82%) of the former Manly-LGA debt and $13 million (54%) of the former Pittwater-LGA debt. As the amalgamation legislation dictated there could be no change to existing rate paths for 4 years from the date of amalgamation, the first time NBC has been able to adjust rates in an equitable manner since the amalgamation was in 2020/21 – when the setting of equitable rates was overshadowed by the lockdowns and genuine hardships being experienced under the first wave of Covid-19. Since amalgamation, former Warringah-LGA ad-valorem rates have increased by an average of $329 (21.0%) per ratepayer, former Pittwater-LGA rates have increased by an average of $22 (1.1%) whilst former Manly-LGA ad-valorem rates have reduced by $86 (-4.4%) – with reductions primarily due to the harmonisation of waste collection charges. A similar story can be seen for minimum rate payers, where former Warringah-LGA rates have increased by $263 (21.8%) whilst former Pittwater-LGA and former Manly-LGA minimum rates have reduced by $39 (-2.7%) and $121 (-8.4%) respectively. It is hard to draw any other conclusion than the clever manipulations of the former Manly and Pittwater LGAs (by entering the amalgamation with significant debts, coupled with rate trajectories that were not designed to bring them back to balance) have delivered a massive windfall saving to their ratepayers by forcing their pre-amalgamation debts to be paid off by disproportionate increases in rates payable by former Warringah-LGA ratepayers. The rates harmonisation should therefore be viewed through this lens. Even if we include business tax payers, the average debt brought into the NBC from former Manly-LGA ratepayers was $3,375 per ratepayer and the average debt brought into the NBC from former Pittwater-LGA ratepayers was $943 per ratepayer. Through this lens, a domestic rate harmonisation increase of $107 for ex-Manly-LGA minimum rate-payers and an average $476 for Ad-Valorem ratepayers should be introduced as quickly as possible (from 2021/22) to reduce the ongoing and

What is your support for the introduced Scenario 4?	Please share your reasons
	inequitable impost on ex-Warringah ratepayers to pay down someone else's debt. There is even a case (albeit one which would be politically unpalatable) for council to use their legal ability to impose area-based charges to introduce an additional "debt repayment surcharge" to former Manly-LGA and former Pittwater-LGA ratepayers. That said, it may be more prudent to use the reinstatement of these pre-amalgamation debts as a "poison-pill" to scupper any thought of future demergers at the behest of disgruntled ratepayers. Delayed commencement of harmonisation to 2022/23: The proposal advises residents that "as an additional support for COVID recovery, we are proposing no harmonisation changes until 2022/23". The rationale for this is fundamentally flawed: by delaying the rate reduction for those currently paying more than the harmonised rate, you are actually taking away the benefit they would have received in 2021/22 as a result in the harmonisation equating to an additional burden of $55 for Minimum Ratepayers in former Warringah-LGA and an average of $101 and $78 for each Ad-Valorem Ratepayer in former Warringah-LGA and former Pittwater-LGA. As a result, you are planning TO COLLECT $6.0 million EXTRA from these ratepayers over and above what you have identified as the appropriate harmonised rate structure legislated to apply from 2021/22. And you are planning NOT TO COLLECT $5.5 million from the former Manly-LGA ratepayers, by not levying rates fairly across the Northern Beaches. So, the delay merely transfers the burden of payment from former Manly-LGA ratepayers to former Warringah/Pittwater-LGA ratepayers. However, it's also not clear to me what COVID related hardship is being addressed by delaying rate increases for former Manly-LGA residential ratepayers. Whilst the COVID related impact on small business ratepayers is clear and substantial, the impact on residential ratepayers is likely to be isolated – and therefore best addressed through the general hardship provisions. For the majority of residential ratepayers, their expenses in 2020/21 and 2021/22 are likely to be significantly lower than in the pre-COVID era: if they have a mortgage, then their interest payments will have dropped by around 3% pa (which equates to $30,000 pa on a $1 million loan), and a recent Federal treasury press release indicated that Australian households have saved more than $200 billion during the COVID-19 pandemic as a result of lower expenditure on (inter-alia) overseas vacations, arts/entertainment and hospitality. This would suggest that most former Manly-LGA ratepayers will have sufficient money tucked away in their rainy-day funds to meet the modest increases in their overall expenditure required to ensure they pay their fair (and harmonised) share of the rates.

What is your support for the introduced Scenario 4?	Please share your reasons
Support	I think the option you have been recommended to use is the most fair & equitable option for all rate payers.
Support	Seems the fairest
Don't support	I do not agree with the approach and method as outlined above.
Don't support	As above
Support	Fairness
Don't support	Is in fact a Wealth Tax
Support	Seems a fair approach
Support	Gradual harmonisation is the way to go
Don't support	As noted above
Support	This is the most fair and equitable overall, though my area could benefit more from other scenarios. Increases in other areas like Manly, which have enjoyed reduced charges to date, are somewhat moderated and less likely to induce hardship.
Support	As above, equitable charge across LGA
Support	As also mentioned above... As long as My Beacon Hill Rates DO NOT increase (which according to the video appears that mine will decrease). But feel we should all be on an equal level. Why should Pittwater (affluent area especially Palm Beach etc.) & Manly pay less than me in Beacon Hill.
Don't support	Overall council costs should reduce by running the place efficiently. Where is the bounty from council amalgamation? Bring all NBC rates down to the current Manly council level. Why raise Manly to the level of Warringah and Pittwater? Residents are feeling financial pain, why is this not shared or recognised by NBC?
Don't support	Warringah have had approx 20% rates increase since amalgamation, the other areas nil or a decrease. Now we are expected to accept delayed and scaled back decreases in our rates in order to enable continued lower rates and slower increases in

What is your support for the introduced Scenario 4?	Please share your reasons
	the other areas. Given the other areas also brought a $90m debt pile with them, NBC seems to think Warringah ratepayers are a gift that can keep on giving. So do not support scenario 4.
Unsure	As above - what has been the historical increase and associated change in rates for land values in Manly vs Warringah.
Somewhat support	Given the lowering of services in Manly following integration I wonder whether a more subjective measure of "which community is better off" should be ascribed to determine the share of rate increases. I fear that all ratepayers may argue they have not benefitted as a result of amalgamation which would require Council to have a good look at how it is performing. If I am wrong and areas and satisfaction of services in particular areas have improved then perhaps that would create a fairer allocation.
Don't support	As I have written above
Don't support	As above. It is not aligned with services and resources consumed.
Don't support	Reduce the rates of Warringah and Pittwater.
Don't support	As stated earlier, Local Council provides a myriad of services that the majority of rate payers don't need and don't want. I could easily cut Council's budget by at least 75% and the virtually no one would notice a difference....other than a dramatic reduction in their rates.
Somewhat support	As I have previously indicated, as we are one Council area we should be under one rating structure. However as the waste collection harmonisation has been previously implemented and the former Warringah area has been, since then, supporting the other two (2) areas in this area of expense this, should be taken into consideration in the implementation of the procedure.
Unsure	How is the weighted average calculated? Weighted average of what?
Don't support	See above comm
Don't support	I don't want a 25 per cent rates increase at all. It is a frequent frustration to me, generally, that council employees are so used to receiving guaranteed income that they have no idea what it is like to be out in the general workforce. Many of us have seen our businesses flounder and even disappear completely during this pandemic. I am shocked that you

What is your support for the introduced Scenario 4?	Please share your reasons
	think it reasonable to introduce this "harmonisation", especially as the only reason Warringah rates are so high is because you thought it acceptable to aggressively ramp them up just before amalgamation.
Don't support	Your average minimum rate, at present, is very very unfair.
Support	Fair and equitable
Somewhat support	What is 4 I can't find it
Somewhat support	IF the minimum weighted average rate is calculated on the lowest average land value for the whole of the Northern Beaches then that is fair. Otherwise higher land value properties will be subsidizing others.
Support	Seems like the most fair approach
Don't support	Individual units rates should be charged substantially less than single dwelling houses with the land of the same size. My rates for owning a unit in the Pittwater area have risen according to your new formula whilst every family/friend I have address checked (who lives in a freestanding house) theirs has been reduced ??? I am a single mother who does not claim any pension yet cannot afford to buy a house in this area. Where is the rate harmonisation for me???
Don't support	This minimum rate may be overstated providing Council with excess funds.
Unsure	council rates should be based on actual services provided!.
Unsure	I have no understanding of the four scenarios and/or what is embraced by "the introduced Scenario 4". In my view this is a user unfriendly Submission Form and is unsatisfactory.
Somewhat support	seems fair
Unsure	[redacted] is not on your "Calculate your rates here" list?
Don't support	Please see above.

What is your support for the introduced Scenario 4?	Please share your reasons
Somewhat support	I support there being a minimum but am wary that the range of properties that will fall into this category is great. For an owner of a small unit in a block as I am I would want to be sure these minimum rates don't increase over time without very good reason.
Don't support	Wealthier areas like pittwater and manly should pay more. Ex warringah still being screwed.
Support	Rate harmonisation is the fair and most appropriate way to ensure all residents of the northern beaches are contributing equally to our council area.
Don't support	See the reasons I provided in the Rate Harmonisation section
Support	It is a fair method.
Support	That seems to be the fairest method.
Don't support	As above. If the larger LGA resulted in savings, how come I am not a beneficiary? Where are all these savings going?
Don't support	Again, Manly residents have reaped rewards of having higher land values, yet paid less residential rates. Warringah residents would have had a number of years paying extensively more so to implement a $55 reduction just doesn't seem fair.
Don't support	The approach you have used (which appears to be using land value on land that hasn't changed in location and that has had no improvement in services) is a failed strategy. Please try again.
Don't support	It is based on land value not population and impact of infrastructure
Somewhat support	Reasonable for Pittwater and Manly but find it difficult to accept that Warringah residents have been paying a larger impost since amalgamtion and will continue to do so over the next 4 years while harmonisation continues. We have not noticibly been given any extra service or benefit over other council areas for our higher rates and deem it to be very unfair.
Don't support	Leave things as they are. You can not seriously be considering putting my rates up by 19%.
Don't support	I don't support any of the scenarios.

What is your support for the introduced Scenario 4?	Please share your reasons
Don't support	Council needs to show fair rates for residents living in([redacted]) community title estates. These residents pay for entire external community maintenance, replacement and all costs of roads, footpaths, street lights gardening etc via strata levies. Then the Council charges each resident the full cost of rates, without contributing normal council services. The council needs to reduce levies for estates which subsidies considerable cost to the council. Unless the council is prepared to take responsibility for these assets, the rates charged are grossly unfair.
Don't support	Just leave the rates alone, has anyone been complaining about rates in our area, why are you making these changes?
Don't support	Leave it the way it was. It's not broke don't try to fix it .land values increase by lot size or the closer you live to the beach .
Don't support	Scenario 1 is my preferred option. Why should 76% of rates payers subsidies effectively the old Manly council. Northern Beaches council was established nearly 5 years ago. It seems with this proposal; the old Warringah Council residents have been subsidising the other residents of Pittwater and Manly council for long enough. You want us to continue to subside them for a further 4 years. No. Change everyone's rates to the same rate effective 1 July 2021. Let's be fair about this and move forward. Please support the majority, not the minority.
Don't support	I don't believe rates should be calculated on land value. I do not see how that applies to what should be paid and smacks of being legislated so rates are easy to increase at will.
Don't support	The proposal will increase my yearly rates, while subsidising those who own multi million dollar properties. Once again, it is the working class residents being exploited at the expense of the higher income and asset owners.
Support	This appears to be well reasoned and workable.
Somewhat support	I understand the requirement to harmonise. What would be helpful to sell the significant increase for Manly residents would be some information on what the combined council is doing to drive down costs and achieve savings from the amalgamation process. Also please can you let us know what council requires for storm water management? Again $0.9m to $2.0m is quite a budget

What is your support for the introduced Scenario 4?	Please share your reasons
	increase. Is it required? Why don't you reduce the overall charge from $25 to $20 This all seems one way and at a time when everyone has take a pay hit!?
Don't support	Decrease the rates for everyone. Decrease the ridiculous wages.
Don't support	The Council should adopt a zero-budget approach, ignore the current approach from each legacy council, and define its vision. Houses in Avalon are further apart and drive more maintenance cost whereas apartments in Manly and luxurious and consume the same waste or use the same playgrounds
Support	I firmly believe that a weighted average minimum rate based on land value is a fair system within the Council area. As a single Council area, we, as residents, would be contributing to strengthening and improving all our facilities and spreading the onus of support across the whole municipality.
Don't support	When the councils were amalgamated it was supposedly to reduce costs. My rates will increase significantly because presumably Manly Council was more efficient than the others. I do not think that is fair nor in alignment with the purpose of the amalgamation
Don't support	Scenario 4 continues to perpetuate the rates imbalance between the previous LGAs and does nothing to redress the over-payment by Warringah ratepayers for the past four years.
Somewhat support	I support minimising the impact of any rate changes on all ratepayers. My preference is a cap on rate increase under the harmonisation concept to a max of 5% - ie rate harmonisation impact on any ratepayer can't be more than 5%.
Don't support	Unfair on former Warringah residents. Per the merger it is required to be done by July 2021. You have had 5 years to sort it out.
Don't support	I believe council should charge for services provided (eg per category of dwelling) and be measured on their efficiency and cost effectiveness in delivering those services.
Support	Evenly distributes the increases and decreases to ratepayers over a reasonable time frame.

What is your support for the introduced Scenario 4?	Please share your reasons
Don't support	The proposal is an unreasonable wealth transfer and subsidisation of the majority by a few.
Don't support	Please see my submission
Don't support	I still find scenario 4 unreasonably penalises old Manly residents
Unsure	Why is it necessary to phase rather than implement change? I do not understand why rates are based on the unimproved value of the land on which I reside. Does the variety, standard and quantity of services vary between addresses? Surely all properties receive and have access to equal services. Basing rates upon unimproved value of land does not even represent affordability. The property market, over which I have absolutely no control, determines land value. Even properties that stand side by side and opposite each other on the same street are rated differently, which is an utter stupidity. The only variable should be in rates collection services and I pay for two bins because there are 5 people in my home. Other homes alongside and opposite have 1, 2, 3 and 4 residents.
Don't support	Focus on reducing council costs and the obvious one is by having council staff work a 5 day week like everyone else.
Support	It should be done from 2021/2 with no transition to soften the blow. With no overseas travel on the immediate horizon, the vast majority of Manly and Pittwater ratepayers will hardly notice the increase.
Support	Seems fair

Do you have any feedback on the other scenarios considered or would you like to put forward a different scenario?

Feedback on scenarios
Leave it as is - all ratepayers pay based on their UCV's
If absolutely necessary it would only be appropriate to stage the increase of the rates to the former Manly Council residents over a series of years given the huge increase to our rates.
Yes, I would like Council to consider "Harmonisation by Reduction" as discussed in the attached submission.
Scenario 1 is the fairest
Whilst the analysis is performed on residential rates as the data is more transparent, the same logic could equally be applied to business rates, where the impact of selection of different scenarios would be relatively minor given business rates represent only 17% of the total collection, and the proposals freeze the current rate payment for both Warringah Mall and The Corso. A less aggressive stance on business rate collection would therefore deliver a fillip to businesses severely disrupted by Covid at a modest cost to council income. Focussing on residential rates collections, Scenario 2 (harmonising to Pittwater rates) and Scenario 3 (harmonising to Warringah rates) would deliver increased rate collections of $2.9M (2% increase) and $8.9M (6%) respectively. There is no justification to use harmonisation as a back-door process to increase the collection levels, and such a process is likely to be contrary to the NSW Government directive that harmonisation should not increase overall rates collections. Neither of these proposals is worthy of further consideration. Given the intent of Amalgamation was to form a more efficient council for the Northern Beaches, the 2019/20 recurrent benefit of $29.5M pa reported in the July 2020 NBC Merger Performance report is relevant. Whilst some of the savings have been handed back to residential ratepayers in the form of lower waste-charges in Manly and Pittwater ($7.1M reduction), counterbalanced by higher waste charges in Warringah ($3.1M increase), that still leaves significant headroom for savings to be passed back to ratepayers. Additionally, since Amalgamation, annual NBC residential rates charges (excluding waste and stormwater levies) have actually increased by $19.5M (15.5%), which should provide a more than adequate buffer against a rising cost-base in a low-inflation environment. With the debts from the former Manly and Pittwater LGAs targeted to be reduced from $90M to $22M by 30 June 2021, and given the current low interest-rate environment, it seems appropriate that the lower running costs are allowed for the first time to flow through into lower residential rates charges rather than balance-sheet improvement.

Feedback on scenarios
Through this lens, Scenario 1 (harmonising to Manly rates) becomes a highly attractive option: 1. All ratepayers receive either a rate-freeze or a significant rate reduction, so there will be no public opposition in the run up to the 4 September 2021 elections 2. By introducing lower rates from 2021/22 onwards (and freezing rates in 2021/22 for former Manly-LGA ratepayers), genuine "Covid-recovery support" is delivered to all ratepayers in the Northern Beaches in a timely fashion 3. The imposition of a Stormwater charge for former Warringah ratepayers can be done concurrently – merely netted off against their rate reduction 4. The lower residential rate collection (a reduction of $26.4M) is offset by $1.1M additional Stormwater collections and is well aligned to the $25.5M of amalgamation benefits that have thus far not been passed back to ratepayers 5. NBC could resume rate increases in-line with IPART rate-pegs from this lower base from 2022/23 onwards 6. With a lower cost base, Council will be genuinely incentivised to find additional amalgamation productivity savings without impacting on service provision 7. Should council have already made higher spending commitments for 2021/22, then a phased approach could be considered whereby some of the reduction is held back in 2021/22 before the full reduction is implemented in 2022/23 So, in summary, Scenario 1 – transitioning all Northern Beaches rates to the current Manly-LGA rate structure is the best option of the 4 presented. If, however, council have already made commitments for increased cost (perhaps through improved service provision) that mean that the $29.5M pa amalgamation savings are not able to be fully banked in the manner outlined above, then an additional Scenario – let's call it Scenario 5 - could be developed that would harmonise rates at a slightly higher level than the current Manly rates (perhaps Manly +5%) that: • is both achievable in 2021/22, • gives former Manly-LGA ratepayers a sense that they have "won", whilst still paying a modestly increased rate, and • delivers genuine amalgamation savings to former Warringah and Pittwater-LGA ratepayers according to the timeline envisaged by the current NSW legislation This would be a good outcome to relate to Northern Beaches voters in the run-up to the Council elections of 4 September 2021.
Scenario 1 is the fairest for all ratepayers
Simply divide the resulting deduction or increase and phase evenly over the number of years.
You could pause or delay increases for former Manly residents, but in these challenging financial times it is unfair to delay the harmonisation for Warringah residents.

Feedback on scenarios
Leave rates as they are. The amalgamation was never supported by those of us in the old Manly Council and should not therefore have to suffer any additional cost as a result. Those from the old Warringah Council have far more peaceful, wonderfully environmentally friendly space that will be vehemently defended and protected whilst we suffer the ravages of over development with fewer and smaller green spaces.
As stated above the harmonisation of rates is a way for council to cover the major bungle of the amalgamation and in doing so is punishing the Manly rate payer.
1. I want to attend a briefing session. So please open more up. 2. Yes, rates should be coming down post amalgamation which I was in favour of. 3. Why are rates going up, what is the reason? There is no explanation of why you push rates up. 4. Timing, 25% in one go? Bugger off!
If increasing rates you have to supply extra value, Fairlight is a tiny area and get nothing. Over parking with commuters over parking with ferry people, garbage bins left on street anywhere you name it out service has gone down not up so an increase is crazy
Increase the minimum rate. I understand NBC has one of the highest minimum rate charges in NSW and is reluctant to increase the minimum rate any higher, however with an ever increasing number of apartment/units being built within the Northern Beaches, where every individual dwelling demands the same level of Council provided services, the apartment owners should be prepared to pay a more equitable share towards those services. The burden of covering the shortfall in rates revenue should not be transferred to the ad valorem component of the rates calculation (the individual dwelling owners)
Base the rates harmonisation on cost of service provisions, ie a user pays model
No
A new cost benefit analysis calculator
I would like to put forward a different scenario. Costings should be based on the suburb total budget requirements to maintain infrastructure, improvements plus anticipated growth based on inflation (to cover increases in prices for these) over the numbers per household and over the total number of residents in each total municipality. Plus a small surcharge to cover the additional drain on all the suburbs wear and tear because of high incoming non residents that utilise the suburbs and then leave and don't contribute to any maintenance costs in the suburb. Plus an additional surcharge for higher domestic waste contributors. Everyone already pays for the additional services they use such as extra parking passes, building submission fees etc to council so this is extra and should continue so. what are the basic rates we are all paying going towards then, estimated land value prices has nothing to do with how much the charges will cost to

Feedback on scenarios
maintain the municipality and it doesn't account for the resident numbers of who will utilise services (for e.g. you could have a large parcel of land with only 1 resident who is a pensioner and doesn't utilise services in the area and doesn't contribute much to domestic waste, doesn't go out, versus a smaller household or even a business, who has many people, uses a lot of services and contributes a high domestic waste, brings people into the suburbs who also utilises services and takes advantage of all areas, driving maintenance costs up within the suburb), why is the person with the larger parcel of land paying for that as an e.g of a different way of looking at things.
No
If you truly believe there is a basis for giving domestic ratepayers additional support for COVID recovery, then by all means defer the planned increases for ex-Manly-LGA ratepayers and ex-Pittwater-LGA Minimum ratepayers, BUT DO NOT DELAY the implementation of rates reductions in the other jurisdictions. This would mean that NBC would need to defer ~$6 million spending in 2021/22: it would seem appropriate to either push out the schedule for the repayment of debts from the former Manly and Pittwater LGAs, or alternatively to delay selected planned capital works in the former Manly-LGA area - as they are the ratepayers who would paying significantly less than the harmonised rate, whereas other ratepayers would already be paying their fair share. The alternative is to implement harmonised domestic rates across all jurisdictions in 2021/22 in accordance with the State Government's currently legislated directive.
No
I am ok with increasing rates if there is a valid reason/services/infrastructure is delivered
No
Different scenario. Residential rates harmonisation goes ahead in full on 1 July 2021 or worst case scenario 1 July 2022 with no year on year phasing. Any adversely affected ratepayer can apply to council under the hardship provision to make their case that they cannot afford the increase. Not wanting to pay while on a huge salary or living in a multi million dollar home is not a valid reason. Given both Seaforth and Palm Beach are in the top 10 income earning postcodes in NSW, it seems unfair and unconscionable to delay reductions in Warringah postcodes due to concerns about hardship in Manly/Pittwater. The storm water charge for Warringah and expanded pensioner benefits for Manly/Pittwater should only proceed at full harmonisation point - not earlier which is what occurs in the scenario 4 examples. So harmonisation should occur in full without phasing.

Feedback on scenarios
Look at a more aligned user pays system and don't rob Peter to pay Paul. What you are proposing is merely a re-appropriation of wealth and has nothing to do with funding or improving services.
no
I'd like to see the council spending less money, as we are all trying to be more frugal, but rates just keep going up and up. Under the harmonisation scheme, I will see my rates reduce, but by a trivial amount. If the council had a smaller budget, then no ones rates needs to go up.
Business should take on board a large proportionate increase. Asset value in this category has increased considerably without the comparative rates increase. This will enable Council to provide more relief to residents in the old Warringah area.
Reduce other areas rates if necessary. Amalgamation was supposed to reduce costs so where is all the money going?
Gradual rate increase for Pittwater and Manly as proposed but Residents recieving a reduction should be immediate. We have been paying above everyone else for sometime now.
The scenarios should also take into account the cost efficiencies supposedly realised by amalgamating three councils into one. The scenarios considered do not model a situation in which rates in the former Manly council area remain stable, while rates in other areas decrease. This situation should at least be considered.
1. Leave the rates alone. 2. Move the rates to be based on a fixed amount per property, it is a silly system to base council fees on the value of land, what does the value of the land have to do with the provision of roads and rubbish removal. This system gives people particularly in units a cheaper deal as they get to use the same roads and services but their land values are much less per property. Units/ townhouses etc should be paying more as they get to use the same services but as their land value is shared they do not pay the right amount of rates to reflect their usage of council services. 3. You should take this opportunity to revise the whole system, to be a fixed min fee per property not based on the value of land and then add an extra fee based on the number of bedrooms as that equals the number of people per property you are providing the services to. 4. Finally the system needs an overhaul because places like Manly and Dee Why beach shops have heaps of tourists that place pressure on the local council services , all the residents are subsiding these services. You should ensure that landlords in these areas pay much higher rates as these areas place lots of pressure on council resources.
If we are one council, make the rates uniform now - as it should have happened at time of amalgamation.
Why would 3 bedroom apartment in Manly pay less than a 3 bedroom apartment in Balgahlaw?

Feedback on scenarios
Scenario 1 is the only scheme that fully redresses the rates imbalance between the former LGAs. It provides the former Manly residents with the smallest rate hike. It forces Council to live within it means. It goes some way to redress the over-payment by Warringah ratepayers for the past four years.
Comply fully with the sensible deadline provided under the merger i.e. 1 July 2021 = full implementation
A flat, rate per property.
Why is it necessary to phase rather than implement change? I do not understand why rates are based on the unimproved value of the land on which I reside. Does the variety, standard and quantity of services vary between addresses? Surely all properties receive and have access to equal services. Basing rates upon unimproved value of land does not even represent affordability. The property market, over which I have absolutely no control, determines land value. Even properties that stand side by side and opposite each other on the same street are rated differently, which is an utter stupidity. The only variable should be in rates collection services and I pay for two bins because there are 5 people in my home. Other homes alongside and opposite have 1, 2, 3 and 4 residents.

Gradual harmonisation

How supportive are you of gradual harmonisation?	Please share your reasons
Support	If you are going to be Screwed, may as well accept Gradual Screwing - like the Chinese Government [redacted] Tests for Covid 19
Don't support	I do not support a rates increase as I have seen a deterioration of council services during period since the council amalgamation. If absolutely necessary it would only be appropriate to stage the increase of the rates to the former Manly Council residents over a series of years given the huge increase to our rates.
Somewhat support	This concession does not change the fact that Manly landholders will pay 26% more in rates. The concession is like "death by 1000 cuts" to self funded retirees but is better than nothing.
Don't support	Prolongs the rates imbalance and further penalises former Warringah ratepayers
Don't support	As the phasing of Scenario 4 is provided in more detail, I am able to comment on the issues that arise from this inequitable transition plan – which will be equally valid whichever final rate model is selected: 1. The delay in implementation from 2021/22 to 2022/23 only delivers “Covid-recovery support” to former Manly-LGA ratepayers. As a direct result of this proposed delay, former Warringah-LGA residential ratepayers are required to pay AN EXTRA $4.5M in 2021/22, former Pittwater-LGA residential ratepayers AN EXTRA $1.2M in order to cross subsidise former Manly-LGA ratepayers to the tune of $5.7M. This is patently inequitable! 2. The proposed imposition of the new Stormwater Levy to former Warringah-LGA ratepayers in 2022/23, at a time when they are still paying more than the harmonised rate, adds insult to injury and should be delayed until harmonisation rate reductions have been fully implemented under any scenario 3. If council genuinely wants to spread rate increases (for effected ex-valorem ratepayers) out over 3 years, then it should find the money to do so ($3.1M in 2023/24 and $1.5M in 2024/25) by making savings elsewhere in the budget, rather than by imposing higher rate charges on Warringah and Pittwater ex-valorem ratepayers by delaying their rate reductions 4. Dragging out the transition limits the council’s ability to seek rate increases under the IPART framework, as this can only be recommenced once harmonisation is complete
Don't support	Phasing the changes only prolongs the rates imbalance between the former LGAs and further punishes the Warringah ratepayers

How supportive are you of gradual harmonisation?	Please share your reasons
Somewhat support	Why the gradual change? If it is deemed the more equitable approach then make a definitive decision and commit to it rather than waste time with a staged approach.
Support	With a number of people facing financial hardship as a result of 2020, deferral makes sense.
Don't support	I do not support the suggested changes to rates for any residents of the former Manly Council area.
Don't support	Unfair.
Somewhat support	If the council goes ahead with the rate rise it should be phased in. Manly is an aging population on fixed incomes after a life of working and paying taxes to have a home in a piece of paradise. We shouldn't put all Manly residents in one basket that we are millionaires
Don't support	As noted above, it's unfair that Warringah residents are disadvantaged for an extended period.
Don't support	My understanding is that the old Manly Council was operating under a financial regime which was not financially sustainable. Why should the other residents continue to subsidise this inequality
Don't support	The period for those residing in Balgowlah, Balgowlah Heights and Seaforth is way, way too short if the planned Rate Harmonisation is to proceed and should never begin until well 'after' completion of construction of the Link.
Somewhat support	the delay to implement is ridiculous - it will cost more in council admin time to implement this than it will save people the amount of saving is so small it should be enacted quickly in year 1 ideally it is ridiculous for there to be an increase in Year 1 when already said will be getting a saving
Support	Any changes need to be phased in gradually
Don't support	Unfair and would not have been necessary if the people had been listened to in the first place and the amalgamation of councils in our area had been stopped.
Somewhat support	I somehow support because i think the benefits to those who get decrease in rate should apply in year one and not be gradual over 5 years.

How supportive are you of gradual harmonisation?	Please share your reasons
	Who knows what will change in 5 years time? Thank you for the opportunity to submit my comments.
Don't support	You think we want to lock in a 25% increase and then allow you to 'phase it'? That is crap. You should NOT be getting any increase as you should be more efficient. You are asking us to vote on which option is less bad. That's just poor government and you should be DRIVING DOWN rates as you get more efficient.
Don't support	I want my discount today before rates rise at the next interval.
Support	See Further Comments
Support	See Further Comments!
Don't support	Former Warringah residents have overpaid rates in conparison to former Pittwater and Manly residents since amalgamationof council. We should therefore be paying less as compensation for overpayments and former Pittwater and Manly residents should subsidise former Warringah rates immediately and over a 4 year period.
Support	Phase in over four years
Somewhat support	Allows people some choice, warming etc With a 26% in rate costs for the same service, should have bought in Warringah, had a smaller mortgage and got the same service by Council for less!
Don't support	I don't support the gradual harmonisation over a number of years because as an amalgamated council for quite some time now, this payment inequity between the 3 previous localities has gone on long enough.
Support	Passing would at least provide some limited relief for a short time, perhaps while options to reduce rates are considered For instance the Council could give more attention to the savings promised from amalgamation and use these to provide some rate relief. This would no doubt benefit all ratepayers
Somewhat support	A new way of calculating and if it's a fair system could be implemented straight away. Ad valorem is not a fair system

How supportive are you of gradual harmonisation?	Please share your reasons
Don't support	I don't want to see inequity occur especially amongst older residents just because everything around them is getting richer
Don't support	We save a whopping $50/year. Phasing a change that small costs way more than just doing it upfront. Those who have to pay more have already had years of savings and have been carried by surrounding council ratepayers
Support	Bringing the changes to rates over a three year period I believe is practical and allows that these Price changes for those that have increased rates more time to adapt.
Don't support	I believe Council should act now to harmonise the rates, instead of requiring people with lower value properties in Warringah to subsidise people with high value properties in Manly and Pittwater. They have already benefited from this since 2016.
Somewhat support	It doesn't seem like a drastic change one way or another so I think most people could absorb the change without having to phase it in over time.
Don't support	Again, this is simply a mechanism to reduce the rates of ex-Manly-LGA Ad-Valorem ratepayers at the expense of Ad-Valorem ratepayers in Pittwater and Warringah. This equates to additional charges over and above the fair harmonised rates of $4.8M over 2022/23 and 2023/24 in Pittwater and Warringah, which are then used to subsidise the ratepayers in former Manly-LGA to the tune of $4.6M over this 2 year period. If I were an Ad-Valorem ratepayer in either Pittwater or Warringah (which I am not), I would be deeply concerned over the inequity of this. Again, if it is politically unpalatable to levy the harmonised rates in the former Manly-LGA, then don't force others to take up the slack. It would seem appropriate to either push out the schedule for the repayment of debts from the former Manly-LGA until their ratepayers are deemed to be in a position to fund their share of the harmonised rate-burden, or alternatively to delay selected planned capital works programmes in the former Manly-LGA area to match the planned under-payment of rates.
Don't support	The phasing in of changes will result in a financial windfall for the council. This is not the aim of rates harmonisation. Using the councils own calculator, my rates will reduce by approx. $46 per year. If implemented in one go, over four years I will pay approximately $200 less in rates. Using your proposed phasing in approach, over the same period I will only pay $46 less, so I would effectively be paying the council $150 more than I should over a four year period. Given the majority of rate payers will see a reduction in their rates, this will equate to a massive windfall to the council.

How supportive are you of gradual harmonisation?	Please share your reasons
	A full reduction in rates should be applied by the required date. If you want to limit the impact on those that will see their rates increase, phase in their increase over four years.
Support	All sounds fair to me
Don't support	I understand your reasons for negotiating to implement harmonisation over 4 years but I need the full rate reduction now not spread over 4 years.
Support	Then everyone has time to adjust
Somewhat support	Equalize as soon as possible.
Don't support	This rate harmonisation should be phased in starting 2021.
Somewhat support	Ideally this should date from the time of amalgamation. However Covid must be considered probably.
Somewhat support	As we presumably can't actually prevent the rate increases (despite earlier promises that rates would be reduced due to efficiencies from the forced council amalgamations), phasing them in would be financially easier to bear for those affected.
Somewhat support	I am split on this: - The change should happen ASAP, so all unfair subsidising stops - The large increase for ex-Manly may be a shock to many household budgets, whether they be owners or renters, especially those on fixed or lower incomes
Support	As above, phasing change over 4 years will reduce immediate burden on rate payers that will experience an increase in rates.
Don't support	Council has known of the rates harmonisation requirement since the council merger. There should be no reason to delay the implementation of this initiative.
Somewhat support	If this is the ONLY option I suggest you take it as many families are struggling and forcing them to sell their home doesn't help

How supportive are you of gradual harmonisation?	Please share your reasons
Don't support	The phasing shown in scenario 4 is a further cash grab off Warringah residents - in essence, delaying the rate reductions due to them from the amalgamation process - in order to support ongoing lower rates and slower rates increases in Manly/ Pittwater
Somewhat support	Great that it delays the pain.... but the pain is still coming.
Somewhat support	The longer the harmonisation is delayed the longer ex-Warringah residents will subsidise those from Manly and Pittwater. We are being overcharged and have been for four years already. I support a two year transition but not four. Six years of subsidy and excess rates is more than enough.
Don't support	I personally would prefer immediate implementation of the new structure as both the Council and I myself would know our financial position. The implementation timing should be with the consent of ALL ratepayers not just an assumption of what might be best. Those suffering hardship can seek relief under hardship provisions and the Council still knows where it stands financially.
Don't support	I'd prefer the immediate change, no phasing.
Somewhat support	It doesnt seem fair to the ratepayers who are currently paying higher rates, that the increase to ratepayers who are paying less takes so long to implement. It would seem fairer overall to implement the change sooner, especially as Manly ratepayers are already paying less than they were prior to amalgamation, so there is no real 'hardship'.
Somewhat support	maybe 23/24 commencement? I don't think the effects of the Covid19 will be over by year 22/23 and unemployment will return to lower rates by then. Another year will buffer loss of jobs & loss of business in the area.
Don't support	The reduction in my case is just 4.6%, I assume where rates are increasing the % is similar. As this amount is insignificant and immaterial the increase or decrease should happen in one year not be phased in over 3years.
Somewhat support	In my case it's not much different so won't make a huge difference when it's implemented

How supportive are you of gradual harmonisation?	Please share your reasons
Support	Again in the interest of fairness, I support gradually implementing harmonisation over four years. While this means less money in Warringah residents pocket straight away, it give the other areas more time to adjust. These changes are largely outside of local residents control, as is the expediency of the merger harmonisation. No reason to make it more difficult
Don't support	The difference is not material to warrant gradual implementation.
Don't support	Commence this year FY21/22.
Don't support	The harmonisation should occur immediately given that 76% of residential ratepayers will see a reduction in their annual rates. The properties that will attract the most increase in rates payable are those highly valuable properties, with the percentage of rate increase being only minimal in contrast to the land value and high net worth of those ratepayers who are less likely to have been affected by COVID-19. A relatively small rate increase to a relatively small portion of the population (24% of residential ratepayers) should not outweigh the reduction benefits to the greater community. If easing the financial burden during COVID-19 is the reason for phasing, then it is would contradictory to delay the reductions to the greatest number of ratepayers.
Support	It's the reasonable way of mitigating impact upon, and minimising opposition from, those adversely affected.
Don't support	It should be implemented asap. It is already 3 years late.
Don't support	When purchasing our property council rates were a consideration. Unfair to bump so substantially.
Somewhat support	I would prefer gradual increases started straight away. I understand there is only one increase for the minimum rate but even for that a staggered increase seems sensible.
Don't support	The reduction in my rates should be immediate not over 4-5 years as I have been subsidising the former Manly Council residents for years. I live in the former Warringah Council and a street from the former Manly Council. I am paying more for my rates than my neighbour however precluded from parking a block from my house as the parking is for Manly residents only.

How supportive are you of gradual harmonisation?	Please share your reasons
Don't support	If we are paying too much now then the changes for those of us paying less in the future should be adjusted now. I stand to lose another $106.52 by doing it over 4 years.
Somewhat support	Would prefer for it to happen in one go.
Don't support	The full decrease should be implemented immediately to ensure the majority benefit. Gradual haronization over a number of years will lead to extra costs due to the impact of developing and maintaining a system to do this. It will also delay any benefit to ratepayers. A one off change is needed,
Don't support	I am not supportive of skipping a year and deferring. Can we please get on and make start the process. Amalgamation is already a distant memory. We are one council area and the sooner all ratpayers are treated equally, the better.
Don't support	As above- it is totally unfair to the rate payers paying more- it just means the inequality is locked in for longer.
Don't support	Prefer done immediately again to improve council efficiency
Somewhat support	As it will allow a longer period to review the changing landscape of the area and the people in it, especially during and post a global pandemic
Somewhat support	Pittwater and Manly phasing proposal is fine but residents receiving reductions should begin ASAP. 0$ reduction in first year of phasing is very unfair as these residents have also gone through covid difficulties as well and are getting no support under this proposal. They are paying higher rate levels than other residents.
Unsure	Support for phasing of charges is only provided as a 'last resort' option. Additional charges in areas such as Manly should not be occurring at all. The scenarios considered do not model a situation in which rates in the former Manly council area remain stable, while rates in other areas decrease.
Somewhat support	Gradual implementation is better , gives us a chance to adjust our spending so we can afford this.
Don't support	Why are we waiting to 2022/23 F/Y to start the changes and phasing it in over three years. My land has been revalued by the NSW Valuer General (effective July 2020) with a significant increase of 28% in its value from the previous valuation, this was on top of a 95% increase from the previous valuation (effective July 2017). I had to cop it sweet when the council also

How supportive are you of gradual harmonisation?	Please share your reasons
	increased my rates by the same percentage. I wasn't given 3 years to phase in the increase. I was given a few months warning.
Don't support	As above, absolutely disregarding what is 'fair' to previous Warringah constituents.
Somewhat support	I consider the proposed phasing-in period to be too lengthy. As Council recognises that former Warringah ratepayers are being disadvantaged I would prefer to see this situation remedied sooner rather than later.
Support	This may help take some of the negative pressure off the Manly rate payers who seem to be the worst affected. People think Manly people are rich but most of us are just getting by like everyone else.
Don't support	It should be implemented Immediately. The annual increase is often as much as the proposed changes. The 3 councils amalgamated many years ago and it is about time that people receiving same service pay same rate
Don't support	From the informtion provided my rates will reduce by approx $26 per annum. For such a small change there is no need to gradually introduce this. I understand that other rate payers, for example residents of the former Malny LGA, will most likely have an increase and may prefer to have the changes introduced over a numbe of years. I support the need to defer the changes untill the 2055/2023 FY due to the impact of COVID. Suggest a sliding scale based on the incremental change i.e.
Don't support	The sooner the rates imbalance between the former LGAs is rectified the better. Council should have been working towards this end for the past four years.
Don't support	Why should Warringah residents to subsidise this COVID support? No phasing. You have already had 5 years top sort this out. Overdue to harmonise. Stick to timetable originally promised.
Support	As per above. For equitable reasons and allowing people to adjust to a 28% increase over time especially when most people's incomes are static - mine included. Even if it is not included in the legislation, Council should adopt this as its policy in the interests of its ratepayers
Don't support	I think the change should happen immediately. Phasing the changes disadvantage far more properties than if the full harmonisation happens straight away. Why should I have to continue paying more rates for several years compared to others

How supportive are you of gradual harmonisation?	Please share your reasons
	with the same land value as me? The estimated decrease for my rates is not huge but it's not zero and it seems unfair to make me continue to pay higher rates than I otherwise should be.
Don't support	Why should Warringah ratepayers continue subsidizing Manly and Pittwater for another 4 years? Are we being unfairly treated?
Somewhat support	To ease the burden. However this does not seem to apply to my rates. They increase in total in one year.
Don't support	Why is it necessary to phase rather than implement change? I do not understand why rates are based on the unimproved value of the land on which I reside. Does the variety, standard and quantity of services vary between addresses? Surely all properties receive and have access to equal services. Basing rates upon unimproved value of land does not even represent affordability. The property market, over which I have absolutely no control, determines land value. Even properties that stand side by side and opposite each other on the same street are rated differently, which is an utter stupidity. The only variable should be in rates collection services and I pay for two bins because there are 5 people in my home. Other homes alongside and opposite have 1, 2, 3 and 4 residents.
Don't support	If 76% of residents are getting a rates reduction, they why are we slowing the introduction of that reduction?
Don't support	I think the residential changes should happen sooner but phased over a few years. Everyone is suffering because of COVID. It's unfair that those in manly pay less and will do so for another few years. Needs to start ASAP and be phased.

Rural Residential sub-category

Do you have any comments on the introduction of a Rural Residential sub-category?
I do not support this approach.
If we want to retain rural settings, especially for the maintenance of a local food bowl, then we should support a rural residential sub-category. That being said, I can understand the complexity of attempting to separate rural residences producing food versus stabling horses for recreation - as this would require inspection.
Happy for rural rates, but based on cost of service, ie it may mean garbage, storm water elements are higher based on cost to collect / infra costs
Agreed
I don't support
I could not find very much information in the documentation about this (including within he Council report and attachment) so not sure that I fully comprehend the full scope of the issue. In any case I provide the following comment: Base rate should be charged as per land value, and subsequent charges should be as per provision of services. If this is the same for residential and rural residential then same rates should apply. Suggest that the rural residential properties should only pay less if they are getting less services. Suggest that some residential properties in the LGA would have the same land value as some of the rural properties and they would not be getting any discount. Also suggest that there are probably very few properties in Northern Beaches LGA that are actually used for 'primary production' or farming in any case.
Do not support
Makes sense as less population in an area
More information is required to address this.
Inequity, what is your definition of inequity when comparing rural residents and non-rural residents. If someone has to pay more to live in an area and receives less services or has to pay for additional services then the average rates payer, if yes, then I think there should be a different sub category. I live in what I call a rural area in [redacted], Belrose. I am 100% surrounded by bush land, living in an area where most properties are over 3 acres, I have to access my property via a 'right of access' road of approx 300m and I am on a septic system. I can't even get a land line service as the local exchange is at capacity due to the retirement villages and nursing homes on Forest way. NBN has even refused to run a service to my property. I have additional costs that I have to cover that any normal resident in Northern Beaches Council doesn't. I have to pay for the

Do you have any comments on the introduction of a Rural Residential sub-category?
upkeep and maintenance of the 300 m dirt drive, I am on a septic system and I have just been stung an additional council fee for an inspection. Even though I have Able Waste Services servicing the system, that costs $600 every two years. I have to lug my rubbish approx 300 meters from my house to the main road every week as the rubbish trucks don't drive down and collect my rubbish from my house. So Yeah, I would like to pay less rates as I don't receive the same services as normal residents, and it costs more to live in my location. I have satellite services for my pay TV and Internet. Finally, not sure if this will make a difference, NSW Valuer General zones our property as Non-Urban. Is Non-Urban the same as Rural? If it is, the NSW Valuer General has sub categories.
Do we have any rural property in Northern Beaches?

Residential form – additional feedback

Would you like provide any additional feedback? residential form
No
It appears evident there is a bias towards infrastructure and spend in the old Pittwater and Warringah council areas, which begs the question whether Manly should demerge.
Because this is an election year, all Northern Beaches Councillors have a severe conflict of interest on the harmonisation topic. All the Councillors who voted for the proposal being offered here, have failed in their duty to act with integrity and impartiality. It is an extremely cynical exercise indeed that - in an election year - those Councillors propose to hand rate reductions to the majority of NBC residents. In an election year, the only proper approach is to continue with the ad valorem rates that were in place prior to amalgamation.
I have explained why don't support the proposed models of rates harmonisation in the attached document and alternatives.
As above - If you are going to be Screwed, may as well accept Gradual Screwing - like the Chinese Government Anal Tests for Covid 19
I watched, on a daily basis, the upgrade to the road on Morgan Road Oxford Falls and if that was an indication of hour well our money is being managed, I think the Council as who needs to take a serious look at itself. A creek bank was repaired with Sydney sandstone blocks and a tared road was pulled up and left as a dirt road. On a weekly basis it had to be repaired, I contacted each of the Councillors to tell them how dangerous the road was and was left with a buck parsing exercise between the council and DMR. Even the Mayor didn't understand the importance of the

Would you like provide any additional feedback? residential form
safety of the road. After seeing the holes filled in about 15 times - I gave up until I saw a young girl on P plates bogged in a hole in the road. I don't think this is a isolated circumstance at any level of the council as the lack of responses from anyone was deafening
Council amalgamations were forced upon us without democratic process. They were branded as the most efficient way forward and clearly, through economies of scale and other measures, costs would reduce. The opposite appears to be occurring for Manly residential residents. Council need to re-look at the rates harmonisation program and present a business case for why costs cannot be reduced rather than raising rates by unfair amounts.
The government is seeking to increase the rates of the residents of Manly as a result of the forced amalgamation of councils by the Berejiklian government. The citizens of Manly had no say in this forced amalgamation of the efficient Manly Council with Warringah Council which has a record of maladministration, council sackings and appointed administrators. The citizens of Manly are now paying the price of joining the resulting sprawling new LGA with increased rates for every Manly ratepayer. This discrimination against the ratepayers of Manly is unjustified and contravenes the ruling of IPART.
We do not support an increase to our rate fees but if no other option we request that the implementation happen with as lengthy delay as possible.
It seems from these last questions about the options for implementing that you have already locked in harmonisation, so I am not really sure why you are asking if we support it or not.
More transparent advice should be given to Manly residents on the changes together with an extended time for submissions.
The amalgamation has been very disappointing, with no up side for Manly, the Manly Community are tried of not having equal say in issues.
Do away with the cynical stormwater fee.
Harmonisation should commence in 2021/22
Do away with the stormwater charge. This should be included in Council's general services and should not be used a cynical way of grabbing additional revenue.
I can't see why the rate changes should be put off until 22/23, it should be implemented in the next rate, we all have the same financial pressures.

Would you like provide any additional feedback? residential form
I would also suggest that there is a grandfather clause where our elderly are not affected by an increase - much harder for them to find the additional funds when they grew up in an age where superannuation was not compulsory (or necessarily available). Perhaps for those aged 80 and over there is a 'no increase policy' - where they have held their property for 10 years or more.
I would be interested in hearing the NSW Government's response to plans to significantly increase the council rates levied on the residents of the former Manly Council area. While a proponent of the moves to amalgamate at this time, armed now with the knowledge of the significant additional financial cost to Manly residents resulting from amalgamation, I would argue for Manly to once again become its own Council area. Manly should not be forced to subsidize residents of the other two former council areas. That is an unequitable outcome by definition for te former residents of the Manly Council area.
A significant disappointment in this exercise is the fact that there does not appear to be any consideration given to reducing the overall rates collected and hence trim the expenditure budget. Cost savings was one of the main advantages pushed by the State Government. Apart from waste collection savings there are no other apparent attempts to save and thus reduce the overall amount gathered from rates. In Manly we are looking at an increase of approx 26%, albeit phased, on the basic ordinary rates (using my own rates as an example). Rather than us fund an apparent inequity across the council area I can see no evidence of attempts to reduce costs overall and hence reduce the additional charge to Manly residents, which may be justified on the basis of equity. I recall reading feedback from Michael Regan disputing some negative press regarding the benefit of the merger and pointing out some of the benefits. The problem is that all apparent savings appear to have been used to increase infrastructure and reduce debt but nothing about reducing the overall amount of council rates collected. In fact your rate collection will be increased both by the routine ad valorem amount increasing each year by CPI (which I assume you will continue to implement) and possible Land Value increases in 2022. One final observation, whilst you have a consultation period, I cannot see a period to allow for amendments to the current proposal if the responses deemed it necessary. Are councillors going to review the responses?
I was deeply disappointed to discover that what seems to be a significant commercial development in Lewis Street, Balgowlah Heights with a residential property adjacent to the primary school being converted to a large pre-school business with significant underground parking, although apparently not enough to cater for the proposed business, was only directly advised by Norther Beaches Council to the nearby residents in Lewis Street. The traffic volume in this area for the primary school is already severely testing the limited amount of street space. The heavy construction traffic required for this project will have a significant negative impact on the Balgowlah Heights area (and must also surely pose a significant risk to the safety of teachers and children at the primary school) as will the increased traffic for the completed pre-school. Surely such a large commercial development in a residential area should have been advised to residents of all surrounding streets rather than a handful of homeowners in Lewis Street
Since the merger of Manly council with Northern beaches council it seems like all the suburbs are considered the same whereas the population difference and commercial nature of each suburb should be considered before any rate changes are considered.

Would you like provide any additional feedback? residential form
No
Before the amalgamation of the 3 councils which council pays the least?
I have outlined above our primary objection to Rate Harmonisation, however I would add that none of us is naive enough to believe that shortly after construction at the very latest there will be a State Government push to severely increase population on the whole Peninsula, but particularly those suburbs closest to the Tunnel Link to raise sufficient revenue from tolls to justify the selling to a private contractor. Namely Manly Vale, Balgowlah, Fairlight, Manly etc will be the primary high rise demand areas. Secondly, privatisation of the Beaches buses will both increase costs, and limit schedules. Yet another negative to the area. Thirdly, the Link will facilitate a huge increase in weekend traffic from outside the Peninsula, particularly in summer, as evidenced this past Australia Day chaos at Clontarf, Manly and many other beach and water suburbs. These are just three additional considerations. There are many more, but time does not permit. I trust that Council will truly hear our valid concerns and respond accordingly. I thank you for the opportunity to be be heard, so much more welcome than the approach of the current NSW State government! Thank you. [redacted]
support harmonisation - just dont support the approach - too slow and cumbersome
Is this a done deal or are you really looking for customer feedback and will take notice of objections. We are in hard times at the moment and even with implementation delays it is uncertain that Manly residences will be able to cope with added unnecessary monetary burdens.
I see great benefits in the amalgamation of the councils however a 24% increase in rates (on an already significant increase in valuation from the valuer-general) puts may long-term residents in a difficult situation. This, coupled with all of councils identified capital works programs for 2021 (except roads and stormwater) being outside of ex-manly does not seem to match with councils objective of providing a fair and equitable system.
The fairer rating system as per your letter 25/01/21 sounds OK the way its put in words however when each and every rate payer circumstances is different it effects more some than others as I am now experiencing.
I somehow support because i think the benefits to those who get decrease in rate should apply in year one and not be gradual over 5 years. Who knows what will change in 5 years time? Thank you for the opportunity to submit my comments.

Would you like provide any additional feedback? residential form
This is the most eggregious cash grab taregeting only Manly residents. Disgrace. Shame. Poor Government. I am writing to James Griffin and Zali Steggal. Your Mayor Regan is a joke.
These potential rate increases are totally unacceptable. We cannot afford to pay these huge rates any more.
In our Area of the former Manly Council consider the following. Roads have required repairs for a considerable time, Potholes! We don't have kerbs & gutters nor footpaths. We & School Children walk to the local Bus Stop on the Road or an uneven & sometimes impassable Verge.
In Manly our Rates seem to be increasing by about 20%. Rates have probably been kept low by not providing services! Roads have many unrepaired Potholes. We don't have Kerbs. We don't have Footpaths! We & School Children walk to local Bus Stops on the Road or an uneven & in areas impassable Verge. Increased Rates must include updated Facilities!
See document attached.
At the merger of the three LGA, the Administration at the time adopted a policy to provide the same level of service across all three LGA, and adopted whatever was the highest or best practice as the new standard across all three, a sensible decision at the time. However that probably reduced the number of previously identified savings from the merger and has meant lower synergies and savings. It would be a popular outcome for RATEPAYERS to see a review of the level of service provided by Council and question whether there is a case to reduce levels of service or shift the burden of who pays more towards the user and not necessarily the ratepayer
The introduction of the proposed harmonisation of rates will increase the Council rates of most of the properties in the Manly area. The implementation of this proposal during the Covid -19 pandemic period is the most irresponsible action that any government organisation or a local Council can introduce! To assist its residents during these difficult times, Councils should consider reducing rates instead of increasing them.
I have not looked at the effects of harmonisation on local businesses, however it is possible that the delay to any changes until 2022/23 to lessen the impact from Covid might be a well considered idea.
The Government has recognised that rating residents on land value is inequitable and had this confirmed by an IPART enquiry. If the Council are truly interested in equity that would be pressuring the government to adopt the IPART recommendations.

Would you like provide any additional feedback? residential form
The approach recommended by IPART is not radical and is in fact used in several other states of Australia
Why are you only attempting to harmonise rates now and not years ago? In your survey why don't you allow for people to own properties in more than one LGA area?
When harmonization is used to penalize more efficient former Council areas to financially support less efficient ones it is rewarding inefficiency.
It should occur now at end of this current ft. (Fy21).
See attached file.
The process should have started a long time ago. It is hard to talk about rate harmonisation when the council provides no information on who pays rates and those people/organisations who are exempt from rates. Rates are important. The council should explain why people are rated differently, something this review is partially doing, and who has rate exemptions. A map showing land holdings and rates paid and exemptions/reductions would be an excellent start.
No
This is an updated response. Please retain the initial comments that I made in my initial response, but override my initial radar-button responses with the above, as I did not understand the nuances of the proposal.
When Council elections are held in September resentful Residents and Ratepayers will make their feelings heard.
No
The rate harmonisation creates fairer rates for everyone. Delaying a decrease for warringah residents means they cover an additional financial burden for longer whilst ratepayers that have already received discounted rates for years continue to do so. Everyone has been impacted financially by covid so why discriminate against one set of ratepayers?
Implement quicker
Have you considered the cost saving of not having the beach parking permit for residents? Maybe it should be optional and those who opt in, are charged a small fee.

Would you like provide any additional feedback? residential form
Given the consolidation into one Council effective rates per household contribution should be going down, not up.As more people live in Manly area, per capita contribution is already higher for this jurisdiction. Positioning this as a 'fairer system'- without providing all the facts is somewhat mis-leading to the Northern Beaches public.
No
I believe there should be fairer system / fees for one bedroom unit with one resident which pays the same as a three bedroom unit with five residents.
We should begin ASAP.
I don't think the Council should be paying for protection from ocean erosion in low lying areas.
Stop NOW!
No
I'm assuming this entire 'feedback' initiative is a charade because the rate increases will happen whether Manly rate payers object or not.
Council needs to be more efficient and effective, stop the massive waste of money (was that not the point of amalgamation of councils?) and deliver services to residents. I have certainly not had any improvements in service delivery and yet you continue to want more money!
We would really like to see this more fairly implemented right across the beaches not the former manly residents lumped with what seems like all the extra to pay and cover
No
People with units under 50sqm shouldn't have to pay rates.
No warning of this change was given in the run-up to the consolidation. What makes land value the fairest means of spreading the Council costs ? It takes no account of differentiated cost of provision of services between the the previous Council ares nor does it take in to account the different per-capita cost of provision between the previous Council areas.
How is there nowhere to recycle clothes and other material, why are paper cups hard to recycle. Recycle bins around the beaches are just filled with anything. Pavements are uneven

Would you like provide any additional feedback? residential form
Roads not in great shape And you ask for a rate increase but no promise of enhanced service
Jut to reiterate when efficiency harmonises with inefficiency then in the case of the Northern Beaches Council inefficiency wins.
Please see attachment
Was disappointed to see from council's numbers that Warringah residents have had nil financial benefit from NBC amalgamation. Their rates are up 20% and cash accumulation has been used up mainly to pay off the $90m in debt brought in from Manly/Pittwater. Seems somewhat bold faced of council for them to the expect Warringah ratepayers to support deferring and scale down of small rate reductions currently due - that were part of the initial amalgamation legislation - to allow Manly/Pittwater to keep their lower rates for longer.
No
Basic infrastructure is needed on the beaches basic stormwater, pedestrian safety is totally ignored.
I appreciate there will be no change to the methodology as a result of this process. I understand there probably is a need for harmonisation based on a principle of the same payment for the same services. I do however believe the process has been less than transparent - Council benefits from allowing ambiguity over the "combined" benefit even though they have created a calculator which delivers the "bad" news to Manly ratepayers. If service levels had not appreciably declined I would have accepted the result without feeling the need to comment.
Yes - amalgamate with Mosman.
It really is a big disappointment to see council rates being used as a wealth tax and taking money out of one residents pocket and putting it in another without any additional money going into the council to improve and increase services.
It was disingenuous to attempt softening the blow by stating that Manly residents had a decrease in overall rates due to waste removal savings. Wasn't it always the goal to reduce the cost to residents by having a larger more efficient council? I assume, this benefit was delivered to the other council areas too and was not a benefit limited to Manly.
Start transition in 2021/22
What you have done is singled out Manly ratepayers as somehow taking advantage of the local council rates.
Thank you for the briefing at Council Chambers on the 9th February.

Would you like provide any additional feedback? residential form
Thanks for reaching out and asking for input.
Running a council business should cost close to the same across all branches. Not based on land values. Please advise why the the business doesn't have a budget forecast for the year ahead and then the cost to run that business divided out based on the portion each resident holds? The cost breakdown of running the council should be laid out in the communications to rate payers at the beginning of each year to understand where their contribution is going.
Implement the changes ASAP, and dont phase/ gradually ramp up the introduction - get it all done asap.
Don't raise my rates. Become more efficient, like Manly council was.
thanks
We would be happy to pay more in rates is we were able to have the same amenities as mainland owners. Running water and a sewerage system are absolutely mandatory and it is unbelievable that in this modern age, we still do not have these facilities. These needs to be pushed through straight away.
We live in Manly. Most of the Council's work is done in keeping the Corso and Beach and their surrounds clean. Commendable. But: Having lived here for many years I can't recall the Council undertaking any work of substance which assists me as a rate payer but we continue to subsidise the tourist areas. When do we get value for our significant rates that we pay which I note will now increase by 19% under the guise of 'harmonisation' which really is gouging.
$17000 for one property is rediculous and a rip off
Rental incomes have suffered due to Covid, disposable income is almost gone hence the hospitality industry in the Northern beaches is in desperate state of affairs. To increase the rates for Manly to subsidize the other areas in the NB is not fair
Just get on with it and do it in 2022, don't phase it in.
nil

Would you like provide any additional feedback? residential form
It seems like a fairer system for all and gradual implementation does help people get use to it.
I think additional consideration should be given the hardship conditions with long term, retired residents with fixed lower incomes and legitimate hardship getting more support
I'd like to see the council implement a tighter, smaller budget.
Roll out over a shorter period (3 years).
Don't do this!
I approve of this consultative and open approach.
In my view this is a user unfriendly Submission Form and is unsatisfactory.
It should be started in 21/22 and backdated to 17/18
I think I've commented on this above.
Manly council was the most efficient that's why it was cheaper. Now I have to pay higher rates plus almost ten thousand in land tax. I rent where I live and rent out my old family home as I could not afford to live there. It all goes in tax, how am I to survive, the rent is my only income. In the end taxes will make me sell! Thanks NBC and the state government.
Yes the reduction of$42 is poor wont notice it and i bet is not fairly distributed at all.
Make the changes now, enough is enough!
No.

Would you like provide any additional feedback? residential form
Council should provide the residential population of each Council prior to amalgamations and rate incomes p.a. This would show which residents didn't attribute fairly in the past and could back my argument that scenario 1 is the best solution.
Please just get on and do it.
Please consider the impact these changes have on everyone. 27% increase in my rates is too much of a cross to bear.
Just because you outline different options doesn't mean they should be implemented. It is unacceptable to increase rates unless there is a material reason to do so that delivers additional value or services. I have lived here for [redacted] years and a further [redacted] in Dee Why If this goes ahead it will be time to move away form Northern beaches council as it will simply be unaffordable in my circumstance. The additional thing is the stress this causes. As a resident I am already dealing with impending tunnel that will be very disruptive and change the very fabric of the beaches. The cecesion of the Freshwater class ferries. I understand both these are state government actions but your rate proposal is just another thing to contribute to this stress. My council is meant to be looking out for me, you are elected by me and I did not elect you to have my rates increased. I would like to know the name of the person who proposed this idea. Lets under stand their motivation and what interests they have instead of hiding in in the faceless northern beaches council.
However, would like to use this forum to raise the ongoing dissatisfaction at the rates we pay in the [redacted]. This is a Community Plan title. Roads and estate are private and managed via residents' annual fee contributions. The council does not do any of this. All that we get is storm water drainage and garbage collection. Yet we pay the same rates as someone in the area that is NOT a community plan. How is this fair?
Mayor and councilors need to host meetings for people living in community titles to receive feedback and a constructive way of moving forward
We do not have unlimited amounts of money to be able to fund new government taxes. I do think you should move away from land based rates to fixed min rates per property plus a bedroom fee to reflect the number of people living in a property. Then everyone pays fairly. People who have higher land values never knew land would go so high in value on the northern beaches and may not necessarily have the income to support your proposed changes in fees.

Would you like provide any additional feedback? residential form
I do not support the implementation of ANY initiatives that increase the fees required to be paid by individuals with lower value properties. Rates should be based on the value of the property as this determines how much the land/property owner can afford to pay.
It hasn't been made clear why the disparity. What did former Warringah council get for the extra amount they paid? Certainly not much of a town centre in Dee Why. As a former Manly ratepayer I would have preferred to keep the old rubbish service, which was much better, friendlier and more efficient than the current outsourced service. So my objection is that it seems we will end up paying more to get less. Lose, lose for Manly people.
Thank you for providing the opportunity for ratepayers to provide feedback.
Why is the submission form so difficult to find? Why is there not a link next to the area showing the current number of submissions?
I understand the requirement to harmonise. What would be helpful to sell the significant increase for Manly residents would be some information on what the combined council is doing to drive down costs and achieve savings from the amalgamation process. Also please can you let us know what council requires for storm water management? Again $0.9m to $2.0m is quite a budget increase. Is it required? Why don't you reduce the overall charge from $25 to $20 This all seems one way and at a time when everyone has take a pay hit!?
Yes- the whole point of amalgamating the Council was to reduce costs and become more efficient. When you see a proposed 25% increase to 'harmonise' then something is wrong. Clearly the amalgamation has led to no economies of scale and no effeciences. Surely that has to be looked at ? Who's driving a Cost Out Consolidation programme? If this was running well then you would not need to increase rate fees. It worked well before - bring back Manly Council !!
No
please see previous comment
The staged implementation of the rates harmonisation process continues to penalise the former Warringah residents by having to pay higher rates than their Manly and Pittwater counterparts. It does nothing to redress the over-payment by Warringah ratepayers for the past four years.
No
Not fair to delay. Current rates unfair and have been for 5 years already. No delay or phasing. Implement 1 July as per original deadline.

Would you like provide any additional feedback? residential form
No thanks.
I'm surprised that a Liberal state government is pushing this type of socialist policy. There is a big contradiction in the proposal, you start off saying someone in DY should pay same as someone in Manly, I would agree with that. But then your policy is to have higher costs for those with higher land values.
Any legislation should place a limit on Councils ability to increase rates in a given year. A limit in the order of 5-8% pa max should be implemented
Don't do it. Some Council Smart Alec has come up with a totally ridiculous and unfair way to increase Council revenue. We, as retired property owners with virtually no income, are already being slogged with unacceptably high Rates. Don't look for sneaky ways of increasing them. Mr Wong tried to do this every now and again and he was continuously shut/shot down by unhappy Manly Council area residents, of which I have been one since 1993. DESIST!!!
The Council's interpretation of equality and mine are quite different. Equality means that each ratepayer pays approximately the same amount since the benefits are the same, independent of land value. The unfair methodology used is historic and I understand it cannot easily be changed but it can be made fairer with my suggestions. It is noted that Ipart recommended changes to the system which the Government refused. Councils have until 5 February to make submissions which could make the system fairer.
Get efficiency gains as promised and bring Pittwater and Warringah rates down to Manly levels rather than increase our cost of living...has this been considered..? smaller govt rather than empire building.
Why is there no commentary about the unfair burden on Warringah ratepayers?
Why is it necessary to phase rather than implement change? I do not understand why rates are based on the unimproved value of the land on which I reside. Does the variety, standard and quantity of services vary between addresses? Surely all properties receive and have access to equal services. Basing rates upon unimproved value of land does not even represent affordability. The property market, over which I have absolutely no control, determines land value. Even properties that stand side by side and opposite each other on the same street are rated differently, which is an utter stupidity. The only variable should be in rates collection services and I pay for two bins because there are 5 people in my home. Other homes alongside and opposite have 1, 2, 3 and 4 residents.

Would you like provide any additional feedback? residential form
If most residents are getting a rate reduction then council should be speeding up this process and looking for ways to support residents in hardship rather then a delay for all residents.
Rental reductions from closure of council offices since amalgamation needs to be thoroughly reviewed.
Can you please publish the total support (in $ millions) given by Warringah Ratepayers to ex-Pittwater and Manly ratepayers from the commencement of the Northern Beaches council to your proposed finalisation of harmonisation in 2027. I'd like to advocate redirecting those funds into developments that benefit ex-Warringans - perhaps by delaying the new SLSC premises in Mona Vale and Manly (inter-alia) and bringing forward the re-development of the library/old-council offices in Dee Why into a modern precinct - perhaps even by developing the whole-of-council-area sporting facilities that are identified as needed but not even timelined in a recent strategy document.

Submission form - Stormwater Management Service Charge

Level of support for stormwater charge	Please share your reasons
Don't support	To my knowledge, Warringah had an Environmental & Stormwater Special Rate levy (ESSR) which became a permanent full rate increase of 3% (?) for environmental and stormwater works when the levy was wound up about 8 (?) years ago. This permanent rate increase to Warringah residents for stormwater is still there and being paid to general revenue and hopefully being allocated to stormwater management. If a new SMSC is levied then at least a 1.5% decrease in permanent rates should be made to Warringah residents.
Don't support	There is inequity in the way this is being charged. $12.50 a strata but only $25 for a single dwelling?! 10 strata units the size of a large house pays $125.00 and said house pays $25? Plus, I feel the cost of these projects (if absolutely necessary) should come out of the rates amount we already pay. There are various projects being constructed and delivered around the northern beaches that seem rather frivolous or unnecessary, so clearly there's plenty of money to go around for the necessary projects (just not the 'nice to haves').
Don't support	Extending the Stormwater Management charge to former Warringah-LGA ratepayers will increase rate collections from these ratepayers by $1.1 million pa. As the intent of the change is to harmonise rates across NBC, and the incremental cost is low for each ratepayer, I have no objection to the concessions being harmonised ONCE THE HARMONISATION OF THE MINIMUM AND EX-VALOREM RATE PAYMENTS IS COMPLETE. However, council is proposing that the Stormwater Management charge is levied on former Warringah-LGA residents from 2022/23, and in 2022/23 alone, the Ex-Valorem ratepayers in the former Manly-LGA will be underpaying against the harmonised rate by $3.1 million. So in reality, the introduction of the levy in 2022/23 is just a mechanism for former Warringah-LGA ratepayers to cross-subsidise former Manly-LGA ratepayers. This is a breach of the fairness principal underpinning the levying of rates. By all means harmonise the Stormwater Management charge, but only once harmonised rates are being levied across all categories in all LGAs.
Support	We absolutely need to maintain/increase our improvements to stormwater management. Our beaches and particularly our inner harbour areas are a disgrace after storm events and it is not appropriate to simply put up signs saying do not swim for X days after storm events. The usual impact is on children who do not consider how dangerous the pollutants are after a storm. Little Manly Beach and Manly Cove are perfect examples. Clearly, Warringah area has not provided the "heavy lifting" that has occurred in Manly and Pittwater. Rate Harmonisation is set to seriously impact Manly. Although Stormwater fee is a more moderate expense it must be

Level of support for stormwater charge	Please share your reasons
	shared across all areas of the Northern Beaches. It is a little discouraging to note the lower extent of stormwater management in the old Warringah area.
Unsure	Council are great at charging for services that take way too long to eventuate. And they make some costly choices on some services already provided.
Support	We all share the stormwater problem and we need to all share the costs.
Don't support	Our rates in Palm Beach are very high and at present unfair compared to the other parts of NB Since amalgamation we've been promised our rates will go down! I am 69 and paying far too much rates - ALL the leaves that gardeners blow into the streets go straight to the beach. Should be BANNED. Our drains are FULL of leaves and debris and goes straight into the swimming areas at the beach specially in kiddies corner where young children swim. After rains our beaches are filled with leaves, and rubbish. It's a scandal that our beautiful beaches have been in this state for so long. I've been a resident here since 1980 - and its never changed!
Support	We need to keep our storm water ways working properly to stop any unforeseen problems & it's only a small amount for households to contribute to the project
Support	Ok with a standard approach
Somewhat support	Agree work on stormwater drains is definitely required, but amazed it's not part of standard rates as they stand nor why 'fat' from existing rates cannot be reassigned. The council speaks on wishing to save their ratepayers money yet at every turn look to increase rates. I'm very sure there are many unnecessary expenses (car allowances!) that can be reallocated to the betterment of our community and environment.
Don't support	Do not support this charge being imposed on the Warringah area this charge whilst the council is proposing to defer the rate harmonisation process. which will result in a decrease in the rates Warringah Council area.
Support	These projects need to be adequately funded
Support	It's a minimum cost of harmonisation. It's for a good cause. It's best for all to have an adequately funded Council.
Support	simple fairness

Level of support for stormwater charge	Please share your reasons
Support	Ensuring stormwater is managed is the whole community's concern, especially as our climate is changing and producing an increase in storm events. Everyone is affected, even if not directly at their property.
Support	It is necessary for our environment and will be a fairer system.
Support	The stormwater drainage system is in dire need of upgrade. To service only 1.2km out of 640km is shocking. I personally have a major stormwater drainage issue which council is now ignoring after making many promises. There is clearly no funding so they are taking the risk that people like me won't take them to court and just keep fobbing me off. Disgraceful. It's time to fight my battle but at least I see why they are reticent to help.
Don't support	Another form of tax that will never be capped at a set amount of dollars, the councils where forced together to save us money ,that never happened and this is not saving the residents anything
Don't support	We already pay too much for rates. The council has already reduced our waste each week for very little decrease in payments. There is no scheduled work for our suburb, why should we pay for work in other suburbs. Seriously a levy on residents during a pandemic!!
Support	Storm water management is important, it needs to have dedicated funding
Don't support	Council rate rises have already been significant to ex warringah residents. Council seems to be spending more & more on "nice to have services" ie. the most expensive kids parks with rubber mats /lounge chair swings etc. eg. Collaroy. Replacing perfectly functioning street signs to say "northern beaches"is another example. It is possible to divert funds to key services such as stormwater & prioritise this given COVID impacts on businesses/unemployment etc.
Support	I am in former Warringah area and agree with the expansion of the stormwater charge in a harmonised way across the Northern Beaches. With enhanced climate change risks in our coastal area, expanding works will need a consistent approach.
Don't support	You cant keep asking for rate increases and then asking for all sorts of additional subsidies for providing services.

Level of support for stormwater charge	Please share your reasons
Somewhat support	With amalgamation management savings should flow through to the waste charge as well.

What, if any changes do you suggest? Stormwater charge

What, if any changes do you suggest? stormwater charge
None in Warringah as we had a permanent rate increase to cover stormwater - keep Pittwater and Manly levy
Be much more delineating and careful with the budgets and chosen projects. Take not one cent of our hard earned money for granted, and don't bite the hand that feeds you.
Delay the imposition of Stormwater Management Service charges to former Warringah-LGA ratepayers until all ratepayers are paying their true harmonised rates, which would be 2024/25 under the council's current proposal. This will cost council $2.2 million over two years. Defer some spending in 2022/23 and 2023/24 to allow this to happen, either by pushing out the schedule for the repayment of debts from the former Manly and Pittwater LGAs, or alternatively through the delay of selected planned capital works in the former Manly-LGA area.
Cut CEO wages and their administration personnel which is scandalous - why do we need so many people in council on high wages and even company cars? I noticed the CEO in council keeps putting their wages up - and gets the same as our prime minister! What a joke. Put that towards storm water. Everybody I know is angry -
The councils must be actually doing checks on all regions concerned & report in the Northern Beaches letter what areas they have worked on.
The charge should only be applied to Warringah at the last stage of rates harmonisation - not the first stage shown in scenario 4. So the first rate decrease due to Warringah since amalgamation gets reduced/eliminated by this new charge? Outrageous. Just another way council can keep charging Warringah where the bulk of people live at high levels. So it should only come in as the last step of harmonisation. Let's face it stormwater work was and is still bring funded in Warringah but just out of the general high collections from Warringah ratepayers. Please note: WITHDRAW my earlier submission as have now been to info session and can more clearly see what is going on with council's numbers - and not impressed!

What, if any changes do you suggest? stormwater charge
I'd love to see action taken on residents who overfill their red bins so that they spill onto the ground when wind blows lids back, or spill when they are raised to be emptied into the truck; or have birds peek at the contents and spill the rubbish onto the street and gutters ....leading to stormwater drains. Warn then fine repeat offenders which would raise revenue and assist in reducing pollution. In turn, residents who refuse to purchase a second red bin...or reduce their waste and recycle effectively will need to change their ways immediately instead of thinking their behaviour is acceptable. These arrogant, selfish need to understand the environmental impact this rubbish causes and where it all ends up. Rangers / rubbish collectors could sticker the warnings onto overloaded red bins.
The Stormwater management service charge should only be applied to the Warringah Council rate payers in conjunction with the rate harmonisation process.
If stormwater management is part of Council's responsibility, I don't see why a special rate is needed. It should be a part of the general annual fee. I would also like to be confident properties not currently connected to the stormwater are if needed eg mine in [redacted], Mona Vale.
Take better responsibility for your customers and their stormwater issues. My whole street had their property values lowered by hundreds of thousands of dollars and their home insurance skyrocket as you suddenly deemed us flood prone without doing anything about it. High on a hill the only thing we would be flooded by is stormwater so you are clearly not doing your job.
The Federal government should fund these projects that protect the environment , over 50 years what have the council done with the money to address the pollution from curl curl lagoon , ?
Sort the money wastage and disorganisation in / by council before you levy the residents.
Only issue is to ensure the extra funds raised in Warringah are primarily directed to Warringah based projects, so that there is fair distribution. Due to the proclivity of well resourced former Pittwater residents to take legal action against council for their specific issues, the general Warringah ratepayer needs some protection and assurance from council of fair treatment.
Stop outsourcing jobs hire and pay general workers and individual contributors better and reduce management and executive pay that contributes very little as policy is in councilors hands.
I would suggest that a final charge of $22.50 ie a 10% reduction for those currently paying it should apply.

Submission form - Pensioner Rates & Charges Concession Policy

Level of support for the draft Pensioner Rates and Charges Concession Policy.	Please share the reasons for your rating
Don't support	My reading of the discount is that anyone eligible for a Pensioner Concession Card will receive the discount. As the value of the primary place of residence is excluded from asset assessments, this means that relatively high net worth individuals, sitting on significant assets will be eligible for the discount. It is not clear from the summary of existing voluntary pensioner concessions why it is anticipated that 853 ratepayers would be eligible for the rate concession whilst 6,080 ratepayers would be eligible for the domestic waste charge concession. However, given the incremental cost of $189 thousand is small, I have no objection to the concessions being harmonised ONCE THE HARMONISATION OF THE MINIMUM AND EX-VALOREM RATE PAYMENTS IS COMPLETE. However, council is proposing that the pensioner concessions are given to former Manly-LGA residents immediately, whilst the increases to ex-Valorem ratepayers are gradually introduced over time. This is a breach of the fairness principal underpinning the levying of rates. By all means harmonise Voluntary Pensioner Concessions, but only once the individuals concerned are being levied their fair share of council rates and the rates for the ratepayer in question have been fully harmonised. As a simple example, an aged attendee from Manly of one of the recent consultation sessions was complaining that his rates were scheduled to increase by ~$700pa which he saw as preposterous. By implication his property has a land value of $2-2.5M and a total asset value of over $4M (which he saw as irrelevant to the discussion). However, should he be asset-rich and cash-poor, it is not inconceivable that he would be eligible for an increased pensioner concession of $204.40 – an increase on his current concession of about $175 - which given his rates increase is proposed to be amortised over 3 years would almost fully offset his first increase in 2022/23. This would not seem to be fair and equitable when compared to similarly situated residents in the former Warringah and Pittwater LGAs.
Support	Living on an aged pension as my wife and I do can be done, however it requires careful budgeting. The $50 a day we each receive must cover medical, food, home maintenance, utilities, rates, transport, clothing and all other expenses including unexpected (and with luck only occasional) major financial upsets. Therefore any pensioner concessions that the Council can extend are greatly appreciated. They help us to maintain our financial balancing act and continue to live with dignity in our home which is so central to our lives.

Level of support for the draft Pensioner Rates and Charges Concession Policy.	Please share the reasons for your rating
Support	it is fair for all
Support	I believe ALL eligible pensioners should be entitled to a concession reduction. I recently became a pensioner and applied for my Rates concession to have to jump through HOOPS to obtain part concession as my home is in 2 names BUT I ONLY LIVE in the house and PAY ALL bills associated with the house which I mentioned on form and on phone. This should be made easier & less stressful. I was told I had to have a solicitor letter from my brother to say I pay ALL bills.. (just too difficult to organize) then I was told I had to fill out a HARDSHIP FORM which of course wanted my financial details and my brothers...(which was not going to happen from him) Actually nearly as stressful as providing all information to Centrelink to obtain Aged Pension in first place so why Council would need me to fill in ALL that information which is private information. I advised staff I was NOT claiming HARDSHIP just requesting allowed concession. We came to agreement of my allowed part concession which I'm thankful for...
Don't support	As a pensioner, age [redacted], who has been living here before pension age, and after, since 1977, and have been paying rates , I object now to being charged an extra $480 pa, on top of the $2332.83 I already pay. Resident: [redacted]
Somewhat support	Support the harmonisation but do not support scenario 4 .
Unsure	Will the age limit for age pensioners change or will it be for pensioners under retirement age only. Will pensioners over the age of 67 get the concession?
Don't support	This should be for all Centrelink recipients, not just aged pensioners who fit into the selected categories. It looks too onerous on council to administer. It does not look simple. And it discriminates against lower-income people who may have a hard time raising funds for rates. Look at the Centrelink pensioner rates - aged pensioners receive much more from Centrelink than JobSeeker or Parenting payments. Help all people, not just pensioners.
Don't support	I don’t understand a word your saying from all your gobbledygook. I think you are trying to confuse us pensioners and ratepayers in general by saying it will fairer when it won’t be. It seems to me that pensioners will be worse off under your new scheme and by that I mean the council is scheming to pay us less. I live on just 103 sq metres in Manly and

Level of support for the draft Pensioner Rates and Charges Concession Policy.	Please share the reasons for your rating
	my rates will go through the roof as they already have. I will lose whatever pensioner concession I get through your planned rate hike over the next four years!!!!
Unsure	My current Pension Rebate is more than the proposed. WHY?
Support	We live in the previously known Warrigah council area. Don't want to se our concessions reduced
Support	Simplifying the basis for these costs/savings for existing and developing domestic and commercial sites. Should allow simple annual rate adjustments across all rate paying properties. Justification may require amendment to the initial base figures if they are found to be at variance to the actual annual costs Council experiences. The management of this new basis for rates will require a clearly independent body, not run by Council or political biased person/s.
Support	Agree that extending the most generous Warringah pensioner concessions to the rest of the area is the right way to go and not a huge impost on the budget.
Unsure	Maybe I'm dense, but the above chart makes no sense to me. I've looked at my current rate notice and I received a rebate of $304.40 (an "old Warringah" resident) - is this the concession you are talking about - and if so, where does $150 come into it.
Don't support	The new policy excludes Age Pensioners from Council's Voluntary Pensioner Concessions. This discriminates against Age Pensioners who should be included in the voluntary concessions or at least Council should clearly justify their exclusion. Are Age Pensioners in the former Warringah Council area excluded from receiving voluntary concessions?
Support	Being a pensioner relying soley on the pension i need as much assistance as i can get. If it remains as it is i can budget.
Somewhat support	I do not agree with inclusion of the subsidy for waste management.

What, if any changes do you suggest? Pensioner concession form

What, if any changes do you suggest? Pensioner concession form
Delay the increase to Pensioner Concessions in the former Manly-LGA until the domestic rates harmonisation for former Manly-LGA ratepayers is complete, and they are being levied their fare share of the Northern Beaches Council rate bill. This is currently in 2024/25 in the proposed harmonisation process.
none
Not to make so difficult for eligible pensioners to obtain concession as I advised in my above reply.
Even though I find the existing rates high,I'd prefer them to remain the same.
The more generous pensioner benefits should only be implemented at the final stage of harmonisation, so not early on as per scenario 4
Either: - Give the same concession amount, not a range of amounts, to all Centrelink recipients, regardless of age - Don't give any concession to anyone
You are scheming now to raise rates unfairly. I'm lucky enough to own my own terrace house in Manly and I will be due to receive the pension in a few months and I see us pensioners losing our discounted rate to the new rate hikes. You are raising the rate for everybody unjustly not just pensioners and it's just a council money grab, pure and simple. I want to see pensioners who have worked hard all their lives to get a substantial rate discount not the pittance we get back now.
I cannot offer a suggestion until I know how this decrease in Pension Rebate is calculated.
My only minor concern is the domestic waste discount - that it does not get larger or more costly as time goes on as everyone - pensioners included - should be encouraged to reduce waste and reductions should be driven by encouraging all of the community to reduce waste and then the domestic waste charges reduced for everyone.
First off, explain it in terms the average householder understands. Also give a reduction to those residents who don't own a car and have no use for parking stickers.
I think the Policy should be changed by having the same definition of "Eligible Pensioner" in the both the Voluntary Concession part of the policy and the Statutory Concession part - Namely the Statutory definition.

What, if any changes do you suggest? Pensioner concession form
I would like to see the rebate geared to cost of living rises and increased accordingly.
A single rebate of $150 provides a sufficient concession.

Submission form - Rates and Annual Charges Hardship Policy

Please provide your level of support for the revised draft Rates and Annual Charges Hardship Policy	Please share the reasons for your rating
Support	The hardship policy seems fair and should be used to assess if residents are in difficulty to pay rates. This should be the mechanism applied if people in Manly and Pittwater cannot manage their rates increases - not the watered down Scenario 4 approach.
Support	There can be no logical or moral argument against the consistent charging of rates across the Council area. This should be implemented immediately.

What, if any changes do you suggest?
None

Submission form - Business Rates

What is your level of support for scenario 4?	How supportive are you of gradual harmonisation?	Please share the reasons for your responses or any other comments you may have
Don't support	Don't support	Increasing commercial rates in this way will only put more pressure on small business to keep afloat. With Covid-19 we are struggling to keep afloat. If you want to see more businesses go out of businesses and jobs lost go ahead. The Rates should be reduced not increased, NBC should streamline there own internal systems and expenses instead of looking for it from us the rate payer.
Don't support	Somewhat support	Council amalgamation was meant to bring scale benefits. We have no discernible benefits currently from our level of rates and certainly don't with to pay more without any tangible benefit. In these strained times we would not be able to ask our tenants to cover this proposed increase in their rent.
Don't support	Don't support	NBC should not put more pressure commercial businesses to once again find funds to pay for rates that provide NO benefit. Rates increase will only get passed on as we cant not adsorb any more expenses. In the long run jobs WILL be LOST and businesses WILL no longer be able to continue. NBC should look internally to cut cost as all private businesses have to do every day.
Don't support	Support	The treatment of the Manly CBD in the rate harmonisation process is clearly unfair. The Manly CBD rate per $100k of UV is $554, which is significantly higher than all other commercial areas in the NB Council. In addition we are being charged $188 per $100k of UV for the Manly Special Rate. A true harmonisation would reduce the rate for the Manly CBD to around $450 per $100k of UV, and Council has not provided any justification, as required by the State government, for excluding the Manly CBD from the harmonisation process.
Support	Somewhat support	I believe if we are to harmonise the business rate then it should be the same rate for all business zoned/precincts & properties within the Northern Beaches Council. To exclude the Manly CBD from the harmonisation process or any subcategory precinct is unfair on the basis that all residents and businesses within the Northern Beaches equally share these important facilities and benefits they offer.

What is your level of support for scenario 4?	How supportive are you of gradual harmonisation?	Please share the reasons for your responses or any other comments you may have
		Your proposal on rate harmonisation advises that you will exclude the Manly CBD from the rate harmonisation process. Yet, your proposal states the ordinary Manly business rate is approx $310 per $100K of Land Value which is grossly misleading the public because the Manly CBD business rate together with the Manly CBD Special rate is approx $748 per $100K of LV which is more than double the ordinary business rate you have quoted and compared against the other former Council areas ie. Warringah at $520 & Pittwater at $420 per $100K of LV. The history of the Special Rate for the Manly Business District was a tax placed upon the Owner's of Manly CBD properties many decades ago to purchase more car parking areas within the CBD but consequently when Council had ceased purchasing land for this purpose the Council decided to maintain this tax without consultation and the Owner's have had to bear this cost without a right to appeal this decision. As such and at all times when Council states a business rate for the Manly CBD it should always be quoted incorporating the Special rate when comparing rates between the other business zoned properties within the Northern Districts Council. Therefore with the above in mind if the Northern Beaches Council is to harmonise the business rate throughout the Northern Beaches Council then it needs to abolish any Special rates charged and create one ordinary business rate for all Owner's within the Northern Beaches Council.
Don't support	Support	As Business Rates form a part of a business's cost base, it is reasonable to assume that their pricing policy will be predicated on the expectation of no more than CPI increases in these costs, so there is a strong argument to smooth significant Business Rate increases over a 3-year period to give them time to adjust. There is clearly a justification for giving small business ratepayers additional support for COVID recovery, so deferring the planned increases for former Manly-LGA and Pittwater-LGA ratepayers in 2021/22 makes sense, but using this logic NBC should NOT DELAY the implementation of rate REDUCTIONS for former Warringah-LGA business ratepayers. This would give a small fillip to struggling small businesses in the area. The deferment of some spending in 2021/22 to allow this to happen could either be through pushing

What is your level of support for scenario 4?	How supportive are you of gradual harmonisation?	Please share the reasons for your responses or any other comments you may have
		out the schedule for the repayment of debts from the former Manly and Pittwater LGAs, or alternatively the delay of selected planned capital works in these areas (as they are the ones benefiting from delayed rate increases).
Support	Support	It is unfortunate council have not been more proactive to start harmonising business rates earlier than now. I am ok with scenario 4 as it gives business time to adjust. It pains me to support it though as it's yet another example of a cash grab from Warringah where Warringah businesses pay more and it takes much longer for any reductions due to them to kick in.

Rates Harmonisation

Attachments to Your Say submissions

I understand from the NBC website that they are required to “harmonise” the rates across the three former council areas. From my understanding of the current proposal that will result in a rate increase of up to 30% for ratepayers in the old Manly Council area and possibly a reduction for the the old Warringah and Pittwater ratepayers. In my case the total rate increase will be $711 in the first year, approximately 25%. This includes the waste and stormwater charges.

Back in 2015 when the merger of the three councils was being considered consultants were engaged to calculate the benefits. They identified significant benefits not least of which were cost savings. The amalgamation was “sold” to the ratepayers of the three councils as probable long term savings for the ratepayers. Clearly something got lost in the presentation as it is now being suggested that we will have substantial rate increases.

At the time of the amalgamation, the old Manly Council area, where incidentally I’ve owned my home for 45 years as a ratepayer, had well established infrastructure funded by a relatively small number of ratepayers over the years. Clearly ex Manly ratepayers are now to be penalised for coming from an old well established and small Municipality. This is exacerbated by the substantial land valuation increases over my time here leading to a relatively high land valuation in the old Manly area.

The current rating system seems to rely too heavily on the single use of land valuation as a means of determining rates for a property. There is sense in having some component of land value used in the rating process to give it a progressive taxation element, but to wholly rely on this method seems somewhat unjust and old fashioned. All ratepayers, and indeed residents, make use of the Council provided facilities and services. I advocate that the methodology in the next paragraph be applied for 5 years during which time the council develops a more equitable rating system. This should be well within the capabilities of the consultants who developed the original amalgamation proposal.

During the first five years, while the improved approach is developed, a more equitable approach would be to maintain the current rates for the old Manly ratepayers, subject to land valuation increases, and use the amalgamation savings to provide reductions, if appropriate, in the other old council regions. Over time with standard rate increases being consistently applied across the entire NBC, and if required a new rating arrangement, the harmonisation will be achieved without causing the old Manly ratepayers the significant financial penalty implicit in the current “harmonisation’ proposal.

If this proposal is accepted I can see that rate harmonisation is appropriate. However, in its current form it is totally unacceptable as it is inequitable and unjust.

Submitted for your consideration.

Sir, Madam 22 Feb 2021

Your cash grab dressed up as harmonisation would mean a 25% increase in our rates. Your questionnaire online asks questions about which phasing option we would support, but I do not support this cash grab regardless of phasing.

I also note all community sessions are closed and I have just heard about this. I would suggest you open up more sessions as I want to hear from Mayor Regan. I was supportive of amalgamation as I believed that this would bring efficiencies and reduction in costs from:

- Dealing with fewer suppliers and bargaining scale
- Fewer systems and scale from each system (updates and maintenance)
- Less bureaucracy, speed to get things done, less duplication, likely fewer staff or providing a better service with the same staff

However, you are bludgeoning Manly residents overnight with a 25% increase in rates and no increase in services. Why are you not far more efficient now as a single council?

I do not see how you can put forward a plan which would increase my rates by 25%. Where is the ACCC in this? I will be writing to James Griffin and Zali Steggal as I think your cash grab is shameless and unfairly targeting Manly residents.

[redacted]

1 February 2021

REF: Submission to Northern Beaches Council on Rates Harmonisation
Supporting Proposed Scenario 1
Objecting to gradual harmonisation of rates over three Years

1 Executive Summary

1.1 The 'revenue neutral' approach of Northern Beaches Council does nothing to pass-on the so-called benefits of amalgamation to the ratepayers. In fact, it demonstrates the absence of any tangible efficiency benefits from amalgamation.

1.2 The overpayment of rates by Warringah residents since amalgamation is a direct result of Council's greed and of its lack of foresight for the inevitable harmonisation process. The four proposed harmonisation scenarios do nothing to redress the overpayment by Warringah residents.

1.3 Harmonisation Scenario 1 is the only practical way to get the rates for Northern Beaches residents onto an equitable footing without overly disadvantaging the Manly ratepayers.

1.4 The gradual harmonisation of rates over a three-year period only serves to further overcharge Warringah ratepayers for another three years.

1.5 Drop the Stormwater Management Services Charge. This service should be included in Council's general services and not used cynically as an additional source of revenue.

2 Support for Harmonisation Scenario 1

As a Warringah resident I am horrified to see that we have been subsidising the other Northern Beaches residents since amalgamation. Furthermore, Warringah rates have increased by almost 20% since amalgamation whilst Manly and Pittwater rates have either reduced or remained static. Knowing that rate harmonisation was part of the legislation for amalgamation, Council has been negligent in not reducing the rate imbalance between the various former council areas during the four years since amalgamation in 2016. Harmonisation Scenario 1 is the only practical way to rectify the rates imbalance for Northern Beaches residents without overly disadvantaging the Manly ratepayers.

3 The 'revenue neutral' approach is flawed

The 'revenue neutral' approach of Northern Beaches Council does nothing to pass-on the so-called benefits of amalgamation to the ratepayers. Council should consider living within its means, even if that requires a revenue reduction. Council should pass-on to ratepayers the benefits of this amalgamation in the form of rates reduction. So far, the only tangible benefit to ratepayers has been the introduction of the Beach Parking Permit extending from Palm Beach to Manly.

4 No redress to Warringah residents for overpayment

While the four rates harmonisation scenarios proposed by Council serve to address what could amount to large rate increases for some residents, particularly in the former Manly LGA, all but one of the scenarios require Warringah residents to continue to pay more than Manly and Pittwater residents. There is no consideration or redress for the fact that Warringah ratepayers have already paid more than their fair share since amalgamation.

5 Objection to Gradual Harmonisation over three years

The gradual harmonisation of rates over a three-year period only serves to further overcharge Warringah ratepayers for another three years. I strongly object to this proposal. I see that Council has been advocating on behalf of our community to amend the legislation to allow a transitional period for implementing these changes. I fear that this requested amendment may already have been made. I therefore request, even if legislation now allows it, that rate harmonisation is implemented in one year and not transitionally over three years. Council has already had four years to redress the rates imbalance between the former LGAs.

6 Drop the Stormwater Management Services Charge

Stormwater Management is an essential Council service like roads, footpaths and other amenities. It is not a user-paid service, like Waste Management, and it should not be used cynically by Council as an additional source of revenue outside the normal rates structure.

It would appear that Council has already decided on Rates Harmonisation Scenario 4 with gradual implementation over three years and that this community consultation is merely paying lip-service to Council's fiscal duty to the community. I hope for the sake of the entire Northern Beaches Community that our elected councillors have not sunken to this level.

Yours sincerely

[redacted]

[redacted]

[redacted]
[redacted]
Seaforth NSW 2092

12th February 2021

Dear sir / madam,

I am writing to object to the way you are undertaking the Rates Harmonisation process.

Your calculator is showing an eventual rates increase for the house I live in of over 22% (over the 4 year period) compared to the current rates!

You seek to justify this by stating that this will make things fairer and more equitable. As a resident of the former Manly council area, I can assure you it doesn't feel very fair or equitable. What would have been fair for residents of the Northern Beaches is for your stance towards this initiative to have been communicated up front, prior to the amalgamation of council areas. This would have helped us weigh up the consequences of losing Manly council, and having to align with the inefficiencies and prior financial controversies of the other northern beaches councils.

Part of the justification for council amalgamation was the removal of inefficiencies and duplication between the previous council structures. When will we actually benefit from this? It seems as if the increase in rates has continued unabated since amalgamation, with the increases now being turbo charged for residents in the Manly area under the guise of "harmonization" and "fairness".

You will not need reminding that average salaries are not increasing, the Covid-19 pandemic has challenged people financially more than ever before, CPI is negligible, but Northern Beaches Council has persisted in increasing its rates, rather than helping residents by delivering a meaningful efficiency dividend to residents via reduced rates, reflecting the original vision of council amalgamation.

You are faced with a choice to withdraw the current rates harmonization proposal and to deliver a rates reduction to all Northern Beaches Council residents by properly and professionally managing the amalgamated council, or being on the end of a significant voter backlash in September, as voters fundamentally question what has happened since council amalgamation.

In the interim, please withdraw this reckless proposal and come up with a compromise which does not punish residents of the previous Manly council area.

Yours sincerely,

[redacted]

[redacted]
Fairlight
NSW 2094
AUSTRALIA

9 February 2021

The Mayor
Northern Beaches Council
PO Box 82
Manly
NSW 1655

Dear Mayor,

Re: A Fairer Rating System across the Northern Beaches

Well my first response must be 'This is exactly what Jean Hay AM, the last Mayor of Manly, was opposed to. A take over by the old Warringah Council to reduce the rate burden on it's own residents.' (Where do the 76% of residential ratepayers who see a reduction in their rates live?? Warringah of course). So no, as an old Manly resident now likely to see my council rate increased by 26%, I am not in favour of this council's model. This is not fair or equitable.

Is the council stuck with rating on the Valuer General's Unimproved Capital Value. These days, when there is a strong pressure to accommodate more and more in the same land areas – leading to more units, granny flats and boarding houses. Are all residents paying their fair share to the council?

For example I notice a largish 'secondary dwelling' has been erected at [redacted] Street, Curl Curl, NSW 2096. [redacted] No drawings or other documentation to indicate its ultimate size or use are included on the council's register. From the road it looks like a stand alone dwelling quite separate to the main house and could easily be let a residence to a separate family. Will the council garner a separate rate for this addition if it is let out?

Should all 'granny flats' and the like also be subject to council rates? Are there any other more equitable rating schemes. Floor area of residence for example.

As to 'the most generous concession scheme' for eligible pensioner, well, although both my wife and I hold Commonwealth Seniors Health Cards, these do not qualify us for any concessions. So although we are on a fixed pension income there is no relief.

In the long run rating on UCV will mandate that the older residents in Manly sell up and move on. Not a pleasant thought for ourselves who have lived here for 50 years.

Yours faithfully,

[redacted]

Submission – Rate Hike

I object to the increase in rates for Manly residents for the following reasons:

1. It is now clear that the advantages of joining the Northern Beaches Council was misrepresented to the residents of Manly as the mega-Council was meant to lead to a reduction of rates, not an increase for reasons of 'harmonisation'.

2. Council has already given its support to the Northern Beaches Tunnel (NBT) which will undoubtedly have a detrimental impact upon the house prices of those who live around the proposed development sites. Increasing rates at this time when we will soon be enduring 5-7 nightmare years of living in a construction zone is simply callous. Perhaps Council could agree to put a hold on these harmonisation rate increases for those living within a kilometre of the Balgowlah and Wakehurst build sites until after the NBT is complete?

3. As an alternative to increasing rates, has the Council considered removing the 2 free hours of parking from all Council-owned car parks and streets in Manly for all non-Northern Beaches residents? At all other beaches around Sydney visitors are charged for parking and these charges are not insignificant (Bondi - $16 for 2 hours). Rate monies are undoubtedly used for the operation and maintenance of these Manly parking facilities meaning that residents are effectively subsidising free parking for visitors. Surely the Council should be looking at this and other alternative revenue sources before taking the easy route and simply increasing the tax on its residents.

[redacted]
BALGOWLAH HEIGHTS NSW 2093

16/02/2021

Dear Mr Regan

I'm writing on behalf of my elderly mother, [redacted]

My mother is most concerned about the proposed rate increase on her property [redacted]t Balgowlah Heights NSW.

My mother and late father built the property in the early 1950s. In contrast to many substantial surrounding homes, very little improvement has been made to the property since that time, except for an extra story built in the late 1970s. It is now a somewhat dilapidated weatherboard house without a view to the Harbour that many surrounding homes enjoy.

My mother is a pensioner and is concerned that her income will not keep aligned with the proposed increase over 5 years.

Yours sincerely

[redacted]

[redacted]

[redacted]

Comments on Rates Harmonisation

Submitted By: [redacted]

As an owner/resident of a property in the former Warringah LGA for the last 47 years, I should be happy that the proposed Rates Harmonisation will minimally reduce my rates over the next four years. The rational of a common method across the LGA is a logical one albeit there will be protestations from those whose rates will increase.

However I have never agreed with the current method of Ordinary Residential rate determination, that being based on land valuation – the ability to pay principle. This principle implies that because you live in a highly land valued property that you will have the ability to pay rates proportional to that value. Many long term residents of the peninsula have seen their properties escalate in value however those increases are only realised if the property is sold. Residents income in many cases have not increased in line with land values and when attaining retirement many are forced out of their long held homes as Council rates form a large part of cost of living expenses.

Extract from ATTACHMENT 1, Rates Harmonisation Analysis, ITEM NO. 9.1 - 15 DECEMBER 2020
"Thus, the "fairness" or "appropriateness" of rates may be considered in the light of these two criteria:

- The extent to which those who receive the benefits of council's services also pay for those services - the benefits principle.
- The extent to which those who pay for council's services have the ability to pay for those services - the ability to pay principle.

It goes without saying that a rate which is fair when judged by the benefit principle may not be fair according to the ability to pay principle, and vice versa.
The benefit principle has been often quoted as the main element in local government finance, as increasing attention is devoted to user charges."

The ability to pay principle is flawed when comparing market values to land values. In my case I am retired and I estimate my property's market value is $4,000,000 which essentially gives a market to land value ratio of 2:1. As an example take 910 Pittwater Road, Dee Why with 100+ units with a conservative market value of $750,000 each = $75,000,000 and a land value of $10,800,000, the market to land value ratio is 7:1. One of the better larger units may be worth $1,000,000+ and let's say two occupants could be earning incomes around $100,000 each how does this "ability to pay' compare to my allocated pension and they are paying a minimum rate. Just because you own a highly valued plot of land doesn't mean that you have any better ability to pay than anyone else.

Regardless of whether you own a $600,000 unit, a $1,000,000 house or a $5,000,000 home what services does council provide differently to the residents of these dwellings. This also raises another issue that of population. Rates per dwelling does not consider the number of occupants within a dwelling and services provided by Council are generally for people not dwellings.

In respect to the Domestic Waste charge that is and add-on to the Ordinary Residential Rate, why does the council provide a wheel out – wheel in service to a large number of units at no additional cost. It is probably due to not wanting to have numerous bins on the roadside as there is very little spare space given the number of cars parked on the road outside these units. This situation is affecting a lot of the single residences in Dee Why now as well.

Northern Beaches Rates Harmonisation

Background

It is obvious that the method of calculating ad valorem rates based on land value is unfair. It is a form of taxation but not based on a person's ability to pay. The services provided by a council to a ratepayer are about the same independent of the land size or value. Consequently we are starting from a position of inequality. However, this is the system defined in legislation (even though IPart recently recommended changes) and we have to work within it but we should not lose track of that fundamental point that the basis is unfair.

Fairness

Much has been said about the lack of fairness between old Council areas because, on the ad valorem rate, a property in Manly pays a lower percentage than one of equal value in Warringah. However, surely the criteria must be what is actually paid by the average ratepayer. I would expect that, for an equally sized block, the land value in Manly is higher than in Warringah and therefore the average Manly ad valorem ratepayer may very well pay higher rates. This is borne out by the fact that the percentage of Manly ratepayers with a property valued at $1m or more is 44.2% whereas in Pittwater it is 31.8% and in Warringah only 29.6%. This demonstrates that the average Manly ad valorem ratepayer (who gets the same benefits as others) is effectively subsidising those in other areas and the Council is now planning to increase this anomaly even further. How is this consistent with the Mayor's vision of a "just and inclusive community where equality and justice are as important as economic well being"?

Minimum rate.

It is appreciated that the Council does not want to increase the minimum significantly because that affects many ratepayers who may be struggling to afford an increase. However, those paying the minimum rate in Warringah have been doing so for some time. Why should the Council be reducing the minimum and compensating for this reduction by increasing the revenue from Manly ad valorem ratepayers who may also be struggling to afford the rates?

Choice of Scenarios

The Council claims that it has performed "extensive modelling" of options but the only options presented are for variations in the Minimum Rate whereas the effect of variations in ad valorem rates were not included even though they affect the majority of ratepayers.

I would like to see scenarios in which ad valorem rates are brought down significantly, perhaps to the existing Manly level. To compensate, the minimum rate obviously will have to increase leading to a fairer sharing of costs.

Scenario 4

This is claimed to be a weighted average but it appears to be an average of only the minimum rates, not rates for all. As mentioned, this does not account for possible options in the ad valorem rate and so it is certainly not the middle ground it claims to be. Setting a weighted average of what is an arbitrary setting for minimum rates is not a valid methodology. For Manly, how can an increase of 12% in the minimum rate but 26% in the ad valorem rate be considered fair and equitable?

Justification for ad valorem increases

It is assumed that the former Manly Council was operating successfully financially using the low ad valorem rate. How is it that this rate needs to be increased for the new, larger Council which was amalgamated solely to achieve financial savings? One stated aim of this harmonisation is keep Council revenue unchanged but, on the basis of efficiencies achieved through amalgamation, surely the revenue should reduce. It is noted that the Council is recommending that the increases be introduced over a four year period which means that for four years the council revenue will reduce. If it can manage in 2022 with less revenue why cannot this continue?

Summary

The scenarios must be expanded to include options where the ad valorem rate is reduced and the minimum rate is increased.

The total income to the Council from rates should not be fixed at the current level but should be reduced to reflect the financial benefits of amalgamation.

The average Manly ad valorem ratepayer is being asked to pay more so that the minimum rates can be lowered for others, all for the same benefits.

The proposal does not conform to the Mayor's vision of equality and justice.

Having attended one of the public meeting with Council representatives I am now more aware of the effect of the harmonisation proposal on Manly residents.

I was seeking the real costs of rates to ad valorem ratepayers in the different wards since this information is not on the Council's web pages nor was it in your letter dated 25 January which I presume was sent to all Manly residents.

The costs presented by the Council at the meeting were incorrect and I was pleased to receive the actual costs from your CFO as follows:

Average proposed rates for ad valorem ratepayers:

Manly	$2320	(+26%)
Warringah	$1606	(-6%)
Pittwater	$1855	(-3%)

The Council explanation for the process includes the statement:
"So our job is to look at the overall amount we collect each year and distribute it more equally across the Northern Beaches area". I fail to see how the numbers above could be seen as distributing more equally.

My immediate issue is that, in my discussions with Manly residents, practically no one appreciates this inequality. The letter of 26 February was silent on this subject and was obviously written to make Manly residents feel they were being subsidised by the other wards. The figures above prove that this is incorrect. I have spoken to several residents who took this incorrect meaning from your letter. The Council has a responsibility to advise all Manly residents of the real costs and specifically to advise those who attended the presentation that the numbers provided were incorrect.

I am aware of the report by IPART on the existing rating system whereby they concluded that it was unfair and recommended changes which, for example, would enable councils to charge different ad valorem rates to particular areas within their boundaries. As it is obvious that the Manly situation is a prime example of what IPART saw as inequitable, I ask the Council to raise the issue with the NSW Government.

In summary, I seek action from the Council to:

Correct the misinformation provided by the Council by sending another letter to all Manly residents which informs them of the actual average rates in dollar terms.

Provide more time for residents to respond after they receive the correct information.

Raise the issue of adopting IPART's recommendations with the NSW Government.

Consider other scenarios which do not penalise Manly residents.

Thank you for the opportunity to comment on this policy. I have been living in the Northern Beaches (former Warringah area) since the late 1980s. Unlike many people in the former Manly and Pittwater areas I have a small timber house, no views, and no swimming pool. As you recall, we in Warringah had to subsidise the residents of Pittwater when they decided to break away and form their own council.

Many of the places in the Manly and Pittwater areas are multimillion dollar properties. The people who live in them presumably have a much larger income than I do, which is why they can afford these properties. I, on the other hand, am retired and living on a superannuation pension.

Since the amalgamation of Councils in 2016 (which is something I supported) we in the ex - Warringah Council have been subsidising the rates of people in Pittwater- and especially Manly, where I understand there were also some costly problems to fix. So for about 4 or 5 years already we have been paying more than our fair share to the amalgamated Council. Council now proposes that we continue to do this until 2027!. In other words, Council expects that the people of the former Warringah Council area (whose average property value is presumably less than the average property value in Manly or Pittwater) subsidise the people with high value properties for 11 or 12 years following amalgamation, because they do not want to upset the people with high value properties by making them pay their fair share now. They have already had several years grace, by paying less than their fair share since amalgamation. If they can afford to have high value properties they can afford to pay the correct amount of rates.

I believe that Council should initiate rates harmonisation now, in 2021, and that the harmonisation process should proceed very quickly (within 2 years), so as not to further disadvantage the residents of the former Warringah Council area. It is ironic that Council does not now want to upset wealthier people who live in very expensive houses, and prefers instead to penalize those with less money and less expensive properties – and also ? less influence on Council. This is hardly fair.

Northern Beaches Council Rates Submission

Thank you for the opportunity to comment on Northern Beaches Council's proposed rates harmonisation.

Costs of council amalgamations
One of the NSW government's council amalgamation promises was that councils would be able to make savings which would be passed on to residents. Therefore, **no rates should need to rise in any former council area to harmonise them** across the Northern Beaches.

Equity principles
However, I understand the reality of the council's financial position, which has been further challenged by the Covid pandemic, and that it could not afford to cut rates to the lowest levels of any former council to bring them into alignment.

I also appreciate the council's attempt to find a fair rates system, modelling four different scenarios. However, **none of these systems are fair to ratepayers from the former Pittwater Council area.**

The council says that residents from the former Warringah Council area have paid the highest rates since council amalgamations – but that's based on minimum rates.

Looking at average rates, in fact Pittwater has paid the highest residential rates plus water management charge – which Warringah has not.

Neither have Pittwater residents seen higher levels of service – I note the continuing closure of the council service centre at Avalon, deteriorating footpaths and roads, weeds all over the place – along streets in town centres, at Mona Vale Village Park, and in bushland such as the severe asparagus fern infestation covering hundreds of square metres at Palm Beach dunes.

A truly equitable solution would therefore compensate Pittwater residents for the extra they have paid since May 2016. This could be achieved by freezing Pittwater rates and directing any increases in rate pegging (or other IPART increases) to Manly and Warringah until their residents have paid an amount proportionally equal to that contributed by Pittwater.

However, I believe with the economic situation resulting from Covid, residents in Manly and Warringah should be given the option of delaying payment of increases in their rates until families and businesses have an opportunity to recover their finances.

Pittwater business leaders also say they have seen no improvement in services since amalgamations, so there is no justification for raising business rates by 24 per cent – especially at a time when they are suffering due to the Covid pandemic in general and the extended lockdown in Pittwater during December and January.

Pittwater also has far less traffic – road or pedestrian – than the southern end of the electorate at any time and therefore makes far lighter demands on council infrastructure.

Increases should be delayed
If the issue of equity for Pittwater was to be ignored and any increases in rates imposed in this area, families and businesses should also be given the option of delaying payment of the increases until the pandemic ends and finances recover. Some economists are predicting that the economic situation will continue to deteriorate so that a **recovery is likely to be at least a year away.** I hope the council will succeed in lobbying the NSW government for a delay as discussed in the council papers about harmonisation.

Pensioners and Hardship
I support the proposal for **pensioners to receive rebates** in line with the most generous council area (Warringah). I believe those receiving a **part-pension** should also qualify.

Hardship provisions in the current economic circumstances resulting from Covid will be **particularly important**.

Stormwater management charge
Given the council's financial position and importance of maintaining stormwater infrastructure – and likely cost of new works in the future – **the Stormwater Management Charge should be retained in Pittwater and Manly and extended to Warringah**.

It is, however, impossible to see whether the water management charge has been spent exclusive and proportionately in Pittwater and Manly - from where it has been collected since May 2016. And if that is the case, what has been happening with maintenance and other work in Warringah during that time? Has the cost been covered by general rates – as was presumably the case when Warringah was a standalone council - or has the work been neglected?

Therefore, the **council should be transparent about this issue and add the cost of any work carried out in Warringah on stormwater infrastructure since 2016 to Warringah rates bills** until its residents' contributions equal those of Pittwater and Manly.

Increase council borrowings
The council should avoid increases in rates at this time for anyone on the Northern Beaches, and instead go further into deficit by borrowing, because of the prevailing economic conditions. Cuts to staff and services should also be avoided to enable spending in local businesses to continue and avoid further depressing the local economy.

Environmental Levy
An environmental levy should be introduced – as was done in Pittwater – to create a pool of funding available for buying environmentally sensitive land. This could be introduced at 1 per cent, once economic conditions have improved and perhaps rise a little more when we have a full recovery.

Northern Beaches Council Rates Harmonisation

Introduction

On their website, the NBC has advised that "We are required by the NSW Government to harmonise the rating structure of the former Manly, Pittwater and Warringah Councils by 1 July 2021" and have invited submissions on "options for implementing rates harmonisation" amongst other things. This document is in response to that invitation.

Background

In October 2015 the Independent Pricing and Regulatory Tribunal published a Final Report on "Assessment of Council Fit for the Future Proposals". The report found "Manly, Pittwater and Warringah not fit for the future, as they did not meet the scale and capacity criterion. Further the report indicated that a merger of the three councils would provide a 20 year NPV in the range of $116Million to $265Million using a discount rate of 9.5%. Ratepayers of the three councils agreed to the merger hoping that the promised benefits would be realised. How this reduction was expected to play out over time is not known but a figure of $5Million PA might be a reasonable approximation, particularly if a lower discount rate (more representative of current rates) were to be used.

Experience to Date – one Analysis

The writer has analysed the rates levied on a property in Seaforth over the period August 2008 to August 2020 from retained rate notices. This analysis shows that from August 2008 to August 2015 rates (Ad Velorem plus Waste plus Stormwater) paid to Manly Council increased at a compound annual growth rate of 5.1% but from August 2016 to August 2020 REDUCED at a CAGR of 1%. This is obviously a GOOD THING and Council is to be commended.

Council Modeling

Council has provided four "models" aimed at achieving "rate harmonisation". All of the models assume that the 17704 Many ratepayers must be charged on average around $300 each to raise an additional $5.3Million so that Warringah (and Pittwater to a lesser extent) rates might be reduced. Council has not modelled any scenarios where reductions in Warringah/Pittwater rates are achieved by savings in Council expenditures. This is disappointing but not surprising because making savings (in line with the promises of amalgamation) requires work and perhaps pain for some. It should be NOTED that the additional $5.3Million to be extracted from Manly ratepayers corresponds closely to the $5Million PA promised saving estimated above.

Proposal

It is PROPOSED that Council adopt a scenario whereby Manly rates are held constant, apart from changes in land valuations (rather than enjoying rate reductions achieved in line with recent trends)

with operational savings to be made by Council and passed on to other ratepayers to achieve the desired harmonisation over a reasonable five-year timeframe.

It is further PROPOSED that if Council cannot or will not harmonise rates without penalising Manly ratepayers then the NSW Government should undertake an audit to establish how the savings they foreshadowed from amalgamation can be achieved.

Third Submission

Introduction

This is my third submission to the Northern Beaches Council in response to Council's invitation to provide feedback on "Rates Harmonisation". This submission draws upon further research, including attendance at the Information Briefing Session held on 9 February.

Council Communications

Council has issued a number of communications on "harmonisation" including a succession of "have your say" emails on a range of subjects and one letter to Manly residents dated 25 January 2021.

As a Manly ratepayer I find these communications deficient because they are not upfront in alerting Manly ad valorem ratepayers to the very substantial increase in their rates proposed by Council.

I would **request** Council to communicate again with all Manly ratepayers explicitly and transparently alerting them to the scale of the proposed changes and provide more time for feedback before the matter is determined, presumably shortly before implementation of harmonisation, now proposed for 2022/23. I also **request** that any further communication includes a summary of feedback already received including any suggestions for a fairer harmonisation process.

Fairness and Subsidisation.

Some in Council have suggested that Manly ward is being subsidised because its ad valorem "rate" is less than Warringah's. This notion is a corruption of the word "subsidy" which means "a sum of money ". Using the understood definition of "subsidy" the 9,816 ad-valorem ratepayers in Manly in 2020 paid an average of $1,830 each but the 34,342 Warringah ad-valorem ratepayers paid on average only $1,707. Manly ratepayers subsidised Warringah's to the extent of $123 each.

If the proposed "scenario 4" is adopted Manly ad-valorem ratepayers will pay on average $466 extra each in order to save Warringah AV ratepayers a further $101 each, making the new subsidy $690 per Manly ratepayer.

The current rating system is unfair because the unimproved value of land does not, in many cases, indicate the ability of the landholder to pay. On the one hand we have retirees living in modest homes on high-value blocks who will have difficulty in paying the increase. On the other hand there are wealthy owners of luxurious apartments across the whole Northern Beaches paying only a "minimum rate" but receiving the same services as their poorer neighbouring householders who are paying a much higher ad valorem based rate. The IPART review of the rating system recognised these problems and recommended a move to Improved Capital Value, unfortunately ignored by the NSW Government.

Additionally the "harmonisation" arrangement proposed by Council is also intrinsically unfair because requiring Manly ad valorem ratepayers pay an average of $466 extra for no additional service is contrary to Council's own definition of equity.

I **request** that Council recognise that the current rating system is unfair, and take all available steps to minimise its impact, including those outlined later in this submission. I also **request** that Council

be proactive in urging the NSW Government to move quickly to a fairer rating system, such as that proposed by IPART and adopted in other jurisdictions.

Harmonisation by Reduction

Council's approach to "harmonisation" has been to prepare four scenarios all of which substantially increase Manly ward's ad valorem toward that of the other wards in the municipality. No other approaches have been documented by Council.

A more equitable approach would be to **reduce** the ad valorem of other wards either over time or immediately to that currently applying to Manly ward. It is estimated that an immediate reduction would result in Council's revenue falling by approximately $22 Million PA. This may seem a large amount but it is not in terms of efficiencies achieved and forecast by Council and the scope for savings in discretionary services. Reducing the AV would provide meaningful savings to all AV ratepayers, other than those in Manly ward, who would at least be spared the 26% increase threatened.

Although less equitable, Council could determine a "compromise" ad valorem, for example 0.14. This would result in average increase in Manly's AV rate of around $250 (instead of $466), while reducing Warringah's AV rate by a more meaningful amount of around $250. This approach would result in a decrease in Council's revenue of around $10 Million which should be readily possible for Council to accommodate.

To date, apart from Waste Collection, Council has not passed on any savings from amalgamation directly to ratepayers. Either of the alternatives outlined above would not only win the approval of all ratepayers (not just those in Manly), they should be well received by the NSW Government, who has recently been facing criticisms about amalgamation outcomes

I would **request** Council to prepare two more scenarios based on harmonisation by reduction and make these available on their website.

Affordability

The Northern Beaches Council Merger Performance Report dated 28 July 2020 documents the very substantial benefits that have been achieved by Council since amalgamation. The report states that Council had paid down $63Million in debt from $90Million inherited from the three councils, and was on track to save $161.6 Million in NPV over 10 years. The report goes on to say "In 2019/20 the annual recurrent merger saving being reinvested back into the community, is estimated at $29.5 million".
The $161Million saving in NPV over 10 years equates to an annual saving (at a discount rate of 9.5%) of $25.7 Million which is consistent with the $29.5Million annual recurrent merger saving in 2019/20.

Although COVID19 has and will impact on Council, hopefully the impact will be short lived and annual benefits from amalgamation of the order of $25-$30Million will be achieved ongoing. Rather than directing this back to the community by way of services (with attendant Council administrative costs) some could be directed to ratepayers by way of a reduction in ad valorem (other than in Manly ward until parity is achieved).

There may also be savings available to Council in addition to those already in train, but Council accounts are not sufficiently transparent for an outsider to identify them with any certainty. What follows are some possibilities that could be considered if not already included in ongoing plans.

Further Reducing Staff

Prior to amalgamation the three councils had 1229 equivalent full time staff members. It is understood that the corresponding number for the Northern Beaches Council is now 1195, a reduction of less than 3%. One would expect a greater reduction in staff, Council's largest expense item, particularly if staff for waste collection were included in the pre amalgamation numbers. Noting that Council does not publish its equivalent full time staff number in its financial reports (unlike the former councils) it is **requested** that this figure be included in future annual reports.

Discretionary Services

Council conducts a number of activities which are not core functions of local government and the question arises as to whether these should be eliminated or scaled back and the funds returned to ratepayers. Examples include the "free" parking stickers and the "free" Hop Skip and Jump bus that serves Manly Ward (and has been extended to Manly Vale). This bus service was originally introduced to assist shoppers while the "Totem" shopping centre at Balgowlah was being redeveloped by Stockland. It is understood that the service was initially funded by Stockland but is now funded by Council. The annual cost of this service is not readily identifiable from Council documents but to run a fleet of buses on four routes would doubtless incur a considerable cost. Following completion of the Stockland development at Balgowlah the rationale for this service no longer exists and the service should be reviewed. Being free to the user the service is popular and there is pressure to further extend it, likely placing an even greater burden on ratepayers. It is **requested** that Council specify those functions it regards as core and those it regards as discretionary and identify the costs associated with each group, as well as individually in the case of discretionary functions. It is also **requested** that Council conduct a plebiscite of all ratepayers at the time rate notices are dispatched indicating the cost of the Manly "Hop Skip and Jump" bus, describing its background and asking the question "Do you support the continued operation of this discretionary activity and if so do you support its extension across all of the Northern Beaches " including a statement of the estimated cost in both cases.

Stormwater Management

The Council webpage covering a harmonised Stormwater Management Services Charge indicates that the $25 per property charge already applying in Manly and Pittwater will be extended to Warringah (whose ratepayers have not previously paid this levy) raising an additional $1.1Million PA. No doubt stormwater works were carried out in Warringah as required, so the additional stormwater funds will release an amount of the order of $1.1Million from rates revenue that could be applied to reducing the ad-valorem.

Need for Harmonisation

Council documents state that "We are required by the NSW Government to harmonise the rating structure of the former Manly, Pittwater and Warringah Councils by 1 July 2021."

The above statement is misleading in that it ignores forthcoming amendments to the Local Government Act currently in draft. If the amendments are passed it appears that Council will have the ability to declare, for example, all the properties in the location "Manly ward" to be a separate sub-category of the category "residential" with a different ad-valorem to properties in other locations. If this interpretation is correct, Council may not need to "harmonise" rates at all, although it is difficult to see this arrangement as other than a short term device to lock in Manly's ad valorem while rates in other wards are progressively reduced as forecast savings are achieved.

It is **requested** that Council provide a legal opinion on whether the proposed changes to the LG Act would provide Council with the option of not harmonising rates at all.

Council Financial Reports and Performance Indicators

Council's financial documents are prepared as if for a business enterprise reporting profit levels to shareholders rather than reporting value to its ratepaying customers.

Council is a monopoly with an assured source of revenue from its captive customers. Like any monopoly there is doubtless a temptation for Council to exploit its customer base for the benefit of its shareholders (including Council employees)

The only fiscal discipline on councils appears to be the limits placed by the NSW Government on the amount of extra revenue that can be extracted from ratepayers. Evidence is that councils seek to extract the maximum increase allowable from ratepayers rather than the minimum required to provide the services needed.

It is **requested** that Council establish indicators for all of its staff in order to measure and reward their performance against ratepayer centric targets and include them in annual reports. In particular an annual reduction in ad valorem significantly higher than the 0.2%PA in productivity savings shown in Council's long term plan.

[redacted]

Seaforth

27 February 2021

REVIEW OF RATES HARMONISATION SCENARIOS

Supplementary submission – [redacted] – 27 February 2021

This is a supplementary submission to explore the merits of the 4 residential rates harmonisation scenarios. Whilst the analysis is performed on residential rates as the data is more transparent, the same logic could equally be applied to business rates, where the impact of selection of different scenarios would be relatively minor given business rates represent only 17% of the total collection, and the proposals freeze the current rate payment for both Warringah Mall and The Corso. A less aggressive stance on business rate collection would therefore deliver a fillip to businesses severely disrupted by Covid at a modest cost to council income.

Focussing on residential rates collections, Scenario 2 (harmonising to Pittwater rates) and Scenario 3 (harmonising to Warringah rates) would deliver increased rate collections of $2.9M (2% increase) and $8.9M (6%) respectively. There is no justification to use harmonisation as a back-door process to increase the collection levels, and such a process is likely to be contrary to the NSW Government directive that harmonisation should not increase overall rates collections. Neither of these proposals is worthy of further consideration.

Given the intent of Amalgamation was to form a more efficient council for the Northern Beaches, the 2019/20 recurrent benefit of $29.5M pa reported in the July 2020 NBC Merger Performance report is relevant. Whilst some of the savings have been handed back to residential ratepayers in the form of lower waste-charges in Manly and Pittwater ($7.1M reduction), counterbalanced by higher waste charges in Warringah ($3.1M increase), that still leaves significant headroom for savings to be passed back to ratepayers.

Additionally, since Amalgamation, annual NBC residential rates charges (excluding waste and stormwater levies) have actually increased by $19.5M (15.5%), which should provide a more than adequate buffer against a rising cost-base in a low-inflation environment.

With the debts from the former Manly and Pittwater LGAs reduced from $90M to $22M by June 2021, and given the current low interest-rate environment, it seems appropriate that the lower running costs are allowed for the first time to flow through into lower residential rates charges rather than balance-sheet improvement.

Through this lens, Scenario 1 (harmonising to Manly rates) becomes a highly attractive option:

1. All ratepayers receive either a rate-freeze or a significant rate reduction, so there will be no public opposition in the run up to the 4 September 2021 elections
2. By introducing lower rates from 2021/22 onwards (and freezing rates in 2021/22 for former Manly-LGA ratepayers), genuine "Covid-recovery support" is delivered to all ratepayers in the Northern Beaches in a timely fashion
3. The imposition of a Stormwater charge for former Warringah ratepayers can be done concurrently – merely netted off against their rate reduction
4. The lower residential rate collection (a reduction of $26.4M) is offset by $1.1M additional Stormwater collections and is well aligned to the $25.5M of amalgamation benefits that have thus far not been passed back to ratepayers
5. NBC could resume rate increases in-line with IPART rate-pegs from this lower base from 2022/23 onwards
6. With a lower cost base, Council will be genuinely incentivised to find additional amalgamation productivity savings without impacting on service provision

7. Should council have already made higher spending commitments for 2021/22, then a phased approach could be considered whereby some of the reduction is held back in 2021/22 before the full reduction is implemented in 2022/23

Scenario 4 (harmonising collections to a weighted average of current rates) does not take the amalgamation savings into account, and in fact aims to not just maintain the 2020/21 residential ($143.2M) and business ($29.9M) rates levies, but increase rates collection by extending the stormwater levy to the former Warringah - an additional $1.1M.

As the phasing of Scenario 4 is provided in more detail, I am able to comment on the issues that arise from this inequitable transition plan – which will be equally valid whichever final rate model is selected:

1. The delay in implementation from 2021/22 to 2022/23 only delivers "Covid-recovery support" to former Manly-LGA ratepayers. As a direct result of this proposed delay, former Warringah-LGA residential ratepayers are required to pay AN EXTRA $4.5M in 2021/22, former Pittwater-LGA residential ratepayers AN EXTRA $1.2M in order to cross subsidise former Manly-LGA ratepayers to the tune of $5.7M. This is patently inequitable!
2. The proposed imposition of the new Stormwater Levy to former Warringah-LGA ratepayers in 2022/23, at a time when they are still paying more than the harmonised rate, adds insult to injury and should be delayed until harmonisation rate reductions have been fully implemented under any scenario
3. If council genuinely wants to spread rate increases (for effected ex-valorem ratepayers) out over 3 years, then it should find the money to do so ($3.1M in 2023/24 and $1.5M in 2024/25) by making savings elsewhere in the budget, rather than by imposing higher rate charges on Warringah and Pittwater ex-valorem ratepayers by delaying their rate reductions
4. Dragging out the transition limits the council's ability to seek rate increases under the IPART framework, as this can only be recommenced once harmonisation is complete

So, in summary, Scenario 1 – transitioning all Northern Beaches rates to the current Manly-LGA rate structure is the best option of the 4 presented.

If, however, council have already made commitments for increased cost (perhaps through improved service provision) that mean that the $29.5M pa amalgamation savings are not able to be fully banked in the manner outlined above, then an additional Scenario – let's call it Scenario 5 - could be developed that would harmonise rates at a slightly higher level (perhaps Manly +5%) that:

- is both achievable in 2021/22,
- gives former Manly-LGA ratepayers a sense that they have "won", whilst still paying a modestly increased rate, and
- delivers genuine amalgamation savings to former Warringah and Pittwater-LGA ratepayers according to the timeline envisaged by the current NSW legislation

This would be a good outcome to relate to Northern Beaches voters in the run-up to the Council elections of 4 September 2021.

[redacted]
Fairlight
NSW 2094

10 February 2021

The Mayor
Northern Beaches Council
PO Box 82
Manly
NSW 1655

Re: A Fairer Rating System

Dear Mayor,

I do not agree that 'harmonising' the rating system across the Peninsula is a fair or economically sensible action.

This new rating practice discriminates against elderly, retired, self-supporting, home owners. It is, therefore, not fair and equitable.

We are not Pensioners. We live on our savings, budget carefully and live simply in order to make our savings last as long as possible.

Staggering new rates repayments over a number years will not help us in any way unless interest rates rise.

We hold Commonwealth Senior' Health Cards but are not Pensioners. We are, therefore not eligible for any of the planned rating concessions.

I will be 80 this month. My husband is 86 and has chronic lymphocytic leukaemia. We do not know what medical expenses are likely to be incurred in the future.

We have lived in this house for more than 50 years. I and my husband worked hard and saved our money to buy it. It is a family home and members of the family return here at times of disruption in their own lives. Our son and our grandson have each been able to do this recently until their lives settled down.

We plan to stay here and this is consistent with the Government policy of allowing older folk to remain in their homes for as long as possible.

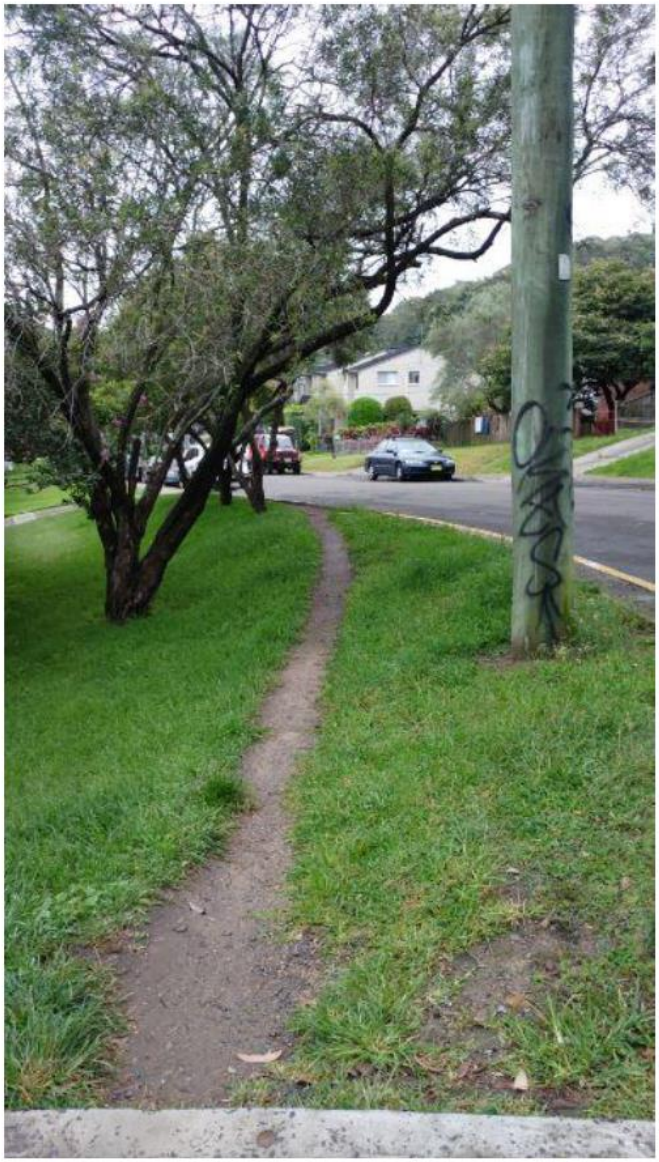
We could, of course, cash in our superannuation and spend all our money on an expensive holiday, then return and apply for a Government Pension and get all the related concessions. However, we prefer to remain self-supporting.

Moving house in order to benefit from the reduction in rates in one of the areas in which a reduction in rates applies, would be traumatic our age and threaten our health and our independence.

The Economy: a large increase in rates in the Manly area will mean that rents will rise, businesses will suffer, especially shops which rely on local families, and young families will no longer be able to afford to live here. Is Manly to become just a tourist destination? Or another Double Bay or Vaucluse where only the wealthy can afford to live?

Yours sincerely,

[redacted]



Footpath request attachment - Brookvale

Council Rates

I can't understand how council can say that the rate payers of the old Manly Council area are paying 25% less than the other council areas. Currently 17,704 Manly rate payers pay $24,726,790 which average out at $1,400 per rate payer which is 3.6% less than Warringah

With Warringah 54,395 rate payers pay $78,979,984 which average out at $1,450 per rate payer.

With Pittwater 23,563 rate payers pay $39,520,070 which average out at $1,680 per rate payer which would be 16% more than Manly N.B. Council say the old Manly area would pay up to 25% more in rates which would be $30,908,487 which would average out at $1,746 per rate payer.

With the council gross income from 95,662 rate payers is $143,226,844 which would average out at $1,500. There must be a lot of rate payers paying a lot less than $1,500 as there is a great number paying up to three times or more than that amount.

I would like to know how council calculates how much rates units owners pay compared to a single home on the same size block next to the units where the unit owners would receive exactly the same council benefits.

This is how I worked it out but I may be wrong.

[redacted]

Rates Harmonisation

Written and emailed submissions

From: Council Pro
To: Rates Northern Beaches
Subject: Council Pro(council-northernbeaches) - Event #NB116405
Date: Monday, 18 January 2021 5:36:22 PM

Event #: NB116405
Group: RATES
Category: GENERAL
Type: ENQUIRY
Date: 18/01/2021
TIme: 17:36
Caller Name: [redacted]
Caller Phone: [redacted]
Email Address: [redacted]
Incident Street: [redacted]
Incident Suburb: [redacted]
Cross Or Extra Information: [redacted]
Details Of Issue: Called re: issues with using the rates harmonisation calculator online, it is not working. Caller would like call back for assistance using this tool.
Action: Email Rates

Scanned 26-02-2021

RECEIVED
NORTHERN BEACHES
COUNCIL
26 FEB 2021
MAIL ROOM

[redacted]

The General Manager
Northern Beaches Council
AND ALL COUNCILLORS
Pittwater Road
Dee Why, N.S.W 2099

February 23
2021

SCANNED
NORTHERN BEACHES
COUNCIL
26 FEB 2021
20__/

Dear Sir & all Councillors,

Re: RATE HARMONISATION

You have been slow to act on rates harmonisation since the merger took place. Stop the unfairness and attend to the matter NOW! Don't ask former Warringah ratepayers to wait ANOTHER four years leaving us to further carry the can while letting Pittwater and Manly off the hook.

I'm just one of hundreds in this area who are aware of the injustice and want the matter NOT SPUN OUT OVER YEARS but resolved NOW!

Most sincerely,

[redacted]

From: [redacted]
To: Council Mailbox
Cc: [redacted]
Subject: Rating system
Date: Monday, 15 February 2021 10:47:58 AM
Attachments: Council changes 12.doc

Attention: Mr Michael Regan
Mr James Griffin
Please find attached letter in response to your invitation.
Regards
[redacted]

Mr Michael Regan 12.02.2021
Northern Beaches Council
council@northernbeaches.nsw.gov.au
Manly NSW

Cc Mr James Griffin
manly@parliament.nsw.gov.au

Rating System

Dear Mayor

We received your letter of 25 January 2021.

You state that the invitation is a requirement of the NSW Government. However from the tone of your letter you give us no option but to assume that the Council has already made a decision to increase the rates on the properties situated in the Manly area. It seems like a fait accompli.

Firstly, we did not want amalgamation. Some councils/areas were able to avoid it but not us. Why? We were told that our rates would not be increased. It seems this is not the case. We were told at the time that there would be savings after amalgamation such as overheads, wages and other expenses. Where are the savings? What has the Council done to reduce expenses? That is what we the ratepayers want to know. What are the savings in wages, honorariums and waste in the administration of the Council's properties?

Secondly, it stands to reason that Council will be collecting more rates as a result of so-called harmonization. Why would 76% see a reduction in rates and Manly residents have to pay more?

Thirdly, what does it mean that the Warringah area is contributing a higher income percentage as a proportion of land value? If it suggests that land values in Warringah are less than those in Manly we need to wait because if you speak to any real estate agent you will be told that the cost of homes in Warringah is skyrocketing.

Fourthly. the Manly area is significantly smaller than Warringah and in that regard needs less services eg waste/recycling. I have to say that the only services we see in Balgowlah are waste collection and use of Manly library. Our local waterways

are neglected eg Clontarf which is always dirty and overcrowded (not always by Manly residents).

We have also suffered from Covid-19. As self funded retirees in the lower income bracket we have had our income reduced by interest rate cuts and rental reductions and are struggling to stay self-funded. We have lived in Balgowlah for 50 years as a married couple and in rental housing in Manly before that when Manly was a very working class suburb and house prices were low. We should not now be forced out of the area and onto the pension as a result of government ineptitude.

What is the Government's answer to the Council's proposed changes?

Yours faithfully

[redacted]

From: [redacted]
To: Council Mailbox
Subject: Disagree with Rates Increase
Date: Monday, 8 February 2021 11:23:30 AM

Dear Sir / Madam

It appears that your rates harmonisation process is a way of DECREASING rates for individuals living in prestigious areas such as Pittwater, while INCREASING rates for individuals living in lower value areas such as Balgowlah.

Once again it's an attempt to support the financially well-off Liberal Government supporters, at the expense of the harder working, less income earning, Labor Government supporters.

I DO NOT support the increase of $108 in my yearly rates, when I will NOT be receiving any additional services to justify this increase.

[redacted]

From: [redacted]
To: Council Mailbox
Subject: Letter - A Fairer Rating System Across Northern Beaches
Date: Monday, 15 February 2021 12:25:53 PM

Attn: Michael Regan -Mayor
Reference: A fairer rating system across the Northern Beaches – refer letter 25 January
Sub Heading – Other Changes in Public Exhibition
Dear Sir
Would you please clarify your storm water charge which you stated that former Manly and Pittwater ratepayers already contributed and is now proposed to apply this charge across the remainder of the Northern beaches.
In July 2018 six residents in Haigh Ave and Karalta Cres, Belrose had storm water issues and when the then Warringah Council was contacted we were advised that all those who have the benefit of the storm water easement were responsible for its upkeep and ongoing maintenance. This resulted in the six residents paying in excess of $6500 to fix the problem.
At the time it was the residents who paid for the improvement to the storm water infrastructure and no assistance was received from the Council to protect the people and properties from flooding. Could you please explain why a charge is being introduced and if introduced will the Council now be responsible for any further problems with the storm water.
Yours faithfully
[redacted]
[redacted]

From: [redacted]
To: Council Mailbox
Subject: Rates
Date: Monday, 1 February 2021 6:52:30 PM

Quite frankly I find the current system of valuation for rates as something which must have come from Medieval Times.

To me it is about as unfair as it gets. Eg people who live in Units often get more services than people in houses.

From: [redacted]
To: Council Mailbox
Subject: Rates Harmonisation
Date: Sunday, 28 February 2021 3:23:51 PM

>> Dear Sir/Madam
>>
>> The purpose of this email is to register with you my full support for the above policy change by Norther Beaches Council (NBC.) to harmonise the rates for all NBC properties.
>>
>> The proposed changes as outlined in NBC communications to me is fair and reasonable. I am of this belief because of the satisfactory way in which the former Warringah Council managed its financial affairs. I cannot say the same for either of the former Pittwater and Manly Councils.

>> If you have any questions regarding this submission please contact me by email.
Regards
[redacted]

From: [redacted]
To: Council Mailbox
Subject: Have your say... Rates Harmonisation - my feedback
Date: Sunday, 7 February 2021 11:25:50 AM

Dear Council
Firstly… even though the website says "have your say", it's pretty unclear where to actually "provide you comments"… thus hoping this is the correct process to submit my feedback :-: Seems to me that you don't want feedback, and you'll use the limited responses (49 so far) to then say you provided an opportunity but no one did.

It's appears that my rates are going to increase by 26% using your calculator. We work in the airline and university sectors, so to say this will impact our day to day is an understatement!… Like are you for real? what business in our community is actually increase fees? Most business's are reducing wages, reducing hours of employees, sacking people, struggling to get income.

It's just amazing to me, in this economic environment, that you'd recommend anyones rates increasing. What are you Robin Hood??
Frankly it shows a complete lack of sensitivity and understanding.
It also demonstrates poor business management of the council in general.
Are you seriously expecting the community to accept you "running the council as normal" in this economic environment, and then try and convince us that a 26% increase is something we should accept.?

Regardless of the reasons and marketing of "decrease" in waste (surely that's your job to find efficiencies in any system), it's just simply outrageous - regardless of how many years you try and stretch it out. I'm assuming too over that 4 years that as well as the 26% increase there will be an overall increase as well.

Like any other "business" in our community, why aren't you cutting expenses, reducing staff wages (especially expense executive salaries), reducing staff, providing essential only services and looking at providing more efficiencies versus trying to "sell" with expensive videos are marketing campaigns this concept of "harmonisation". Surely, you can find ways within your own "business" to fund the harmonisation without increase rates for anyone?

My expectations of council

- don't increase the rates of Manly to then allow decrease in other areas - harmonise down from Manly and decrease rates for other regions. Harmonise by decreasing your pool in total..that would be a fantastic council initiative. So Manly rates stay the same, and if you think other areas are paying to much, you simply decrease their rates.
- Find other efficiencies in the council to allow a decrease in rates- reduce staff, reduce executive wages, stop expensive marketing campaigns and videos that "sell" us etc etc.

Every business and HOUSEHOLD in this economic environment has to look at ways to "manage' their budget. Have you heard of "REDUCING EXPENSES"? Is this what you're doing?
You've just demonstrated to me that you are NOT managing the council with due consideration of "current economic" considerations or looking to your own efficiencies to

manage your "harmonisation" requirement.
Sorry but the **ROBIN HOOD approach doesn't cut it.**



From: [redacted]
To: Council Mailbox
Subject: NBC : Rates Changes
Date: Monday, 22 February 2021 12:36:22 PM

Hi,
I'd like to comment on the proposed Rates changes.
First of all, your letter states... "Rates harmonisation will provide a fair and equitable approach to rates collection, ensuring those with the same land value pay the same rates for the same level of Council services and infrastructure."
On Scotland Island, we do not receive a great many services that are normal for other suburbs. These examples spring to mind, but there are likely others:

- Waste services for Scotland Island did not include the upgrade that happened recently, and there are no waste collections from the house
- Green waste collection is limited to twice a year, which really does not work in trying to keep the level of undergrowth down, especially in a La Nina year
- We have the most expensive residential parking scheme in the entire country, which is approx. 20x the cost of parking schemes in comparable suburbs (eg mackerel beach residents pay enormously less for their mainland parking than we do)
- There is no street lighting
- and no road furniture
- in fact, there are no actual streets or footpaths at all
- No traffic or parking monitoring – though there appear to be plenty of rules, and more coming, there is no one monitoring those rules
- The park on the island does not have public bathrooms, maintained by the council, which are available in every other park in the area

And just to mention, any 'additional services' that are unique to the offshore community are user pays, such as the wharves for commuter boats and the residential parking, so these types of 'services' should not be considered as a service paid for from our rates.
So the rates harmonisation that needs to happen is to acknowledge that while the land value might be 'equitable' for offshore houses, we do not receive the same level of Council services and infrastructure. Yet I notice that our rates are due to go ***up***?
Please take into account the reality of 'council services' for the offshore community when re-evaluating rates.
Thanks and regards,
[redacted]

[redacted]

From: [redacted]
To: Council Mailbox
Subject: Fairer Rating System
Date: Thursday, 11 February 2021 10:36:34 AM

The property owners in the former Warringah Council Area have been contributing greater to the new Northern Beaches Area in 2 different ways.
Firstly, and by your own admission, they have been rated significantly higher than the owners in the other two former areas.
Secondly, as you will remember, when Pittwater Council seceded from the former Warringah Council the property owners of Warringah Council were charged a levy to compensate Pittwater Council for the uneven division of fixed assets.
Since the three Councils have been amalgamated the assets for which Pittwater Council was compensated have now been included in the new identity.
So we of Warringah have involuntarily contributed unequally to the assets of the newly formed council.
In the interest of fairness the Council has two items to consider.
Firstly a refund of the previously raised levy.
Secondly when raising the new rates council must consider the amount which they require to conduct their business taking into consideration any rise in rating revenue they are permitted.
Following this consideration Council must raise rates in a fair and uniform way.
Admittedly this may result in an increase to the residents in Manly and Pittwater, but will bring them in line with the residents of Warringah who will enjoy relief from bearing the greater contribution.
We all live in the same area and enjoy the same assets so must contribute equally according to our land values.

[redacted]

From: [redacted]
To: Council Mailbox
Subject: Rates harmonisation
Date: Monday, 15 February 2021 10:15:21 AM

I read with horror that the Council plan to increase the Council rates for Manly residents under the misnomer of a new FAIRER RATING SYSTEM.
This is hardly fair,those who pay rates elsewhere out side the Manly area DO NOT HAVE TO PAY EXTRA TO PAY TO PARK THEIR CAR IN THE STREET OUTSIDE THEIR HOME. !!!!!!!!!!!!
This is not FAIR and discriminating.
If Council are preparing to increase the rates for Manly residents in line with the rest of the Northern Beaches then be equitable not penalising .
Allow those residents who live in Manly to Park their cars at no extra charge. One car is allowed no cost but most households have 2 cars, so the second car/ boat / caravan should also be allowed to park free outside their home premises for which they pay the so called fair and equitable rate collection.
Otherwise charge all rate payers in this so called 'equitable approach to rate collection' a fee for a sticker to park their car outside their Council rated home
Fair is fair , don't double dip and penalise Manly residence owners under the falsehood of fair and equitable rate harmonisation.
Bring back Manly Municipal Council who cared about Manly residents and not how to penalise those who live here and suffer the continued degradation of their lives by Council abuse and the tourists it encourages
[redacted]
Manly resident - rate payer since 1952 (or 61 years)

Sent from my iPhone

From: [redacted]
To: Council Mailbox
Subject: rate increases
Date: Tuesday, 9 February 2021 4:47:22 PM

Thank you for your letter 25th January regarding council rate increases and your request for feedback should there be an issue with these increases.

My family have paid rates in the Manly district for 120 years and we have had no concessions over this time. New residents have moved into the area pushing prices and costs up. My wife and I are self funded retirees and I do not have any income owing to the fact that we dont have Super Annuation anymore and the cash in the Bank is not earning interest. We are resisting running our funds down to get the Pension and everything we spend is in the local area which is good for the community.

There should be some sort of concession for self funded retirees who are not costing the community anything and are as we are, spending what we have in the local businesses. The beaches and parks are overflowing with people from other suburbs, preventing us from enjoying these local facilities, so, we are paying an inflated rate structure for little return other than garbage removal.

Please consider my point of view as it is not fair that residents who have been living here for a long time, are penalized by inflated prices caused by new residents entering the area.

I would request that you respond to this email and please respect the fact that old residents have put a lot into the community and it is now time to consider their situation.

Best regards,

[redacted]

[redacted]

[redacted]

From: [redacted]
To: Council Mailbox
Subject: Rates Harmonisation
Date: Thursday, 11 February 2021 9:09:06 AM

It seems to me ,as a reasonably well educated person, that the average ratepayer would not understand your missive and I would suggest that it was rewritten in a format more readily understandable.
Regards
[redacted]

Sent from my iPad

From: [redacted]
To: Council Mailbox
Subject: Fwd: "Rates harmonisation" Northern Beaches Council,
Date: Friday, 26 February 2021 2:05:04 PM

Dear Sir/Madam
>
> The purpose of this email is to register with you my full support for the above policy change by Norther Beaches Council (NBC.) to harmonise the rates for all NBC properties.
>
> The proposed changes as outlined in NBC communications to me set out a fair and reasonable process to achieve harmonisation of rate. I have arrived at this position because of the satisfactory way in which the former Warringah Council managed its financial affairs. I cannot say the same for either of the former Pittwater and Manly Councils.
>
> If you have any questions regarding this submission please contact me by email.
>
> Yours sincerely - [redacted]
>
> Sent from my iPad

From: [redacted]
To: Council Mailbox
Subject: "Rates harmonisation" Northern Beaches Council,
Date: Friday, 26 February 2021 2:01:44 PM

Dear Sir/Madam

The purpose of this email is to register with you my full support for the above policy change by Norther Beaches Council (NBC.) to harmonise the rates for all NBC properties.

The proposed changes as outlined in NBC communications to me set out a fair and reasonable process to achieve harmonisation of rate. I have arrived at this position because of the satisfactory way in which the former Warringah Council managed its financial affairs. I cannot say the same for either of the former Pittwater and Manly Councils.

If you have any questions regarding this submission please contact me by email.

Yours sincerely - [redacted]

Sent from my iPad

Scanned 25-02-2021

Rates Harmonisation Survey

Scenario 4 model delivers 76% of residential rate payers a decrease in their rates. What does the 24% pays?

Since the formation of Australia and the implementation of the British Laws, Northern Beaches Council would be able to come up with a model on this issue.

As a citizen of Australia, I can only trust the people given the responsibility to come up with a model and do what benefits all the ratepayers of Northern Beaches Council.

[redacted]

26 FEB 2021

NORTHERN BEACHES COUNCIL
25 FEB 2021
MANLY CUSTOMER SERVICE
RECEIVED
Signature

SCANNED
NORTHERN BEACHES COUNCIL
26 FEB 2021
20__

From: [redacted]
To: Council Mailbox
Cc: "[redacted]"
Subject: Rates Harmonisation Submission
Date: Monday, 1 March 2021 10:11:33 AM
Attachments: [redacted] Rate Advice Response Rates Harmonisation Submission.docx

Dear Council Member,
Please find attached our letter outlining our submission.
Regards,
[redacted]

28th February 2021

[redacted]

Mr. Micheal Regan Mayor
Northern Beaches Council

Dear Sir,

re-**A Fairer Rating System Across The Northern Beaches**

We strongly object to the Northern Beaches Council's method of determining a "Fairer" rating system, which we expect will raise the Council rates on our home.

My wife aged [redacted] years and I aged [redacted] years, are both physically disabled, self-funded, but not retirees. We are both still working part time to continue being self-funded and paying income tax plus all other applicable taxes, with no deductions.

North Harbour Street has no footpath either side of the street. The northern entry street, Lower Beach Street has only a part footpath on the northern side. This is the Park side, whilst the south side, the residential side has no footpath, only dangerous undulating ground upon which an elderly neighbour has fallen and broken her leg. The southern entry street, Clarence Street has no footpath either side. The sub-division took place about 70 years ago.

We have owned our [redacted] property since 1995. It has a street frontage of 12 metres and an area of 360 square metres. Some Semi-detached homes in Manly have very small frontages, whilst in some other homes in the Northern Beaches suburbs have up to15 and 18 metre frontages with similar values.

A "Fairer" system of User Pays, based on the amount of frontage and facilities available to each property would be more equitable. The number of users from each property varies in time causing this inclusion in assessment too difficult to administer. Many properties in the Warringah area are larger than in the Manly area.

How can a system be considered **Fair,** when properties like ours lack basic facilities and others have larger frontages with more complete facilities, and both types charged on "Valuation" system?

Following the State Government's promise that amalgamation of Councils would reduce Council rates, is our particular Local Government going to prove this a lie?

We look forward to your reply.

Yours faithfully,

[redacted]

From: [redacted]
To: Council Mailbox
Subject: Rates Harmonisation??
Date: Monday, 8 February 2021 10:10:47 AM

Rates harmonisation? More like rates robbery!

How can my property, which is a 6 metre wide piece of land, incur a rate increase of more than 20%?

While I fully appreciate the need for rates & am happy to pay my share, - in fact have done so for more than 30 years - I see little evidence of rate income being spent to make my life easier.

I consider myself lucky on the rare occasions I am able to park in front of my house; the street gutters are full of leaves while council truck streetsweepers drive down the middle of the road due to parked cars – worse now that people are working from home during COVID - & gutters flood in the rain. Road potholes are everywhere.

I worked until I was 71 to sustain myself & pay off my mortgage; now, in my retirement years, I am asked to pay nearly $3000 a year in rates for little return!

Please reconsider this exhorbitant increase & review expenditures that are a waste of time & money. I thought the whole idea of amalgamation was to save on shared costs?

There also needs to be consideration to self-funded retirees such as myself who worked & saved for many years, yet get no compensation from government or councils: surely a reduced rate could be applied as in the case of pensioners?

Sincerely

[redacted]

From: [redacted]
To: Council Mailbox
Subject: Rates hike
Date: Saturday, 6 February 2021 1:55:29 PM

Hi, I'd like to complain about the proposed 20% rates hike on my property referenced (somewhat tangentially on page 2) in your letter of 25 January and via your website.
The so-called "harmonization" will mean an increase of $465 per year for me, this is unjustified in my view – there are no additional services on offer. The fact that former Pittwater or Warringah councils may have been charging excessively in the past is neither here nor there for me. Though our land value is high, we are not wealthy people and can ill afford such an impost. The high cost of living here makes us want to move, however we are tied to jobs and school in the area.
I see there is no way to enable feedback on the rates "harmonization" page so I am contacting you via the general email. Please forward my complaint to the relevant department and take it as a formal submission on this issue.
Sincerely,
[redacted]
Sent from Mail for Windows 10

From: [redacted]
To:
Subject: Rates Harmonisation and Stormwater Management Services Charge
Date: Tuesday, 9 February 2021 3:05:13 PM
Attachments: image001.jpg

From: [redacted]
Sent: Tuesday, 9 February 2021 2:00 PM
To: Michael Regan <Michael.Regan@northernbeaches.nsw.gov.au>
Subject: Rates Harmonisation and Stormwater Management Services Charge

Hi Michael,

I hope this finds you well. I have read about Rates Harmonisation and Stormwater Management Services Charge and have made a submission for each. I am in support of both, but I believe the change should be instant, not phased in over a number of years. Any transition period would mean that we in the old Warringah Council area continue to subsidise the residents of the old Many and Pittwater Councils for another four or five years during the transition period, which is clearly not fair. I forgot to explain this in my submissions.

Kind regards,

[redacted]

From: [redacted]
To: Council Mailbox
Subject: Rates Harmonization and storm water charges
Date: Friday, 5 February 2021 4:21:49 PM

Dear Sir,

I have recently received notice from council regarding the rates harmonization project and the proposed addition of storm water charges to the council rates.

I find the proposed inclusion rather amusing at best and insulting at worst primarily I had been enduring for years with the lack of storm water drainage at the back of my property. This mean that every time there is substantial rain, there is an abundance of storm water flooding onto my property because of lack of storm water drainage not just with my property but the whole street.

I am taking this opportunity to ask the council whether there is any prospect of remedial action by the council regarding storm water prevention so that the storm water charges in itself actual means something as a rates payer. .

I am more than happy to be contacted to discuss this issue on [redacted].

Regards,
[redacted]

Scanned 19-02-2021

RECEIVED
NORTHERN BEACHES COUNCIL
19 FEB 2021
MAIL ROOM

[redacted]

The Mayor
Northern Beaches Council
PO Box 82
Manly NSW 2095

Dear Sir,

Objection to an Increase in Rates, it is Against the Purpose of Amalgamation

We all heard repeatedly the benefits of amalgamation of the 3 councils, to be more efficient, and to reduce costs. This rate increase for some of us living in the Manly area does not meet that announced commitment on amalgamation and is totally unacceptable.

Amalgamation should result in savings leading to rate decreases or at least a hold for all of us. Where are these savings, the expense of cancelling the car park and the library project, we hear of expensive Council car fleet, an unwanted frivolous weekly email clearly designed to promote the Mayor himself , and something that is not necessary, excessive spending on local works ,a possible new surf club for South Steyne when the existing building can be refurbished and extended. etc etc.

We also read/see on TV that the Northern Beaches Council is one of the worst and poor performing Councils. The Council needs to manage its business and finances better and not pass on costs to us rate payers.

I reject any plans to increase Manly area rates,

[redacted]

SCANNED
NORTHERN BEACHES COUNCIL
19
20

JAMES GRIFFIN MP
Parliamentary Secretary for the Environment
Parliamentary Secretary for Veterans
Member for Manly

Mr Ray Brownlee PSM
Chief Executive Officer
Northern Beaches Council
PO Box 1336
DEE WHY NSW 2099

Dear Mr Brownlee PSM Ray,

I am writing in relation to the Northern Beaches Council proposal for Rates Harmonisation as it relates to residents of the former Manly Council Local Government area.

As you are aware, the NSW Government requires amalgamated councils in NSW to harmonise their rates across the Local Government Area (LGA) by July 2021. In January 2021 the Northern Beaches Councillors were presented with 4 options to harmonise rates across the LGA. This included bringing the entire area into line with the former Manly Council area.

During this exhibition period of public consultation I have been contacted by numerous residents and business owners who have expressed their concerns with the rationale for the proposal as well as the financial impact of Rates Harmonisation on their properties.

I have received further correspondence from business owners in the Manly CBD who continue to be adversely affected by the Special Rates Scheme imposed over the area, that has been exempted from the Rates Harmonisation process.

I would like to thank the Council for its open and transparent process through this decision. However, it seems that Councillors have opted for a quick and inequitable solution to avoid a more pressing conversation about rates more broadly that needs to occur.

I am asking the Council to consider the financial impact of this decision on these residents and to reconsider the current proposal.

I look forward to your response in due course.

Yours sincerely

James Griffin MP

Date: 26 FEB 2021

Shop 2, 2 Wentworth Street, MANLY NSW 2095
Ph: 9976 2773 www.jamesgriffinmp.com

From: [redacted]
To: Council Mailbox
Subject: Fairer rating system across Northern Beaches
Date: Tuesday, 9 February 2021 8:52:44 AM

To the Council:

We on the Northern Beaches were forced into an amalgamated "super" council.
The very least this council can do is collect even rates for even services provided.
I do not believe any household should be granted gradual harmonization. Equal pay for equal service. End of story.

Sincerely,
[redacted]
Sent from my iPad



A: PO Box 104 | Manly NSW 1655
W: www.manly.org.au
T: (02) 9977 0513

1 December 2020

Mr Ray Brownlee
Chief Operating Officer
Northern Beaches Council
1 Belgrave St
MANLY, NSW 2095

Dear Ray,

Subject: Manly Business Centre Improvement Special Rate

Thank you for your continued consideration regarding the Manly Business Centre Improvement Special Rate (Special Levy), and subsequent receipt of Council's letter dated 22 October 2020, regarding Council's understanding of the history of this Special Levy under the former Manly Council.

The Manly Business Chamber (Chamber) would like to clarify the definitions and names of each of the levies and special rates:

1. **Manly Off-Street Parking Local Rate, which then became the Manly Off-Street Parking Special Rate c. 1960 – 1993,** was a **voluntary levy** initiated by commercial ratepayers for Council to acquire CBD land for additional parking.
2. Manly Off-Street Parking Special Rate is then changed to '**A Special Rate - Manly Business Centre and Ocean Beachfront Improvements**' in 1994, after Council established that there was no more land that could be acquired in Manly's CBD for parking. This name change was made without any consultation to Chamber or commercial ratepayers.
3. **Business Improvement Levy, also referred to as Manly Business Centre Improvement Special Rate in letter from Council dated 22/10/20,** commenced in 2005 and is the voluntary Special Levy that Manly Council approached the Chamber in order to gain support and agreement from its commercial ratepayers. The MOU agreed to between Manly Council and the Chamber was for a 10-year period and was for the improvement and replacement of Manly CBD infrastructure and amenities including the upgrade of The Corso, installation of security cameras, establishment and maintenance of Manly Mainstreet Co-Ord, and was applied to Manly business centre ratepayers. This is the Special Levy approved by the Minister for Local Government, with the crucial 10-year clause cap omitted, unbeknown to Chamber.
4. **Manly Infrastructure Levy** is an additional levy that Manly Council applied for pursuant to section 508(2) of the Local Government Act to raise an additional $400,000 from Ordinary Rates, commencing for 10 years on 28 May 2007, and applied to ALL ratepayers. This was to upgrade public toilets, maintenance and cleansing; graffiti reduction and vandalism management; capital works etc.



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There is a long and convoluted history with levies and special rates in Manly. The Chamber is very clear in its position and has recently confirmed with former Manly Mayor Jean Hay, former Councillors and GM of Manly Council, that the **Manly Business Centre Improvement Special Rate**, was intended to be in place for a limited 10-year period, with an end date of 2015.

As we are all aware Covid-19 has also created some uncertain and tumultuous times. It is taking longer to re-let vacant premises, and generally at much lower rentals and/or with longer rent-free periods, which is a major concern to Chamber members. Additionally, retailers and F& B operators have suffered at the loss of considerable foot fall through lost tourism and lack of compelling attraction in Manly's CBD. This is due in part to the current poor state of The Corso and adjoining precincts, which doesn't make it viable to attract more compelling and suitable operators to Manly's high streets. In turn, it has created a precinct predominantly reliant on day tourists and younger party goers who frequent the adjoining Manly Wharf precinct, resulting in the poor daytime trade of the high street retailers. The very viability of many Manly businesses is now at stake.

Upon seeking advice from State Government Member for Manly, the Hon James Griffin, he suggested the Chamber seeks the removal of the Special Levy, as part of the current rate harmonisation process that Council is undertaking, on the basis that it was a discriminatory levy that was not being imposed on any other commercial ratepayers in the combined Northern Beaches Council. The whole local government rating system is based, for equity purposes, on unimproved land values, and Manly commercial rates are already very high due to the high land values in the Manly CBD.

Notwithstanding the above, and given the amalgamation of the former Manly, Warringah and Pittwater Councils, the Chamber formally requests that the **Manly Business Centre Improvement Special Rate** be **completely removed** to align with Council's rate harmonisation across the LGA.

We look forward to working with you to agree to a fair and equitable solution.

Yours sincerely

Charlotte Rimmer
President - 2020

cc Hon James Griffin
Mayor Michael Regan
Councillors Pat Daley, Candy Bingham, Sarah Grattan
The Corso Owners Group
Manly Business Chamber Executive Committee

manly business chamber
support + connect + prosper
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25 February 2021

Northern Beaches Council
CEO Ray Brownlee
Mayor Michael Regan
Director Corporate & Legal - Jeff Smith

Dear Sir/Madam,

Re: Northern Beaches Rates Harmonisation submission.

We write this letter to provide feedback on the Northern Beaches Council proposed Rates Harmonisation.

It is our understanding that the Local Government Amendment (Rating) Bill 2020 recommended a proposal for a range of reforms to provide greater flexibility in the Council rating system, distribution of the rating burden and to make rates fairer. However, this is not the case for the Manly CBD Commercial rate payers, who will receive a minimum decrease in rates. Our view is that this decrease should be substantial.

State Government provided a number of options for Council to select. The Northern Beaches Council has chosen to utilise the option of a weighted average minimum. This does not create a fair result, which we believe is an unintended result of the Local Government Amendment (Rating) Bill 2020.

We are disappointed that by choosing this method Council have effectively excluded Manly CBD from the "harmonisation" process and disregarded the intention of the Bill for Manly CBD property owners.

On average Manly CBD property owners are paying $554 per $100k of UV for the Ordinary Business Rate, and a further $188 per $100k of UV for the Special Business Rate. A total of $742.

Manly CBD has been treated as its own entity like Warringah Mall. The reason given by Council for Manly CBD not being 'harmonised' is every commercial property owner in that prescribed locality is already paying the same rate as each other. We do not understand or accept this justification.

Furthermore, Manly CBD has been classified as a 'multiple level shopping centre' like Warringah & Warriewood Malls (the only malls in the Northern Beaches Council area), each with a standalone rate. Manly CBD does not fit the criteria for this sub-category and we therefore question this classification.

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Extract: "A sub-category of the business rate is applied to multi-floor shopping centres and high intensity shopping districts such as the Manly CBD as they generate a higher demand on council services relative to a single storey set of shops or other business"

Please find below our suggested actions:

Action items for Council:

Special Levy

1. Full accountability and collaboration with the Manly Business Chamber and the Manly CBD property owners for expenditure of the Special Levey. A proposed budget to be presented to the Chamber Executive for approval on an annual basis, for the FY ahead, with a detailed P&L issued at the end of the FY.

2. The Special Levy will be removed, entirely after 4-years, with final payments made June 2025, with discussions to remain open for reduction within this timeframe.
   This expiry date equated to double the original agreed timeframe of 10 years, which began in 2005.

Manly CBD Rates

1. The Chamber is to be issued detailed line items on the expenditure of the Manly CBD and the income of Manly CBD to explain the rate allocation for the Manly CBD.

2. The amalgamation of sub-categories is intended to ensure fairness. Manly CBD should not be considered a multiple level shopping centre but should align with other 'strip shopping' areas, such as Seaforth, Balgowlah, Freshwater, Avalon and even Dee Why. This requires Council to 'harmonise' Manly CBD with Councils General Business Rate for each of the 3 previous Council areas. This will create a fair calculating for Manly CBD of 0.36972 ($370 per $100K).

3. We request expenses be removed from the Manly CBD rates to reduce the overall charges i.e., Council have proposed in their recent Northern Beaches Destination Management Plan, to expand the Information Centre, to represent all of the beaches, therefore costs should be apportioned across all commercial rate payers.

4. Proof that rental income generated from the Information Centre's commercially acquired assets; The Pantry and Cove Expresso are applied to the expense of the Information Centres, to balance out the cost of operation.

5. We ask for confirmation that the additional income raised from Manly CBD business and tourism activity are offset against the expense codes. This includes income items such as;

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footpath rentals, car parking fees and income, event applications, advertising banners, filming application and busking permits.

6. As per State Government requirements Council is required to publish their rationale for charging different rates. We would like justification of the current rate calculations, based on council expenses Vs council revenue raised.

In review, if you cannot meet the above requests, our preference is that the harmonisation is delayed while the State Government reconsiders IPART's recommendation for a fairer rating system, as to date, Northern Beaches Council have ignored their recommendations.

Finally, as the Chamber is awaiting details of the previous Special Levy expenditure and rationale for the harmonisation rating, as requested from Jeff Smith on Tuesday 16 February, we request the ability to add to our submission, after Sunday 28 March 2021.

The extension request is for 14 days, after all information is received from Council.

Yours sincerely,

Charlotte Rimmer
President – 2021

CC:
Northern Beaches Councillors
[Candy Bingham, David Walton, Natalie Warren, Roslyn Harrison, Penny Philpott, Stuart Sprott, Pat Daley, Sarah Grattan, Rory Amon, Sue Heins, Vincent De Luca OAM, Kylie Ferguson, Alex McTaggart, Ian White]

James Griffin MP (local member for Manly)

Manly Business Chamber Exec Committee
[Christine Franze, Drew Johnson, Jim Buda, Klaudia Brown, Matt Clifton, Meegan Clancy, Regan-VanderWert-Walsh, Stephen Pirovic, Tracey Mietzke]

Shelley Hancock (Minister for Local Government)

The CBD Property Owners Group
[Aspiring Properties - Blair Courtney-O'Connor, Athas - Chris Athas, Gwynvill - Michael Rogerson, Halix - Bob Smith, , Henroth Investments - John Roth & Con Nicola, NC Coombes & Co - Nicholas Coombes]

26 May 2016

Mr Dick Persson
Administrator
Northern Beaches Council

Dear Mr. Persson

Re: Proposed Manly Oval Carpark, Manly CBD Parking and Commercial Special Levy

The Manly Chamber of Commerce would appreciate the opportunity, in due course, to explain the process we have been through in evaluating the merits of the proposal to demolish the Whistler Street car park and construct a new car park under Manly Oval. We understand that you have more immediate priorities in initiating the merger of the Councils, but we would like the opportunity to counter some of the negative comments about this proposal which are emanating from a relatively small group of residents.

It is fair to say that the Chamber shared some of the initial concerns about the financial aspects of the proposal, but following the earlier KPMG review of the costs/financials, and the subsequent successful tender process, we are now fully supportive of the Proposal. The Manly 2015 Plan is a very important upgrade to the infrastructure in the Manly CBD, with the improved pedestrian areas, and reduced traffic in the centre (by locating our main car park on the ring road). The existing Whistler Street car park would require many $millions just to bring it up to current fire safety and access codes, and we would still be left with an ugly structure, with small car spaces, very low clearances and very narrow tight ramps (and much reduced parking numbers). It would be very difficult to mount an argument that it should be retained, long term, as one of our major car parks.

With the recent merger of the 3 northern beaches Councils, the Manly Chamber of Commerce believes it is important to record the history of our "voluntary" Parking Levy, and its role in funding the parking facilities we now have in Manly. The same Levy, which is now known as the Special Levy, has also been used to fund a portion of the Oceanfront Promenade improvements, and all of the recent Corso up-grade.

History of Manly CBD Parking Levy and current Special Levy:

This levy commenced, in the early 1960's, when the local commercial ratepayers and businesses approached Manly Council, to establish a fund to acquire land for additional parking in the CBD. It was a voluntary levy, and was initially used to acquire land in Wentworth Street, Central Avenue and Short Street. These levy funds, combined with Parking Contributions received from Developers, were used to help fund the construction of the Whistler Street car park. Subsequently, all these sites were developed and public

car parks were included in the new developments (i.e. Manly National Building, Pacific Waves and the Peninsular Development). Manly Council also received over $17million from the developers of the Peninsular project.

Manly is very fortunate that our commercial ratepayers (and former Councillors), had the foresight to initiate the voluntary levy used to acquire these sites that now provide almost 1,100 car spaces. Comparable locations such as Bondi and Cronulla did not benefit from the same forward thinking commercial businesses/owners, and now suffer major parking problems.

As mentioned, the Parking Levy was changed about 18 years ago to a "Corso and Oceanfront Improvement Levy" and is now known as the Commercial Special Levy. This change was made at the time by Mayor Sue Sacker, who said that we cannot afford to acquire more land for parking, or build more parking, and changed the nature of the Levy, without any real consultation with the ratepayers who were paying the Levy (which was as we point out a "voluntary" levy).

The Levy now raises over $1million per annum, and was increased 11 years ago to allow Council to fund The Corso upgrade. At that time the Chamber was seeking an upgrade of The Corso, the state of which was a complete embarrassment to the local business community (and local residents). Council advised they had no funds for the up-grade, and we were asked by General Manager, Henry Wong, whether we would support a doubling of the Levy for 10 years to fund the Upgrade. The Manly Chamber consulted with our members and with the majority supporting a doubling of the Levy, we wrote a letter acknowledging this support, for Council to seek approval to the increase from the Minister for Local Government. The agreed 10 year period for the "doubled " Levy expired in June 2015, and we believe Council should now revert to the original Levy.

The public car parks have now become a major revenue source for Manly Council, and over the years we have had to "fight" to retain the 2-hour free parking provided within the car parks. The public car parks are a very important part of our business infrastructure, and Councils ramping up of the parking fees after the 2-hour free period, in recent years, is of concern to local businesses (who have to compete with Warringah Mall and Stockland Balgowlah with cheaper and more plentiful parking).

As a result of this "Levy" history, we believe the local business community has a very real equity stake in the CBD public car parks. The on-going management and operation of the car parks is of vital concern to all CBD owners and operators. We are particularly concerned that you, as Administrator, of the new combined Council, are aware of the history of the Levy, and that the car parks will continue to be managed with the interest of local businesses (and our residents/customers), overriding any revenue raising efforts of the new Council.

In Summary:

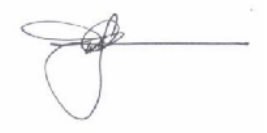
The Chamber strongly supports the Manly 2015 Plan, and in particular the need to replace the very poorly designed, ugly, and now obsolete Whistler Street Car Park. The suggestion by the Planners involved in the Manly 2015 Plan, that Council look at relocating this parking under the Manly Oval, now has the Chambers full support. Modern CBD traffic planning principles also support the positioning of major public car parks on the roads - leading into major commercial and tourist centres, or on the ring roads, to avoid vehicular congestion in the pedestrian friendly areas.

The 2015 Plan, with new pedestrian areas and a modern 500+ space car park under the oval, will revitalise the western section of the CBD. The new car park, even with the 2-hour free parking, will generate very significant revenue for Council over the next 20-30 years. The fact that the new car park will be paid for by the sale of a 99 years lease over the "triangular" site in Whistler Street and Market Lane, is a very satisfactory outcome in our view.

We understand that as Administrator of a new combined Council, you might need to review this major project. However, the Chamber sees the removal of the "obsolete" Whistler Street car park, and redevelopment of that location, as a very important part of the Manly 2015 Plan. The development proposed by the Athas Group appears to be very attractive, including some very worthwhile community assets.

The Chamber, would really like the opportunity to meet with you to explain more fully the reasons why we are so supportive of the overall Manly 2015 Plan. Please contact the Chamber or the undersigned if you need to discuss any of the points raised in this letter.

Your sincerely



Drew Johnson

President

1 March 2021

Northern Beaches Council
CEO Ray Brownlee
Mayor Michael Regan
Director Corporate & Legal - Jeff Smith

Dear Sir/Madam,

Re: Northern Beaches Rates Harmonisation submission.

We write this letter to provide further feedback on the Northern Beaches Council Proposed Rates Harmonisation, as per our original submission, 25 February 2021.

We are now in receipt of the requested documentation from Council, containing the budgeted forecast for the Manly Business Centre Improvement Special Rate and would like to address the following:

The Minister for Local Government, Hon Paul Lynch, gave direction for a Rate Increase authorization, dated 27 June 2007. Accordingly, the Special Levy was approved for:

1. Renewal of infrastructure assets and maintenance.
2. Capped at 10 Years.
3. Clear reporting required by Council of the expenditure per project/program and outcomes achieved.

The supporting MOU between Manly Council and Manly Chamber of Commerce 2005, regarding the expenditure of the business Special Levy, reinforces that any works expenditure is outlined as:

1. Improvement and replacement of public area infrastructure and amenities within the Manly CBD.
2. Upgrade of infrastructure for all footpath and pedestrian areas in the CBD, where adjoining properties are levied with the Business Special Levy
3. Establishment of a Mainstreet program, with a Business Plan, to be agreed upon by the Manly Chamber of Commerce.

After reviewing the expenditure of the Special Levy, received from Council 25 February 2021, we note it shows expenditure for lawn mowing, the Jazz Festival, Hello Manly Visitor Information Centre and other non-capital items.

The Special Levy, formerly known as the Parking Levy and Corso and Oceanfront Improvement Levy, was to be used to augment capital improvements in the Manly CBD, not cover operating expenses.

General cleaning, beach sweeping, cleaning of furniture and lawn mowing are daily operational costs.

The Visitor Information Centre costs have been in the general budget since its inception in 1970 and should not be attributed to the Special Levy. Even if it's erroneously included, the costs of operation should also be reduced by income generated for leased assets Cove Expresso and The Pantry. The Manly Business Chamber operated this centre at a cost of $80,000 PA, after savings, and rental incomes were applied. Thus, Council should be reviewing its excessive operational costs of $330,000.

The Manly Jazz and Food and Wine Festivals have been in operation for 44 years. How has this budget allocation now fallen into a Special Levy fund designed for upgrade works?

Council is required to keep separate accounts for the Special Levy expenditure, with annual consultation, agreeance, and approval of the budget. This was a compulsory, statutory requirement of the Ministers approval and MOU and has not been delivered at any point in 15 years of use, placing Council in breach of both agreements.

Special Levy

Due to obvious misuse in the levy, we are requesting an immediate 100% removal of the Special Levy.

Manly CBD Rates

In accordance with our earlier submission on the "rate harmonisation", the Manly CBD is clearly being treated unfairly in this process and being asked to pay a much higher rate per $100k of UV, without any attempt by Council to justify this higher rate. The difference between Manly and other commercial areas is excessive. Stand alone sub categories are not a reasonable rationale for this difference, and thus we require an immediate review of the cumulative rates being charged to the Manly CBD, with a reduction applied. This is especially important considering how badly Manly CBD is suffering due to the pandemic, with businesses closing or becoming insolvent on a weekly basis.

Yours sincerely,

Charlotte Rimmer
President – 2021

CC:
Northern Beaches Councillors
[redacted]

James Griffin MP (local member for Manly)

Manly Business Chamber Exec Committee
[redacted]

Shelley Hancock (Minister for Local Government)

The CBD Property Owners Group
[redacted]

02-07-07 14:58 1

Infrastructure Levy Special Rate

LOCAL GOVERNMENT ACT 1993

INSTRUMENT UNDER SECTION 508 (2)

I, **PAUL LYNCH MP**, Minister for Local Government;

1. In pursuance of section 508(2) of the Local Government Act 1993 determine that the percentage by which Manly Council may increase its general income for 2007/2008 is 5.8% above that for 2006/2007 subject to the following conditions:

   (i) the Council will raise $428,032 of the increase by additional rates for the costs associated with renewal of infrastructure asset renewal and maintenance, as defined by the Council, for a period of 10 years; and

   (ii) the Council will reduce its general income in 2017/2018 by $428,032 plus the equivalent cumulative proportion of this increase from any general variation increases or any special variation increase approved for 2008/2009 to 2016/2017 inclusive; and

   (iii) the Council clearly reports in its annual report for the period 2007/08 to 2012/13 information on the total income received from the special variation, expenditure per project/program and outcomes achieved.

This approval is on the understanding that the Council makes and levies its rates according to the provisions of the Local Government Act 1993.

Dated this 27th day of June, 2007

The Hon Paul Lynch MP
Minister for Local Government

Manly Business Centre Improvement Special Rate

2021/147594

24/02/2021

	% funded from Special Rate	Yr 0 2020/21	Yr 1 2021/22	Yr 2 2022/23	Yr 3 2023/24	Yr 4 2024/25
Total Special Rate income levied		**$1,263,037**	**$1,305,880**	**$1,337,221**	**$1,373,995**	**$1,412,741**
Special rate contributes funding towards:						
Maintenance and cleansing						
Mowing and vegetation and streetscape maintenance - Corso and reserves	20%	$110,000	$112,200	$114,893	$118,052	$121,381
Cleansing - including high pressure paver washing, cleaning of street furniture, litterbins and beach raking and cleaning	20%	$380,260	$387,865	$397,174	$408,096	$419,604
Total maintenance and cleansing		**$490,260**	**$500,065**	**$512,066**	**$526,148**	**$540,986**
Total as a % of Special Rates		39%	38%	38%	38%	38%
Tourism, Events and Business Support						
Manly Mainstreet Place Co-ordinator and activations and workshops	100%	$169,000	$172,380	$176,517	$181,371	$186,486
Manly Christmas decorations	75%	$75,000	$76,500	$78,336	$80,490	$82,760
Manly Visitor Information Centre, Hello Manly website and Tourism and Economic Development	50%	$331,981	$338,621	$346,748	$356,283	$366,331
Major Manly Events - including Taste of Manly and Manly Jazz	30%	$90,000	$91,800	$94,003	$96,588	$99,312
Total tourism, events and business support		**$665,981**	**$679,301**	**$695,604**	**$714,733**	**$734,889**
Total as a % of Special Rates		53%	52%	52%	52%	52%
Capital Expenditure and Special Projects						
Manly Place Plan	70%	$20,000	$126,514	$0	$0	$0
Rialto Lane beautification	55%	$14,805	$0	$0	$0	$0
Public Space Protection Program (Vehicle mitigation devices)	8%	$71,991	$0	$0	$0	$0
Manly Place Plan implementation		$0	$0	$129,550	$133,113	$136,867
Total capital expenditure and special projects		**$106,796**	**$126,514**	**$129,550**	**$133,113**	**$136,867**
Total as a % of Special Rates		8%	10%	10%	10%	10%
TOTAL CONTRIBUTION		**$1,263,037**	**$1,305,880**	**$1,337,221**	**$1,373,994**	**$1,412,741**

From: [redacted]
To: [redacted]
Cc:
Subject: Fwd: NBC Rate Harmonisation
Date: Monday, 1 February 2021 11:40:58 AM
Attachments: Equity and NBC Council Scenarios.docx

Dear requests,
Can we please consider [redacted] letter as a submission regarding the rates harmonisation and prepare a response.
I imagine that this is dependent upon the service review process.
I've had previous conversation with [redacted] along these lines and realise this is an expensive proposition.

Many thanks

[redacted]

From: [redacted]
Sent: Saturday, January 30, 2021 6:43 pm
To: [redacted]
Subject: NBC Rate Harmonisation
Dear [redacted]

You will, of course, be aware that the NB Council has invited submissions on four "Rate Harmonisation" scenarios, all of which will require average Manly Ward ratepayers to pay around an extra $300 pa so the same ad valorem rate can be applied across the whole of the Northern Beaches.

I have objected to the scenarios because they are not equitable (see the attachment for reasons) and have requested Council to prepare an additional scenario whereby Manly's ad valorem rate is frozen for five years.During this period I have suggested that Council efficiencies be used to progressively adjust the ad valorem rates in other wards to the Manly level.In this regard it is refreshing to see that some of the efficiencies promised from amalgamation have already been achieved and I believe it would be beneficial if Council had a numerical ad valorem goal to achieve in the future. I hope you will all support my request for a new scenario.

The question arises whether Council will be able to legally apply different ad valorem rates across the municipality as would be required to give effect to my request.I can see it would be very easy for Council staff, and perhaps Councillors, to simply say "not allowed" and move on.This would be unacceptable because it flies in the face of the purpose of the IPART review into local government rating system which was to establish an efficient and _equitable_ rating system.

I note that the draft Local Government Amendment (Rates) Bill 2021 does allow councils to define sub-categories within a category such as "residential" for rating purposes but unfortunately only (according to a section (2A) of the draft bill) to reflect differences in demand or

cost.I have not been able to find in council's accounts whether the cost of providing services to Manly ward is less than others but there is certainly circumstantial evidence that it is, again see the attachment

It is a great pity that the draft Local Government Amendment Bill 2021 takes away councils' ability to determine residential rates by "centre of population", and restricts councils' flexibility to establish residential sub categories for reasons other than cost.Councillors will be aware that the Minister for Local Government is seeking feedback on the draft bill by a 5 February 2021 deadline, and I have responded by asking for the Bill to be amended to provide councils with more flexibility in defining sub categories. In particular I have suggested that Section 529 (2A) should be amended to read " A sub-category may be determined for subsection (2)(c)(iv) only if the council is satisfied that it is necessary to equitably provide access to council services and infrastructure."Once again I trust you will all support this change, assuming the deletion of (2A) altogether is too much to hope for.

Kind Regards

[redacted]

Equity and NBC Council Scenarios

The arrangements whereby amalgamated councils were able to continue to apply former ad valorem rates will expire on 1 July 2021, requiring councils to "harmonise" rates.

The approach taken by the Northern Beaches Council has been to simply strike a new ad valorem rate for all ratepayers in the Municipality, set so as to not increase overall rate income and to be phased in over a number years. Council has produced a number of "scenarios" showing the impact of new ad valorem rates on ratepayers in the pre amalgamation municipalities. These scenarios all result in ratepayers in the Manly Ward paying on average around $300 more per annum, with many ratepayers paying much more than this. This result is unfair and inequitable.

According to Council figures, the average UCV for Manly is $1,140,247.82 and for Warringah is $886,602.63 and as a result the average Manly ratepayer would pay nearly 30% more than a Warringah ratepayer if a "harmonised" ad valorem rate were applied. UCV is based on market value and has little or nothing to do with the cost of providing council services. There is nothing to suggest that the cost of providing services to Manly ratepayers exceeds the cost to those in Warringah, possibly to the contrary. Using UCV in this case is not equitable.

As far as can be ascertained there is no data on the cost of providing council services to the various NBC wards. However Council figures indicate that the rate revenue per property in Manly is slightly less than in Warringah. Noting that the maligned as inefficient Manly council was able to provide a full range of services from much the same revenue per property it is seems reasonable to conclude that the cost of servicing Manly properties by the more efficient NBC should be lower than those in Warringah. This is to be expected because Manly is an old suburb and much infrastructure has already been paid for by earlier ratepayers (unlike growth areas further north). Furthermore Manly is a densely populated suburb and it may be expected that this factor may also reduce the cost per property of providing Council services compared with less densely populated suburbs.

It is often argued that use of UCV as a basis for rating is equitable because property value correlates with wealth and ability to pay. However Manly has a population of senior people who are asset rich but cash poor (a common condition) and asking them to suffer a large increase in rates (even if phased in) is both unfair and inequitable. For some it will cause them to sell the home they love and move to nursing home often with well known undesirable outcomes for both themselves and the community. Although accepting that there is little chance of moving from the UCV system, it is argued that a more equitable outcome would result if the Manly ad valorem rate were frozen and Warringah rates were reduced over time through the realised benefits from amalgamation until harmonisation was achieved.

From: [redacted]
To: Council Mailbox
Subject: Pensioner Rates & Charges Concession Policy
Date: Monday, 18 January 2021 11:04:43 PM

I do not support the proposed Pensioner Rates & Charges Concession Policy for the following reason:

The policy excludes Age Pensioners from Council's Voluntary Pensioner Concessions. This discriminates against Age Pensioners who should be included in the voluntary concessions or at least Council should clearly justify their exclusion.
Are Age Pensioners in the former Warringah Council area excluded from receiving voluntary concessions?

I think the Policy should be changed by having the same definition of "Eligible Pensioner" in the both the Voluntary Concession part of the policy and the Statutory Concession part - Namely the Statutory definition.

[redacted]

From: [redacted]
To: Council Mailbox
Subject: Rates harmonisation
Date: Monday, 15 February 2021 9:44:57 AM

Hi
I am confused as to why the merger of the councils did not provide cost savings. I would think cost savings would mean that the Warringah council rates could be reduced to be in line with Pittwater / Manly without raising rates for anyone. I don't see the point of merging the councils if it did not produce cost savings. I would like to see some statistics on this
Regards
[redacted] – Manly council rate payer.

From: [redacted]
To: [redacted] Council Mailbox
Subject: [redacted]
Date: Thursday, 18 February 2021 3:37:18 PM

Dear [redacted]
Firstly, we get a lot out of your regular news letters. Concise and very helpful.

I would like to comment on the proposed rate harmonisation for resident of the NBC.

The former Manly Council was levying rates at a certain level and providing all the services that we expect from a local council - rubbish collection, parks, beaches, building works, etc, etc, from that revenue stream. As far as I can see these services were being provided to a perfectly acceptable level. We certainly had no complaints.

On the other hand residents of the former Warringah and Pittwater Councils were paying a higher level of rates relative to Manly. I assume that residents there were receiving services to a similar level as those residents of the former Manly Council.

If that is the case, then the fact that residents of Pittwater and Warringah were paying higher rates than Manly residents for the same level of service, could on the face of it imply some inefficiency on the part of Pittwater and Warringah Councils. On the other hand it could imply that the former Manly Council were very efficient in providing services relative to Pittwater and Warringah. I can only assume therefore that because of either some inefficiency on the part of Pittwater and Warringah or due to some efficiently on the part off Manly, Manly residents paid lower rates than Pittwater or Warringah.

Now it is proposed that residents of Manly will have to pay significantly higher rates to provide the same service we are currently enjoying.

It seems to me that what is being proposed is that Manly residents should effectively cross subsidise the rates of those in the former Pittwater and Warringah areas.

Instead of Manly residents having to pay more for the same service, has anybody considered lowering the level of rates to the same level of rates in Manly and driving efficiency in the provision of services to the same level as Manly appeared to achieve? I understand that raising rates is the easy option, what choice do we have. At the end of the day we have to pay up. But every organisation has a responsibility to improve productivity and I can't see how this proposal has much to do with that.

Consolidation of local council areas was supposed to yield significant cost and efficiency savings. It's hard for us to understand how that can be defended when our rates are proposed to rise by almost 25% with, to the best of my knowledge, no change in the level of service. How can this be called efficiency or delivering on the consolidation promise?

Phasing "harmonisation" in over 4 years doesn't change the fundamentals. Our rates are still going up by 25%. On the face of it it, is proposed that Manly residents will have to pay more for the same level of service effectively subsidising those in the former Pittwater and Warringah areas.

I would welcome your views and any insights you may have that help us netter understand what is going on as right now, it is not a good look for residents of Manly.

Kind Regards,
[redacted]

[redacted]

From: [redacted]
To: Council Mailbox
Subject: A fairer approach to rates.
Date: Sunday, 31 January 2021 5:22:10 PM

Land valuation should have absolutely nothing to do with determining the rates we all pay.
Every single person living on the Northern Beaches has exactly the same access to services provided by our rate contribution regardless of our address.
Every single persons' rates should be identical.
This would be a much fairer approach to rates and very simple to administer.
Regards,
[redacted]

From: [redacted]
Subject: FW: Rates Harmonisation SRG Briefing
Date: Monday, 22 February 2021 8:58:32 AM
Attachments: image003.png
image.png
image002.png

[redacted]

Just confirming you have this on the register for Finance to respond to

Regards[redacted]

[redacted]

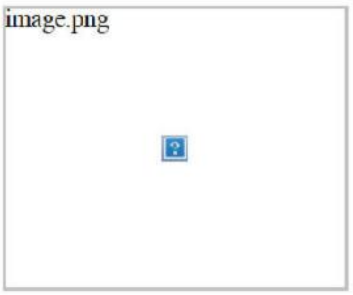
Sent: Saturday, 20 February 2021 4:58 PM
To: Council Meetings Mailbox / Calendar <CouncilMeetings@northernbeaches.nsw.gov.au>
Cc: [redacted]

[redacted]

Subject: Re: Rates Harmonisation SRG Briefing

Hi [redacted] and finance/council team,
Have had a look at the YourSay presentations on the business rates harmonisation plan.
I have 2 questions which the finance team will need to prepare for the answer - as below.
So can you liaise with the finance team to have the relevant slides to answer these questions and circulate this information prior to the meeting to the attendees ?
Then we will have clearer understandings of the impact on both individual business (and home owner) cases and the collective final position - and so can give a more informed view.
Many thanks
[redacted]

Question 1
Background
It is difficult to know how the impact on a business (and home owner) in different parts of the area will roll through.
In particular it is unclear whether new stormwater charges will roll into Warringah business (and residential) ratepayers during the same timeframe.
So can finance provide a breakdown of the year by year impact in former Manly, Warringah and Pittwater LGAs (including any extra new charges for stormwater) for a
Business ratepayer 1. Minimum ratepayer in the areas (so under $600K land value) and 2. An ad valorem ratepayer of $2M land value in each area
and
Residential ratepayers 1. Minimum ratepayers and 2. An ad valorem ratepayer of $2M land value in each area
Formatted like it has been shown for residential ratepayers like this. Expect this would result in four slides.



2. Council says that the harmonisation process is not going to take a higher total rates take - just a redistribution.
Does this mean that the residential rates take could be higher and the business take could be lower - or vice versa - so net off against each other?
Or is each " bucket" kept the same - so just a redistribution in each "bucket" ?
I would like to see a set of numbers that show /verify that this is the case.
So can you supply a table of forecast aggregate rates takings (including stormwater charges) separately for Years 1, 2,3,4 and 5, by former Manly, Warringah and Pittwater areas, split between business and residential ?
So one slide for business and one for residential.
Thanks very much
[redacted]

On Fri, Feb 19, 2021 at 2:46 PM Council Meetings Mailbox / Calendar <CouncilMeetings@northernbeaches.nsw.gov.au> wrote:

> Dear SRG member
>
> As you may be aware, Council is currently consulting with the community on our proposal to harmonise rates.
>
> All SRG members are invited to join us for a special online briefing to hear about the key theme arising from the feedback to date.
>
> There will be also time to ask questions and comment on the project as well as share what you are hearing through your networks.
>
> **Briefing details**
> **Date:** Wednesday, 24 February 2021
> **Time:** 6 – 7pm
> **Location**: The briefing will be held online via TEAMS. Instructions on how to access Teams, along with the meeting etiquette are attached.
> Please note the agenda for this briefing will be distributed shortly.
>
> In accordance with the Terms of Reference and Council's Code of Conduct, please see attached a Disclosures of Interest form for your use if applicable.
>
> Should you have any questions, please contact Governance on 02 8495 6831.
> For more information on this project, please visit the Rates Harmonisation Your Say page.
>
> Microsoft Teams meeting
>
> Join on your computer or mobile app
> Click here to join the meeting

From: [redacted]
To: [redacted]; Michael Regan
Cc: Council Mailbox
Subject: Re: Rates Feedback
Date: Saturday, 6 February 2021 5:11:04 PM

Resent with typos removed and amendments

Dear Mr Mayor,

Your recent communication on Rates got me thinking and as requested, I wanted to provide some feedback.

The impact to my family of your proposal is to increase my Rates from $4000 to $5000- a **25% uplift.**

The whole point of consolidating 3 Councils into 1 was to **drive cost efficiencies**. That's less Council salary costs, better supplier agreements, based upon volume and a simpler and more efficient Northern Beaches Council funding model.

Here we seem to be suggesting a " fairer Rates system" given there is a lack of consistency across the old Council Rates funding- which isn't surprising, as more folk live in Manly than the other jurisdictions, **so the per household unit cost should be lower** !

If the consolidation of the Councils had been successful commercially, **then there should be a 'net saving' to the community.** Clearly there has not been, as Council seems to be suggesting that it needs to get the same revenue as before- where's the value to the residents then on the Council consolidation savings?

How come we need to pay 25% more in Manly to pay for the lack of savings through consolidation ? Shouldn't that we disclosed these facts alongside the request to increase Manly Rates by 25% ?

Where's the reporting on the savings through consolidation and what targets have been achieved ?

How do Rates prices relate to 'number of dwellings per jurisdiction' ? as higher volume residential areas should drive lower per household costs, as volumes are higher. That's why Manly has a lower unit Rates price- and given now you have larger volumes, Manly Rates pricing should be the Rates price target- not a 25% uplift !

We, as a community have heard NOTHING, about the financial targets of consolidation. This shouldn't be about increasing Rates in Manly, this should be about passing savings back to the community, which **clearly has not happened.**

I'd like to raise the lack of transparency of financial reporting to the Community as part of this Rates community discussion please. Unless we get the financial facts - your graphs could be taken as 'mis-representing the volumentrics and efficiencies facts' that seem to be missing.

We have not even touched on the revenue increases through manipulation of land valuation price- again, more revenue for no community value.

Request - Cost Savings and Cost Efficiencies of Consolidated Council be published to the community. Impact of land value re-calculations also be made available alongside the request for a "Fairer Rates System'

Yours sincerely

[redacted]

[redacted]

From: paqclub@tpg.com.au <paqclub@tpg.com.au>
Sent: Tuesday, 16 February 2021 4:15 PM
To: Michael Regan <Michael.Regan@northernbeaches.nsw.gov.au>; pittwater@parliament.nsw.gov.au
Cc: [redacted]
Subject: Rates Harmonisation

Rob Stokes Member for Pittwater
Michael Regan. Mayor The Northern Beaches Council

cc: [redacted] (PAC Secretary) [redacted] (PAC Treasurer)

Dear Rob and Michael,

On behalf of the Pittwater Aquatic Club and other businesses in the Northern end of the council area I object to the very significant increases in commercial rates intended to be levied on commercial premises in the Pittwater area.
It was the understanding of our community that amalgamating three council areas, and significant financial contributions by The NSW State Government would result in cost savings however this does not seem to be the case. The overview provided last year to the five Chambers of Commerce of the Rates Harmonisation only described scenarios involving rate increases and how each of seven scenarios might be applied across the three former council areas. The internal council study did not identify where cost savings might have been achieved. The current proposal to increase commercial rates in Pittwater will impose a $5000 annual increase in council rates on the Pittwater Aquatic Club. Imposing a 30% rate increase on all commercial properties without any discernible improvement in facilities or services is unacceptable. Frankly I feel like I'm living in The "A" Riding again.

Rob,

Prior to ANY rate increases anywhere across the Northern Beaches I ask that the NSW Government conduct an independent and thorough audit of The Northern Beaches Council organisation and finances to identify areas suitable for optimisation such that would be expected from economies of scale achieved by the amalgamation (McKinsey & Co and PwC come to mind as independent consultants that might help.)

Please advise next steps.

Chris Kavanagh
President
Pittwater Aquatic Club

From: [redacted]
To: Council Mailbox
Subject: Submission - Rates Harmonisation
Date: Friday, 26 February 2021 11:19:45 AM
Attachments: [redacted]

Dear Sir/Ma'am,

Please read the email trail and attachments below, before reading the following.

I am a Veteran with a Gold Card in receipt of a DVA Pension (100% of the General Rate). I applied for a Pension Concession on 16 Jun 20 (see attachment) and was rejected based on I did not have a PCC (see attachment). At this point, I requested the process in order to commence a review your policy and here we are.

I have read your draft Rates Harmonisation Policy regarding concessions for DVA Gold Card holders and provide the following for consideration:

Para 1(a). persons who receive a pension, benefit or allowance under Chapter 2 of the Social Security Act 1991 of the Commonwealth, or a service pension under Part III of the Veterans' Entitlements Act 1986 of the Commonwealth, and who are entitled to a pensioner concession card issued by or on behalf of the Commonwealth Government, Remove the requirement Veterans to have a PCC

Para 1(c). persons who have received a lump sum mentioned in section 234(1)(b) of the Military Rehabilitation and Compensation Act 2004 of the Commonwealth or are receiving a weekly amount mentioned in that paragraph, and do not have income and assets that would prevent them from being granted a pensioner concession card (assuming they were eligible for such a card), Remove the requirement for Veterans to a have a PCC

Para 1(d). persons who receive a general rate of pension adjusted for extreme disablement under section 22(4) of the Veterans' Entitlements Act 1986 of the Commonwealth, or a special rate of pension under section 24 of that Act, Change to DVA Gold Card holder

Para 2(d). persons who receive either Totally and Permanently Incapacitated (TPI) Pension or Extreme Disablement Adjustment (EDA Pension from Department of Veteran Affairs. Change to DVA Gold Card holder

Please acknowledge receipt of this email.

Happy if you want to give me a call.

[redacted]

Begin forwarded message:

From: Rates Northern Beaches <Rates@northernbeaches.nsw.gov.au>
Subject: RE: Attention [redacted] - Northern Beaches Pensioner Concession Application 2020
Date: 11 August 2020 at 10:32:54 am AEST
To: [redacted]

Good morning [redacted],
Thank you for your email. Northern Beachs Council offer pension rebates to pension recipients. This is a means based pension through Centrelink or DVA. Some gold card holders do qualify if they are also receiving that pension. I have attached a copy of the verification report from Centrelink where it states you have the gold card but you do not have the pension concession entitlements. Please see section Card Entitlements – PCC Entitlement – No
It does state in the Local Government Act 1993 Section 575 that you need to be an eligible pensioner to receive the pension rebate.
If you would like to discuss any further you may like to email the Rates Manager by sending an email to council@northernbeaches.nsw.gov.au and attention it to [redacted]
Kind regards

[redacted]
Rates Officer
Transactional Accounting
t 02 8495 5060
rates@northernbeaches.nsw.gov.au
northernbeaches.nsw.gov.au

Begin forwarded message:

From: [redacted]
Subject: Attention [redacted] - Northern Beaches Pensioner Concession Application 2020
Date: 3 August 2020 at 5:49:53 pm AEST
To: Council Mailbox <council@northernbeaches.nsw.gov.au>

Donna,

I submitted a Northern Beaches Pensioner Concession Application for reduced rates at [redacted] (see below). The basis of my submission was that I am a DVA Gold Card holder.

This claim was rejected as I do not have a Centrelink Pensioner Concession Card or have a Gold Card embossed with TPI or EDA.

I have since spoken with DVA, who informed me that most Local councils provide rate rebates for Gold Card holders (see link below).
https://www.dva.gov.au/financial-support/discounts-and-concessions/concessions-new-south-wales

DVA informed me that many other NSW councils are awarding rebates for Gold Card holders not embossed with TPI or EDA.

Is the Northern Beaches council considering awarding rebates for these Gold Card holders? If not, is there a process to initiate a review?

Thanks.

[redacted]

[redacted]

Begin forwarded message:

From: [redacted]
Subject: Attention [redacted] **- Northern Beaches Pensioner Concession Application 2020**
Date: 16 June 2020 at 5:48:16 pm AEST
To: Council Mailbox <council@northernbeaches.nsw.gov.au>

[redacted]
As discussed please find attached my application for rates concession on [redacted]
The attached pdf also contains two letters from DVA; one is confirming my Gold Card, the other confirms I am receiving a DVA Pension.

Thanks.

[redacted]

[redacted]

northern beaches council

Pensioner Concession Application 19/20

If you need help lodging your form, contact us		
Email	council@northernbeaches.nsw.gov.au	
Phone	1300 434 434	
Customer Service Centres	**Manly** Town Hall, 1 Belgrave Street Manly NSW 2095	**Dee Why** Civic Centre, 725 Pittwater Road Dee Why NSW 2099
	Mona Vale 1 Park Street Mona Vale NSW 2103	**Avalon** 59A Old Barrenjoey Road Avalon Beach NSW 2107

Office use only	
Form ID	1002
TRIM Ref	C000021
Last Updated	May 2020
Business Unit	Finance
Application No.	
Receipt No.	

Privacy Protection Notice	
Purpose of collection:	For Council to provide services to the community
Intended recipients:	Northern Beaches Council staff
Supply:	If you choose not to supply your personal information, it may result in Council being unable to provide the services you seek
Access/Correction:	Please contact Customer Service on 1300 434 434 to access or correct your personal information

Application for a Pensioner Concession for the whole or part of the year commencing 1 July	

If joint owners are eligible for a pensioner concession, a separate form will need to be completed by each owner to receive the maximum rebate, otherwise only a partial rebate will be granted.

Part 1: Contact Details

Title	☑ Mr ○ Mrs ○ Ms ○ Other:		
Full Name	[redacted]		
Date of Birth (dd/mm/yyyy)	[redacted]		
Concession Card Type *(Pensioner Concession Card, DVA Gold Card)*	DVA Gold Card		
Concession Card Number	[redacted]		
Date of Grant of Concession Card	[redacted]		
Property Address	[redacted]		
	[redacted]	**Postcode**	[redacted]
Rates Reference Number	[redacted]		
Phone	[redacted]	**Mobile**	[redacted]
Email	[redacted]		

Please provide a copy of your pensioner concession card with this application

northernbeaches.nsw.gov.au

Part 2: Owner Details

Is this your sole / principal place of living		☑ Yes	☐ No
When did you move into the property?		[redacted]	
Have you claimed a pensioner rebate for any other property in the last 12 months? (if Yes, please provide the address of the other property below)		☐ Yes	☑ No
Property Address (Relating to previous question)			
	Postcode		
Are you the sole owner of the property? If No, who else owns a share?		☐ Yes	☑ No

Name	Relationship to me (eg. Spouse, Parent, Co-owner, De Facto etc.
[redacted]	Spouse

Note: if the rateable property is jointly owned by more than one person, each of whom are individually entitled to a pensioner concession then each individual must complete a Pensioner Concession Application Form.

Part 3: Declarations

The information contained in this application form and any information requested for the purpose of assessing eligibility for a pensioner concession is required under the Local Government Act 1993 and the Local Government (General) Regulation 2005.

You have right to withdraw your consent by contacting your Council. The information is private and confidential and your Council must not disclose the information to any person or body, if it is not directly related to the purpose for which the information was collected. If you have a complaint about the use of your personal information, contact your Council's Public Officer. The information contained or referred to in this application form may be corrected and updated by you, by contacting your Council.

By submitting this form, I declare that the information provided is true and correct and I am the person making this application. If you make a false statement in an application, you may be guilty of an offence and fined up to $2,220.

Applicant Signature	[redacted]	Date	16 JUN 2020

Part 4: Consent

The information provided on this form is private and confidential and your Council must not disclose the information to any person or body, if it is not directly related to the purpose for which the information was collected. If you have a complaint about the use of your personal information, contact your Council's Public Officer. The information contained or referred to in this application form may be corrected and updated by you, by contacting your Council

Please read the conditions and tick box below to confirm your consent to your Council checking your concession eligibility with Centrelink or the Department of Veterans' Affairs.

I, [redacted]

Authorise:

- Council to use Centrelink Confirmation eServices to perform a Centrelink/DVA enquiry of my Centrelink or Department of Veterans' Affairs customer details and concession card status to enable Council to determine if I qualify for a rebate.
- The Australian Government Department of Human Services (the department) to provide the results of that enquiry to Council.

I understand that:

- The department will disclose personal information to Council including my name, address, payment type, payment status and concession card type and status to confirm my eligibility for a rebate.
- This consent, once signed, remains valid while I am a customer of Council unless I withdraw it by contacting Council or the department.
- I can get proof of my circumstances/details from the department and provide it to Council so my eligibility for a rebate can be determined.
- If I withdraw my consent or do not alternatively provide proof of my circumstances/details, I may not be eligible for the rebate provided by Council.

I have read and accepted the above consent

Applicant Signature	[redacted]	Date	16 JUN 2020

northernbeaches.nsw.gov.au

Reference [redacted] Telephone 1800 555254

Australian Government
Department of Veterans' Affairs

[redacted]

GOLD CARD CONFIRMATION

To Whom It May Concern

This letter is to confirm that [redacted] is the holder of a current Repatriation Health Card for All Conditions from the Department of Veterans' Affairs (Gold Card).

This card was issued to [redacted] on 10/10/2018 and it expires on 1/10/2024.

Yours sincerely

Victoria Benz
Deputy Commissioner
15 June 2020

Want quick confirmation of concession eligibility? If you are a Concession Authority you can now verify eligibility online. To register for the Centrelink Confirmation eService (CCeS) contact the Department of Human Services or visit www.humanservices.gov.au

GPO Box 9998
BRISBANE QLD 4001

COUNTRY AND METROPOLITAN RESIDENTS 1800 555254
INTERNET http://www.dva.gov.au

Saluting Their Service

Page 1 of 1

Reference [redacted] Telephone 1800 555254

Australian Government
Department of Veterans' Affairs

[redacted]

Dear [redacted]

This is to confirm that you are entitled to payments from this Department. The information below sets out your ongoing entitlements with effect from 20 March 2020.

PENSION TYPE	AMOUNT PER FORTNIGHT
Energy Supplement	$7.60
Disability Pension	$508.50
Veterans Supplement	$6.20
Total	**$522.30**

The above information is correct as at the date of this letter. However, it is subject to change due to changes in your circumstances and changes in general pension rates.

Yours sincerely

Victoria Benz
Deputy Commissioner
15 June 2020

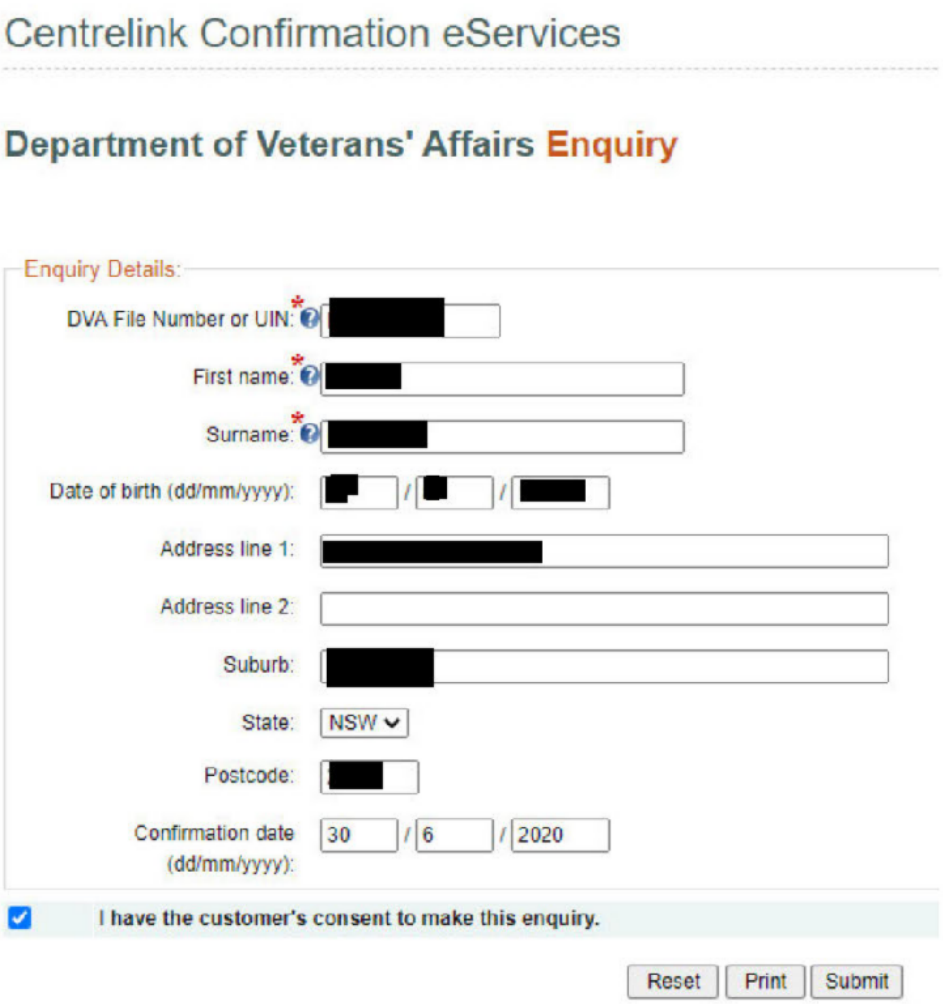
GPO Box 9998
BRISBANE QLD 4001

COUNTRY AND METROPOLITAN RESIDENTS 1800 555254
INTERNET http://www.dva.gov.au

Saluting Their Service

Page 1 of 2

Want quick confirmation of concession eligibility? If you are a Concession Authority you can now verify eligibility online. To register for the Centrelink Confirmation eService (CCeS) contact the Department of Human Services or visit www.humanservices.gov.au



Centrelink Confirmation eServices

Department of Veterans' Affairs Enquiry

Enquiry Details:

DVA File Number or UIN: *
First name: *
Surname: *
Date of birth (dd/mm/yyyy):
Address line 1:
Address line 2:
Suburb:
State: NSW
Postcode:
Confirmation date (dd/mm/yyyy): 30 / 6 / 2020

I have the customer's consent to make this enquiry.

Reset Print Submit

Centrelink Confirmation eServices

Department of Veterans' Affairs Results

DVA File Number or UIN Searched: [redacted]

Confirmation date: 30 June 2020

Customer Match Results

Match type	Result
DVA File Number or UIN	Yes
First Name	Yes
Surname	Yes
Date of birth	Yes
Postcode	Yes

Customer details

Characteristic	Result
Customer UIN	[redacted]
Deceased	No
War Widow Pension	No
Disability Rate	No

Card entitlements

Characteristic	Result
PCC Entitlement	No
GCH Entitlement	Yes

Military Rehabilitation Compensation Act Entitlements

Characteristic	Result
SRD	No
WDP	No

Previous Enquiry | Print | New Enquiry

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From: [redacted]
To: Council Mailbox
Subject: Rating System Across the Northern Beaches
Date: Wednesday, 17 February 2021 12:42:04 PM

Dear Mr Regan
I received your letter re the above matter and would like you to know that I object to
This new rating structure.
When the councils were combined we were assured that costs would reduce and we
Would benefit from this. Nothing could be further from the truth and we have not
Benefitted in any way from the combining of councils.
I am not in a financial situation where the costs can be increased substantially without
Having a direct effect on my living arrangements.
We in Manly did not ask to join with other councils and were more or less forced to comply
With the result that we are worse off, not better off.
There is no reason why the current system cannot be maintained – you state yourself
That this was always the case prior to this thought bubble.
I definitely do not agree with your proposal
[redacted]
Sent from Mail for Windows 10

From: [redacted]
To: Council Mailbox
Subject: Unacceptable Rate Increases!
Date: Monday, 22 February 2021 9:38:47 AM

Hi,

I have just been reading about the huge rate increases that we are expecting to get.

I would like to lodge a complaint, on the grounds that we were told that the council amalgamation would actually reduce rates!

These rate increases are absolutely unacceptable, and the council should instead be looking for ways to increase their efficiency, which was promised to us.

For reference my address is [redacted]

Thanks, [redacted]

From [redacted]
Date 11 December 2020 at 6 33 1 pm AEDT
To Councillors <councillors@northernbeaches.nsw go .au>
Subject The letters showing RBA has a retiree problem

So why do you hink it is ok to keep raising rates?
Your rat ng and spending policies are discriminatory to a large percentage of residents
Yours sincerely

26 February 2021

Northern Beaches Council
via Email: council@nothernbeaches.nsw.gov.au

Dear Sir/Madam,

SUBMISSION - PROPOSED RATES HARMONISATION STRUCTURE

We write in relation to the community consultation process for the proposed harmonised rating structure for Northern Beaches Council, on behalf of Vicinity Centres, owner and manager of Warriewood Square, and its tenants. Specifically, we write to voice our concerns in relation to the retention of the 'Business – Warriewood Square' rating category, which was introduced by the former Pittwater council to target the tenants and businesses operating within Warriewood Square.

Background

Urbis operates a specialist Rating, Taxation and Advisory (RTA) team. The team is widely recognised by both government and business as the leading independent expert/advisor in the area of statutory valuations, rating and taxation. We are continually involved in local government rating policy matters including legislative compliance, differential rating, rating and taxation principles for the purpose of distributing the total rates burden and special rates in response to individual council policy.

In its council meeting on 15 December 2020, Northern Beaches Council tabled four scenarios for the harmonised rate structure to be adopted in FY22. The four scenarios all adopt a single ad valorem rate for 'Residential – Ordinary' properties and a single ad valorem rate for the 'Business - Ordinary' properties with the applicable rate varying depending on which of the former councils' minimum rates charges is adopted, or the weighted average of the three.

We note the existing targeted rating category for Warriewood Square is proposed to be maintained in all four scenarios, with an FY22 ad valorem rate being the greater of:

- the FY21 ad valorem rate for the 'Business – Warriewood Square' rating category under the existing structure plus the FY22 'rate peg' of +2%, or
- 10% more than the ad valorem rate for the 'Business - Ordinary' rating category under the harmonised rating structure.

We strongly oppose the retention of a rating category targeted solely at Warriewood Square and the application of an ad valorem rate greater than that levied on other businesses within Northern Beaches Council, which is inequitable and unfairly places a greater rates burden on tenants and businesses operating within the centre.

We have provided further detail and supporting rationale within this letter.

Best Practice Principles

Urbis, in its capacity as valuation advisor to the Shopping Centre Council of Australia (SCCA), have been directly involved in all state-based reviews and parliamentary inquiries over the past 20+ years, including recent state-based assignments to provide evidence and/or detailed modelling and reporting in the following:

- 'ACT Standing Committee on Public Accounts – Inquiry into Commercial Rates';
- NSW (IPART) 'Review of the Local Government Rating System';
- NSW 'Towards A Fairer Rating System' review of proposed Local Government rating reform;
- QLD 'Guideline on Equity and Fairness in Rating for Queensland Local Governments';
- VIC 'Fair Go Rates System' (rates capping); and
- WA 'Local Government Act Review, Rates, Fees and Charges'.

The key 'best practice' principles discussed through these consultation processes included the following:

- Differential rating categories should be limited to primary land use (i.e. residential, business, farmland and mining) with sub-categories limited to established sub-sets of the core land use category and, where applicable, further delineation of the land use categories based on geographic location. An appropriate capping system must also be applied to regulate ad valorem and minimum rate differentials.
- There must be a mandated process whereby all councils are required to prepare Integrated Planning and Reporting (IP&R) documents or similar providing full disclosure of the rates distribution (i.e. number of properties in a rating category, proposed ad valorem rates, total category revenue etc.). These IP&R documents must be placed on public exhibition with ratepayers provided an opportunity to provide submissions for the consideration of the council prior to adoption.
- In circumstances where a council elects to adopt differential rating categories or redistribute its total rates burden, a supporting rationale consistent with rating and taxation principles must be provided in its IP&R documents.

The creation of property-specific categories typically only occurs where a council seeks to discriminate against a single property, which cannot be supported as it creates inequity and contravenes the principle of competitive neutrality.

We note the 'Rates Harmonisation Analysis' presented on 15 December 2020 specifically references the rating structures of Waverley, Willoughby, Central Coast, Sutherland and Hornsby councils. The reference to these rating structures to justify the retention of the centre-specific category for Warriewood Square can only be described as misleading given their varying locations across NSW and, critically, when noting that only 9 of 128 councils with NSW (including Northern Beaches) apply similar discriminatory policy and adopt property-specific rating categories i.e. the vast majority of councils adopt rating structures consistent with the 'best practice' referenced above and the intent of the governing legislation.

We consider the application of property-specific differential rating categories arguably contravenes the governing legislation, and accordingly the rating structures of the councils referenced above have all been referenced by the SCCA and Urbis with the State Government from an equity and fairness perspective as part of its request for submissions in response to its paper titled "Towards A Fairer Rating System". Waverley Council was not referenced in our submission as they do not apply property-specific rating categories, rather their 'Business – Bondi Junction' contained some 881 assessments in FY21.

Reference to Council Services

We note the 'Rates Harmonisation Analysis' supports the retention of the centre-specific category for Warriewood Square to *"ensure the rates levied reflect the demand and use of council services and fairness and appropriateness of the rates in terms of the benefits principle and the ability to pay principle"*.

The rationale that shopping centres receive a greater benefit from council infrastructure and services is not supportable when noting they do not generate demand for, or directly benefit from, a number of facilities and services funded through council rate revenue including, but not limited to:

- waste collection and management;
- recreation facilities such as parks, sports fields and swimming pools;
- health services such as public toilets, noise control and animal control;
- community services such as children's services, aged care, community care, recreation programs and welfare services; and
- cultural facilities such as libraries, art galleries and public art.

Accordingly, there is no basis for the tenants of Warriewood Square to be treated any differently from other retail businesses operating within Northern Beaches Council.

The impact of COVID-19 on shopping centres and their local businesses

It has been well publicised that the retail industry has been severely impacted by COVID-19 and will likely endure a protracted recovery period. The National Cabinet recognised the considerable challenges created by COVID-19 and implemented a Mandatory Code of Conduct – SME Commercial Leasing Principles, which the NSW Government implemented through the Retail and Other Commercial Leases (COVID-19) Regulation 2020. The intent of these regulations is to generally promote governments, landlords and tenants sharing the burden of COVID-19.

Whilst the application of centre-specific rating categories is rare, there is a common misconception at a council level that the increased charge is borne by the landowner. As council rates are a recoverable charge under commercial leases in accordance with NSW retail tenancies legislation, the increases are borne by the local businesses operating within the centres. Accordingly, in excess of 100 local businesses operating within Warriewood Square, many of whom are small to medium enterprises (SME), will be subject to the proposed increase.

As part of its ongoing commitment to support tenants within the centre through both the 2019-20 bushfire emergency and more recently the COVID-19 crisis, Vicinity Centres have worked with its tenants to provide considerable rental support to help sustain their businesses into the future.

Accordingly, any proposal that sought to increase the tax burden of these already stressed businesses cannot be supported in the current environment and would be detrimental to Vicinity's ongoing financial support for its tenants, and in direct conflict with the principles mandated by State and Federal Governments (SME Codes) and corresponding state-based tax relief measures (land tax rebates, payroll tax waivers and deferrals).

Post the community consultation process, if it is councils intention to proceed with a harmonised rating structure that includes a rating category targeted solely at Warriewood Square, we will seek an opportunity to meet with council on their behalf.

If you have any questions, please don't hesitate to contact me at sallsop@urbis.com.au or on 0408 300 875.

Yours sincerely,



Sam Allsop
Director

21. 2. 2021

Scanned 10-03-2021

To whom it may concern.

I am writing in answer to your Ratepayer System.

I live at [redacted] Cul Cuch have been here for 65 yrs, I am [redacted] yrs old - a pensioner - live [redacted]

The land on which we built a 12 square house - Defence Force Loan - is big - as the blocks were then - I think its 12 squares now - we raised four children - [redacted]

I am very worried that with the new way of rateing I may be forced to leave. I am in good health - very independy - and want to stay here as long as I can



Over the last year or so - I have seen a lot of improvement in [redacted] New school - parking for the fields - footpath - so much has been done to improve the area - Such a huge difference from when we came over here in 1956 -

Once again I do hope you keep in mind the people who have been here in the early days

Yours Sincerly

[redacted]

4th Cecil Cecil 2099

[redacted]



From: [redacted]
To: Council Mailbox
Subject: 'Rates harmonisation' Northern Beaches Council
Date: Saturday, 27 February 2021 9:47:58 AM

Dear Sir/Madam

The purpose of this email is to register with you my full support for the above policy change by Northern Beaches Council (NBC) to harmonise rates for all NBC properties.

The proposed changes as outlined in NBC communications to me set out a fair and reasonable process to achieve harmonisation of rates. I arrived at this conclusion because of the satisfactory way in which the former Warringah Council managed its financial affairs which cannot be said for either Pittwater and Manly Councils.

Yours sincerely,

[redacted]

Sent from my iPad

From: [redacted]
To: Council Mailbox
Subject: Rates Harmonisation
Date: Friday, 5 February 2021 11:16:50 AM

Dear Mr. Mayor,
Q. Why didn't the majority of Manly residents want to amalgamate into Northern Beaches Council?
A. Because there was nothing in it for them; on the contrary, there was every likelihood that Manly residents would be worse off!
However, the subject is Rates Harmonisation!
As soon as I read: ..... *76% of residential ratepayers will see a reduction in their annual rates,* I immediately realised the remaining 24% were going to get it in the neck.
The description "just collecting it more equitably" presumably means "collecting it more fairly". What is fair about discriminating by postcode or precinct? All Northern Beaches residents have the same waste collection service and the same inadequate maintenance of roadways. For your information, an example of inadequate maintenance of roadways is Pacific Parade, between Balgowlah Road and Smith Street; that section of roadway is a hazard for drivers and residents alike and it is long overdue for maintenance attention. When was it last resurfaced?
There's much more to an "equity" debate than the collection of rates based on land value; perhaps we also need to view some statistics regarding the harmonization of Council's expenditure. As an example: What is the annual expenditure by Council on road maintenance per billion dollars of land values, when comparing the "old" Manly Council area with the "old" Warringah Council area for instance?
I have no argument with equitable distribution, however, there are two sides to that coin; one being *Income* and the other being *Expenditure*. Using "land values" to justify "equitable collection of rates" totally ignores "equitable distribution of expenditure". Mr. Mayor, are you able to share some statistics that will demonstrate harmonisation of Council's expenditure based on land values?
Thank you for the opportunity to have my say!
Yours faithfully,
[redacted]

From: [redacted]
To: Council Mailbox
Subject: Rate increase
Date: Thursday, 11 February 2021 3:23:56 PM

Since amalgamation we have been effectively pushed out of Clontarf reserve by the increased use by northern beaches residents who now have free parking! On top of this our rates are about to rise! Thanks Manly !
[redacted]

From: [redacted]
To: Council Mailbox
Subject: Re: [redacted], have your say today": ATTENTION MAYOR REGAN
Date: Sunday, 7 February 2021 11:09:08 PM

Dear Mayor Michael Regan,

Having read your email, and the information provided regarding harmonisation of rates on the Northern Beaches, I must say that I'm disappointed that it appears that the decision has already been made to continue the unfair levy of higher rates being paid over the next 4 years, at least in part, by the former Warringah area.

Warringah area should be relieved of the heavy load they have been carrying immediately from July 1 2021. Especially as they have been paying higher rates since amalgamation.

As a Senior person, though not a Pensioner but recognised as being in need of assistance by the Commonwealth Government by having been provided the Senior Health Card, it would be helpful if we, as well as Pensioners, could be given some reduction in our rates as soon as possible.

I have written my opinion in this format as I have found it difficult to negotiate the other method provided.

This email had been copied to some members of the Council and NSW State Government for their information of my opinion of the pending decision regarding harmonisation of rates in the Northern Beaches.

Regards,
[redacted]

[redacted]

On Mon, 1 Feb 2021, 4:01 pm Northern Beaches Council, <noreply@northernbeaches.nsw.gov.au> wrote:

1 February 2021 No images? Click here



Community Engagement News

Explore open projects

Draft Northern Beaches Local Housing Strategy

From: [redacted]
To: Council Mailbox
Subject: Council rates
Date: Monday, 15 March 2021 7:39:34 PM

Hi there
I'd like to provide feedback on the proposal to harmonise rates. Whilst a good intention, I feel this disproportionately impacts Manly residents such as my family. To offset this, I would hope the council will invest more in Manly and accelerate the numerous projects that seem to have stalled, such as down at Little Manly. As a major tourist destination I think it's in the interests of the council to do this.

Cheers
[redacted]

Towards a Fairer Rating System – Consultation Guide Summary

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The Local Government Amendment (Rates) Bill 2021

1. Allowing Gradual Rates Harmonisation

- It is proposed that each council formed in 2016 have the option to gradually harmonise new rates for residential and farmland rates from 2021-2022 over four years.
- Councils that take up the gradual harmonisation option will need to apply no more than 50% of the total increase in rates at the rating category level over the period, in any one of the four financial years.
- Councils that choose to harmonise gradually will be required to set out their intended approach over the full four years in their IP&R documents.
- Rather than setting a maximum percentage increase each year, it is proposed to allow affected councils to set rates each year according to community needs and prevailing economic conditions.

Rationale

This allows councils with different legacy rating structures to harmonise in consultation with their communities according to local circumstances and conditions, under the IP&R framework.

It also takes into account both an unusual three-year council term, with elections in 2021 and 2024, as well as the fact that all land is to be revalued before rates are levied for 2023-24.

2. Allowing Councils to levy Special Rates for jointly funded Infrastructure

- It is proposed to clarify that special rates may be levied to pay for goods, services and infrastructure that are not covered by chapters 5-6 of the Act if the specific purpose of the special rate is to co-fund or contribute to infrastructure or services being jointly provided with another level of government.
- Income from this special rate will not form part of a council's general income under the rate peg and councils will not need to seek IPART's approval before levying the special rate.

Rationale

The Government is committed to establishing an equitable and effective funding framework for infrastructure associated with development, and, ensuring that growing communities have adequate and effective infrastructure needed to support that growth.

The Government therefore supported IPART's recommendation that councils be able to levy a new type of special rate for new infrastructure, where it is of clear benefit to the community, jointly funded with other levels of government.

3. Increasing flexibility through new Rating Categories and Subcategories

3.1. Allowing councils to set different residential rates in contiguous urban areas

- It is proposed to allow councils to create different rating subcategories for residential land in contiguous urban areas, while also continuing existing provisions that allow different residential rates to be set by 'centre of population', as used by regional and rural councils.
- Under the proposal, a council may only set different residential rates in a contiguous urban area if there is on average, different access to, demand for, or cost of, providing services and infrastructure.

Rationale

Currently, the Act prevents councils from applying different residential rates on properties within a single 'centre of population.' This is difficult to apply in practice and has effectively prevented councils in urban areas, like Greater Sydney, from setting different rates in different locations across their local government area, as occurs in regional and rural NSW.

Given this, IPART recommended councils be able to set different residential rates in contiguous urban areas, but only where there is on average, different access to, demand for, or cost of, providing services and infrastructure. It proposed that councils use geographic markers to define these areas,

including postcodes, suburbs, geographic features (e.g. waterways, bushland) and/or major infrastructure (e.g. arterial roads, railway lines).

Importantly, IPART also recommended that a limit apply so the highest rate structure is no more than 1.5 times the average rate structure across all residential subcategories (i.e. so the maximum difference between the highest and average rates, including ad valorem rates and base amounts, is 50%) except any new vacant land subcategory.

3.2. Creating a new rating category for environmental land

- It is proposed to create a new rating category for environmental land, and to define environmental land as that:
  1. for which current and future use of the land is constrained as it:
     a) has limited economic value relative to its size and location, or
     b) cannot be developed, or
     c) has low development potential for a business, residential or farming activity, and
  2. is subject to geographic restrictions or regulatory restrictions. It is proposed that, in determining whether land cannot be developed or has low development potential, councils must have regard to factors including the zoning of the land under the EP&A Act and regulations and relevant instruments, and any other matter prescribed by regulation.

Rationale

IPART recommended that a new, fifth rating category be created for environmental land to provide for appropriate rating of land that cannot be developed due to geographic or regulatory restrictions.

3.3. Enabling different business rates to be set for industrial land and commercial land

- It is proposed that councils be given the option of setting different rates for business land based on whether it is industrial or commercial land. This would apply in addition to maintaining the current option of setting different rates based on whether there is a ‘centre of activity’.
- It is proposed that councils that choose to take up this option determine whether business land is industrial or commercial, as necessary, based on whether industrial activities are predominantly taking place. This approach means that property zoning is relevant but not determinative for rating purposes, as intended by IPART, and creates a clear approach for councils and ratepayers that can be updated as necessary over time.

Rationale

Currently, the Act only allows councils to create different categories of business rates according to whether business land falls within a ‘centre of activity’

IPART recommended, and the Government supported, changing this so that different rating subcategories can also be created for land where industrial and commercial activities are occurring. This recognises that land where these activities take place typically have different access to, demand for or cost associated with providing council services and infrastructure. It also recognises that these parcels of land may, or may not, be clustered together within a local government area.

3.4. Enabling different rates for residential, business or mining land that is vacant

- It is proposed to give effect to this reform by allowing councils to create rating subcategories for vacant land within the residential, business or mining land categories. This type of rating subcategory will not be able to be created for environmental or farming land. In determining whether a parcel of land is vacant, a council will need to have regard to factors including whether the land has a substantial and permanent structure. For this purpose, a building or other structure may be considered substantial and permanent if it is:
  - significant in size or value
  - not incidental to the purpose of another structure or proposed structure
  - not related to, reliant on, or existing to support use or function of a structure, and
  - fixed and enduring, rather than built for a temporary purpose.

Rationale

At present, councils must rate a parcel of land as residential, farming or mining land if it determines the land falls within one of those categories whether or not it is vacant. If the land does not clearly fall into one of these categories, council must rate it according to its designated use under an environmental planning instrument or, in the absence of such an instrument, based on the predominant surrounding land.

IPART recommended that, after completing the current rating categorisation process for vacant land, councils be able to set a different rate for vacant land to that set for other land in the same rating category for residential, business and mining land.

3.5. Allowing different farmland rates to also be set based on geographic location

- It is proposed that councils be given the option of setting different rates for farmland based on geographic location. If this option is chosen, councils will need to:
  - create subcategories by reference to the geographic names published by the Geographical Names Board rather than drawing 'lines on a map', and
  - have regard to certain matters prescribed by regulation in creating subcategories for farmland and determining rates to be levied for each geographic location.

4. Changing specific exemptions from Ordinary and Special Rates

4.1. Removing mandatory rates exemptions for land with new conservation agreements

- It is proposed that there no longer be a mandatory rating exemption for private land for which a new conservation agreement is entered into after this reform comes into effect.
- Instead, these properties will be categorised for rating purposes by the relevant council and may be rated under the new environmental land rating category. Further, as set out above at 3.2, councils will be permitted to create rating subcategories, and therefore to set different rates for environmental land based on whether or not there is conservation agreement or other instrument prescribed by regulation.
- Importantly, to ensure fairness for parties to existing conservation agreements, it is proposed that those lands that currently benefit from this exemption continue to do so. This maintains a significant financial incentive that was taken into account by land holders when deciding whether to enter into an agreement which, in the vast majority of cases, is now binding on themselves and future owner.

Rationale

IPART recommended removing rating exemptions for private land with conservation agreements and that councils rate the land under the new environmental land rating category (see above at 3.2). This reflected the finding that these parcels of land should not always be exempt from rates as owners have exclusive possession, derive private benefits, use services and impose other costs on the council and broader community.

4.2. Removing certain mandatory exemptions from special rates for water and sewerage

- Not relevant to Northern Beaches Council

5. Improving public confidence in the Rating System

5.1. Narrow scope to postpone rates and let councils choose whether to write them off

- It is proposed to provide appropriate limits on the postponement of rates. These include:
  - limiting who can postpone rates to those ratepayers that would face substantial hardship as a result of paying the higher rates attributable to rezoning

  - restricting the amount of rates that can be postponed under the postponement of rates provisions to the difference between the rate applied under the former zoning, and the amount that will apply under the new zoning, and
  - removing the requirement for councils to write off postponed rates after five years, while still giving them flexibility to do so in appropriate circumstances.
- Importantly, to ensure fairness, it is proposed that those ratepayers that currently benefit from such an arrangement, or have applied to do so, continue to do so under the current provision after the reform comes into effect

Rationale

IPART found that the cost to councils of administering postponement arrangements is high and is inconsistent with the taxation principles of simplicity, efficiency and equity. In particular, the postponement option:

  - does not acknowledge the wealth gained in land value from rezoning
  - does not recognise that the increased rates are a small proportion of the increased value of the land asset, and
  - acts as a disincentive to develop land and does not promote growth and urban renewal.

IPART therefore recommended that the option to postpone rates in these circumstances should be removed, and that councils no longer be required to write-off postponed rates after five years. This would not affect the continuing ability for ratepayers to apply for rates relief on hardship grounds.

5.2. Allow councils to sell properties for unpaid rates after three years

- It is proposed that councils be permitted to seek to sell properties that are not vacant for unpaid rates and charges after 3 years rather than 5 years.
- This would apply from the date of commencement of the provision and would not apply in respect of properties for which a ratepayer already owes unpaid rates and/or charges to council at that time.
- Importantly, the COVID-19 Legislative Amendment (Emergency Measures-Miscellaneous) Act No.2 2020 currently operates to prevent councils from commencing legal action to recover rates and charges for six months unless certain specific matters have been considered.
- This temporary measure was put in place to help households that are under significant pressure to remain sustainable during the COVID19 pandemic and as steps towards economic recovery begin. It is therefore not intended to commence these new provisions while this temporary measure remains in place.

Rationale

IPART recommended that the period of time after which these properties may be sold should be reduced from five years to three years. The Government accepted this recommendation, which is designed to improve the simplicity of the rating system, bring NSW in line with other States, and is likely to reduce costs and delays currently experienced by councils in recovering outstanding rates.

Other rating reforms

1. Allowing councils' general income to rise in line with population growth

- The Minister for Local Government, with the approval of the Premier, has asked IPART to deliver a report recommending a rate peg methodology that allows the general income of councils to be varied annually in a way that accounts for population growth. Terms of Reference have already been provided to IPART for this review, which is expected to be completed within nine months.

2. Encouraging Councils to levy rates on mining land to reflect additional costs

- Not relevant to Northern Beaches Council

3. Retaining the Rating Category for Business as the 'Residual' Rating Category

- Following further consultation and consideration of how each reform of rating categories and subcategories may be implemented by councils, this reform will not be progressed at this time.

4. Requiring Councils to report the value of exemptions they grant each year

- It is understood that most councils do not have ready access to information on the value of all exemptions and that obtaining this information would impose a significant additional burden, particularly where that would require additional land valuations at council expense.
- Given this, it is proposed that councils include in their annual report an estimate of the value of those exemptions granted as a result of a decision of that council. This estimate need only be made by applying a simple, prescribed methodology based on information on each parcel of land that is available to council at the time of its decision to grant the rating exemption.

Towards a fairer rating system

December 2020

A consultation guide to local government rating reform



NSW GOVERNMENT

Produced by the Office of Local Government, Department of Planning, Industry and Environment
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MESSAGE FROM THE MINISTER FOR LOCAL GOVERNMENT

As foreshadowed at the Local Government NSW Annual Conference, I am delighted to release an Exposure Draft of the *Local Government Amendment (Rating) Bill 2020* to implement the NSW Government's response to IPART's review of the local government rating system.

The release of this Bill for consultation represents a milestone in the Government's reform agenda to ensure a fairer and more flexible rating system for councils and ratepayers across NSW.

This consultation guide, *Towards a Fairer Rating System,* has been released to explain the proposed changes and assist councils and others to provide feedback by the February 5 deadline.

The Government is committed to providing greater flexibility in the current rating system to improve distribution of the rating burden in local communities. This will to make rates fairer and help councils cater for population growth and infrastructure costs.

Whilst some will want us to go further, these sensible adjustments to the rating system are the first step to help ensure councils have a stable and reliable revenue base to deliver services for their communities and that ratepayers pay a fairer contribution.

I am now seeking feedback on this Bill from councils, communities and other interested individuals and organisations to help us understand whether we have struck the right balance. Your responses will be carefully reviewed as the final Bill is prepared for introduction to Parliament early next year.

I encourage you to have your say by reading this Consultation Guide, together with the Exposure Draft Bill, and answering the targeted questions, as well as providing any further, general feedback.

Your responses will be carefully reviewed as a final Bill is prepared for introduction. It is important that we hear from councils, communities and as many other interested individuals and organisations as possible.

I look forward to hearing your views.

The Hon. Shelley Hancock MP
Minister for Local Government

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Introduction

At the request of the former NSW Premier, the Independent Pricing and Regulatory Tribunal (IPART) undertook a significant review of the local government rating system in NSW. The purpose of this review was to identify how to improve the equity and efficiency of the rating system, in order to enhance councils' ability to implement sustainable fiscal policies over the long term.

On 18 June 2020, the Government released its Final Response to IPART's Final Report. This response acknowledged that local government and the communities they serve need to have a more flexible rating system, whilst ensuring rates are applied fairly and more equitably to local communities. It also committed to reforming the rating system to address issues identified during the review.

To deliver on the Government's commitments, a Bill has been prepared to seek to amend the *Local Government Act 1993* (the Act). Through this Bill, the Government proposes to implement the key reforms from its response in a way that is fair and reasonable for both councils and ratepayers.

To make sure we get the details right, an Exposure Draft of the Bill, together with this consultation guide, *Towards a Fairer Rating System,* have been released for public consultation. This provides a further opportunity to obtain essential feedback from councils, communities and other interested individuals and organisations until **COB 5 February 2021.**

The Government will introduce the Bill into Parliament in early 2021. In part, this will enable councils formed in 2016 to take up options provided by greater rating flexibility as they prepare for 1 July 2021.

How to read this paper

The consultation guide has been divided into three sections, beginning with a short section explaining the local government rating system. The following two sections provide an explanation of how the Government is implementing its response to the IPART report through the Exposure Draft Bill and other key rating reforms. The three sections are:

- **Section One** – Understanding local government rating
- **Section Two** – the Exposure Draft Bill, and
- **Section Three** – other key rating reforms.

Sections two and three set out each of the Government's commitments, including background information, and a summary of how it is proposed to implement that commitment.

How to have your say

First, read the *Privacy Notice* online or at Appendix A, which explains the personal information being collected through this consultation. To provide feedback, you will need to provide some information about yourself and whether you are responding as an individual or on behalf of an organisation.

Importantly, specific consultation questions are also posed to obtain your feedback on key issues, and you are able to provide general comments if you have other feedback to provide. Feedback can be provided via an online submission form, located on Office of Local Government (OLG) website, www.olg.nsw.gov.au. You do not need to answer every question and can skip to sections of interest.

Alternatively, an identical feedback form is provided at **Appendix A** to this Consultation Guide. This form allows you to respond to the targeted consultation questions and make any further general comments. You are able to post or email the completed form **by COB 5 February 2021** to:

Office of Local Government, NSW Department of Planning, Industry and the Environment
Towards a Fairer Rating System
Locked Bag 3015
Nowra NSW 2541

olg@olg.nsw.gov.au

Executive Summary

The NSW Government is committed to implementing a package of reforms to ensure the rating system is equitable and responsive to changing community needs. This package comprises those recommendations made by IPART in the Final Report on its local government rating system review of that were accepted by the Government in its Final Response.

Most of these reforms require amendments to the *Local Government Act 1993*, which sets out how councils may levy rates from property owners. Other reforms will be implemented by change to regulations and by issuing new guidance.

Local Government Amendment (Rating) Bill 2020

A Bill to make these amendments has been prepared – the *Local Government Amendment (Rating) Bill 2020* (the Bill). If passed by the NSW Parliament, this Bill would:

- allow seventeen councils created in 2016 to gradually harmonise rates over four years, to protect ratepayers from excessive and sudden rate rises
- allow councils to levy special rates above the rate peg for infrastructure jointly funded with other levels of government without IPART approval
- create a new rating category for environmental land for properties that cannot be developed
- allow councils to create more flexible residential, business and farmland rating subcategories to enable them to set fairer rates
- allow councils to create separate rating subcategories for vacant residential, business and mining land to provide additional flexibility for councils to tailor rates for local communities
- remove the rating exemption for land subject to new conservation agreements and allow it to be rated under the new environmental land category
- allow councils to choose whether to exempt certain land from special rates for water and sewerage
- require councils to publicly report the value of any rating exemptions they choose to grant
- limit postponement of rates on rezoned land and let councils decide whether to write off any debts, and
- allow councils to sell properties for unpaid rates after three years rather than five years.

Through the Bill, the Government proposes to implement the key reforms in a way that is fair and reasonable for both councils and ratepayers. An Exposure Draft of this Bill has been released, together with this consultation guide to explain the proposed changes and to seek public feedback.

Other key rating reforms

The rates reform package also includes measures that do not rely on legislative amendments. As part of the Final Response to the IPART rating review, the Government committed to aligning rating income growth with population growth within the rate pegging system. This will help councils provide for growing communities while still protecting residents from sudden, excessive rate rises.

To kick-start this reform, the Minister for Local Government, with the approval of the Premier, has asked IPART to recommend a new rate peg methodology that allows the general income of councils to be varied annually in a way that accounts for population growth. This is consistent with the Productivity Commission's recommendations on its review of the infrastructure contributions system. The Government will not consider any further changes to the rate peg or allowable income at this time.

In addition, the Government supported IPART's recommendation that any difference between mining and business rates should primarily reflect differences in the councils' costs of providing services. This will be implemented through future guidance to the local government sector rather than legislation.

Finally, it is proposed to not progress any change to the residual rating category arrangements, and to limit the requirement for councils to report the value of exemptions to only those they choose to grant each year.

Next steps

The Office of Local Government will receive feedback from councils, local communities and other interested individuals and organisations until **COB 5 February 2021**.

After making any changes in response to this feedback, the Government will introduce the Bill into the Parliament in early 2021. In part, this will enable councils formed in 2016 to take up opportunities provided by greater rating flexibility as they prepare to harmonise rating structures from 1 July 2021.

Proposed Rating Reforms

Section One – Understanding local government rating

Ordinary and special rates help to fund council services

Local councils provide important services and facilities to communities across NSW. These are as varied as community services, local road construction and maintenance, sporting and recreational facilities, planning, environmental protection and waste recovery and disposal.

The *Local Government Act 1993* (the Act) and Local Government (General) Regulation 2005 set out how councils levy rates from property owners (ratepayers).

To pay for services, councils must levy property owners in their area for ordinary rates and may also apply additional special rates in certain circumstances. Some types of properties are wholly or partly exempt from paying rates under the Act. Councils also raise revenue by charging user fees, receiving grants, borrowing or other revenue e.g. from fines, developer contributions and interest.

The rate pegging system restricts councils from increasing their income from rates

Under the Act, the total income that a council can raise from rates each year cannot increase by more than a specific percentage – this is called the 'rate peg'. The rate peg does not apply to charges for services like waste management, water, sewerage and stormwater.

The Independent Pricing and Regulatory Tribunal (IPART) determines the rate peg that applies to councils' general income each year. For the 2020/21 financial year IPART set the rate peg at 2.0%.

Councils can apply to IPART for a 'special variation' to increase their general income above the rate peg, e.g. to provide further services, replace ageing assets or improve financial sustainability.

Councils can determine which rates apply to different property types in consultation with local communities

The Act enables councils to determine different ordinary rates for residential, business, mining and farmland properties (the four rating categories). Councils can choose how they calculate and distribute rates among the properties in these categories.

Council decides which category each property should be in based on its characteristics and dominant use. Councils can also choose to create certain subcategories within each of these four categories, and to apply different rates to properties in each subcategory.

Councils must undertake rate setting as part of their Integrated Planning and Reporting (IP&R)

Councils must set a Revenue Policy each year as part of their Operational Plan. This sets out the combination of rates, charges, fees and pricing policies that will be applied to fund the services it provides to the community. It also contains a rating structure that determines rates and charges each type of ratepayer will pay, and how they will be calculated. Councils must consult on this structure as part of setting their annual Operational Plan and budget before it is finalised.

Councils can choose to apply rates to unimproved land values in different ways

Rates are calculated on the value of the land only, and do not factor in any improvements, such as buildings. For each rating category or sub-category, rates can be calculated based on:

- the (unimproved) land value of the property times the ***ad valorem*** (a rate in the dollar)
- a combination of the land value and a fixed rate per property (**base amounts**), or
- on the land value, but with each property paying at least a set amount (**minimum rates**).

The Act applies some restrictions however, for example – councils must calculate residential rates for all properties with a single 'centre of population' in the same way.

Land values are determined by the Land and Property Information Division of the Department of Finance and Services on behalf of the NSW Valuer General.

Section Two – the Local Government Amendment (Rating) Bill 2020

1 ALLOWING GRADUAL RATES HARMONISATION

IPART recommendation	Key sections of the Act	To come into effect
Recommendation 13	s.506, s.508	On assent

The Government's commitment

In 2017, the *Local Government Act 1993* (the Act) was amended to 'freeze' the rates path of new councils created in 2016 for a period of four years. This was to ensure that their ratepayers would pay the same rates as they would have if the council had not merged for this initial period only.

In 2019, the Act was amended so that the Minister could allow councils formed in 2016 a further year to harmonise their rates, until 1 July 2021, to allow an additional year for this process. Ultimately, seventeen of the twenty relevant councils took up this option, so that the rates path freeze will now end for their communities on 30 June 2021.

At the end of the rates path 'freeze', each council will need to harmonise to a single rating structure – in practice, this means that all residential ratepayers will pay the same rate in the dollar on their properties unless councils choose to charge different rates for different 'centres of population'. At present, the Act only permits councils to harmonise rates across their area in a single financial year, being 2021/22

As part of its response to IPART's review, the Government agreed to IPART's recommendation to allow new councils to gradually harmonise rates across their former council areas over time. IPART suggested that rates increases be limited to 10% a year.

The proposal in the Bill

It is proposed that each council formed in 2016 have the option to gradually harmonise new rates for residential and farmland rates from 2021-2022 over four years. Those councils and communities that do not wish to gradually harmonise over the four-year period would still be able to harmonise their rates all at once in 2021-22.

Councils that take up the gradual harmonisation option will need to apply no more than 50% of the total increase in rates at the rating category level over the period, in any one of the four financial years. Importantly, councils that choose to harmonise gradually will be required to set out their intended approach over the full four years in their IP&R documents.

The proposed four-year period is designed to allow for gradual change, while setting a reasonable period to limit how long some ratepayers are subsidising others. It also takes into account both an unusual three-year council term, with elections in 2021 and 2024, as well as the fact that all land is to be revalued before rates are levied for 2023-24.

Rather than setting a maximum percentage increase each year, it is proposed to allow affected councils to set rates each year according to community needs and prevailing economic conditions. This allows councils with different legacy rating structures to harmonise in consultation with their communities according to local circumstances and conditions, under the IP&R framework.

The proposed '50% in any one year' cap will ensure that councils that choose this option take a gradual approach that protects ratepayers against sudden and excessive rate rises in any specific year. This will not, however, preclude rates from increasing due to changes in land valuation, special rates or any special variation.

Consultation question/s

1. Are you from a local government area newly formed in 2016 that has not yet harmonised rates?

- ☐ Yes
- ☐ No

2. Do you agree with the proposal to enable relevant councils to gradually harmonise rates across their former council areas over four years?

- ☐ Yes
- ☐ No
- ☐ Neutral

Comment:

2 ALLOWING COUNCILS TO LEVY SPECIAL RATES FOR JOINTLY FUNDED INFRASTRUCTURE

IPART recommendation	Key sections of the Act	To come into effect
Recommendation 8	s.495	By proclamation

The Government's commitment

Under the Act, councils can levy special rates, in addition to ordinary rates, on any subset of rateable land in its area to meet the costs of delivering additional works, services, facilities or activities to ratepayers. This is limited, however, to funding local government functions.

Councils are increasingly entering into arrangements to jointly fund infrastructure projects with the NSW Government and the Australian Government. To generate additional revenue to contribute to these projects, which may be a condition of the project going ahead, councils are applying to IPART for a special variation. This imposes a high regulatory burden that extends timeframes and can deter councils from helping to deliver projects that benefit their local communities.

The Government is committed to establishing an equitable and effective funding framework for infrastructure associated with development, and, ensuring that growing communities have adequate and effective infrastructure needed to support that growth.

The Government therefore supported IPART's recommendation that councils be able to levy a new type of special rate for new infrastructure, where it is of clear benefit to the community, jointly funded with other levels of government.

The proposal in the Bill

It is proposed to clarify that special rates may be levied to pay for goods, services and infrastructure that are not covered by chapters 5-6 of the Act if the specific purpose of the special rate is to co-fund or contribute to infrastructure or services being jointly provided with another level of government.

Income from this special rate will not form part of a council's general income under the rate peg and councils will not need to seek IPART's approval before levying the special rate.

Importantly, councils will be prevented from levying a special rate for costs that are being met by a developer under the infrastructure contributions framework or by another funding arrangement. Special rates must only be used for the purpose for which they are levied.

Before applying this special rate, a council will need to consult its community through IP&R about anticipated benefits of the project and special rate, anticipated total project costs, council's contribution to those costs, the contributions to be made by others, the total special rate that would be levied, and how, and for what time period, the rates are to be levied.

Councils will also need to provide information in their annual reports on project outcomes, actual costs to council of this project, costs reported by other parties (where available) and the total revenue generated by the special rate. Where this differs from a council's initial estimates, an explanation is to be provided. The intention is to create a monitoring and reporting framework that maximises transparency, public accountability and community benefit from these special rates.

Consultation question/s

3. Do you agree with the proposal to allow councils to levy special rates for jointly funded infrastructure?

- ☐ Yes
- ☐ No
- ☐ Neutral

Comment:

3 INCREASING FLEXIBILITY THROUGH NEW RATING CATEGORIES AND SUBCATEGORIES

3.1 Allowing councils to set different residential rates in contiguous urban areas

IPART recommendation	Key sections of the Act	To come into effect
Recommendations 10-12	ss.529-530	On assent

The Government's commitment

Currently, the Act prevents councils from applying different residential rates on properties within a single 'centre of population.' This is difficult to apply in practice and has effectively prevented councils in urban areas, like Greater Sydney, from setting different rates in different locations across their local government area, as occurs in regional and rural NSW.

Given this, IPART recommended councils be able to set different residential rates in contiguous urban areas, but only where there is on average, different access to, demand for, or cost of, providing services and infrastructure. It proposed that councils use geographic markers to define these areas, including postcodes, suburbs, geographic features (e.g. waterways, bushland) and/or major infrastructure (e.g. arterial roads, railway lines).

Importantly, IPART also recommended that a limit apply so the highest rate structure is no more than 1.5 times the average rate structure across all residential subcategories (i.e. so the maximum difference between the highest and average rates, including *ad valorem* rates and base amounts, is 50%) except any new vacant land subcategory (see 3.4 below). To exceed this limit, councils would need to seek IPART approval.

The Government believes that councils should be able to explore different options to distribute the rating burden more equitably, in consultation with their communities, and supports enabling greater use of differential rating in urban areas. It supported these recommendations 'in principle'.

The proposal in the Bill

It is proposed to allow councils to create different rating subcategories for residential land in contiguous urban areas, while also continuing existing provisions that allow different residential rates to be set by 'centre of population', as used by regional and rural councils.

Under the proposal, a council may only set different residential rates in a contiguous urban area if there is on average, different access to, demand for, or cost of, providing services and infrastructure.

For this purpose, 'contiguous urban area' will capture a portion of an area that is urban in nature and comprises residential land where the properties within that area, taken together, are not entirely separated by land that falls within other rating categories.

Further, in these cases, councils will be required to use geographic names published by the Geographical Names Board to objectively define different residential areas to which to apply different residential rates, rather than being enabled to simply draw 'lines on a map'.

A limit will also apply so the highest rate structure is no more than 1.5 times the average rate structure across all residential subcategories, with the capacity to change this ratio in future by regulation. "Average rate structure" includes *ad valorem* amounts, minimum rates and/or base amounts, as relevant. To exceed this limit, councils would need to seek the Minister's approval.

Councils will be required to undertake community consultation under IP&R, in determining residential rating subcategories, setting rates for each subcategory and making any future amendments to these arrangements. Councils will also be required to publish the different rates and their rationale for charging different rates in their Revenue Policy.

The Minister will be able to issue guidelines that must be followed by councils in setting these rates, including how the provisions may be used appropriately by councils.

Consultation question/s

4. Do you agree with the proposal to allow for different residential rates in contiguous urban areas?

- ☐ Yes
- ☐ No
- ☐ Neutral

Comment:

5. Do you agree with the proposal to limit the highest rate structure across all residential subcategories to no more than 1.5 times the average rate structure?

- ☐ Yes
- ☐ No
- ☐ Neutral

Comment:

3.2 Creating a new rating category for environmental land

IPART recommendation	Key sections of the Act	To come into effect
Recommendation 29	s.493, s.514, s.518, s.529	By proclamation

The Government's commitment

Under the Act, before making an ordinary rate, a council must have declared each parcel of rateable land in its area to be within one of four rating categories – farmland, residential, mining or business. If a parcel of land does not fall within the residential, farmland or mining rating categories, it is treated as business land (the residual category).

There are concerns that these four rating categories are not sufficient to ensure that specific types of land are being rated at an appropriate level. In particular, IPART heard that this has resulted in land that cannot be developed, and therefore not falling with the residential, farmland or mining land categories, being rated as business land. As a result, a higher rate is often levied.

IPART recommended that a new, fifth rating category be created for environmental land to provide for appropriate rating of land that cannot be developed due to geographic or regulatory restrictions. The Government accepted this recommendation 'in principle', noting that it closely relates to IPART's further recommendation (No. 18) in relation to conservation agreements (see further below at 4.1).

The proposal in the Bill

It is proposed to create a new rating category for environmental land, and to define *environmental land* as that:

1. for which current and future use of the land is constrained as it:
   a) has limited economic value relative to its size and location, or
   b) cannot be developed, or
   c) has low development potential for a business, residential or farming activity, and
2. is subject to *geographic restrictions* or *regulatory restrictions*.

It is proposed that, in determining whether land cannot be developed or has low development potential, councils must have regard to factors including the zoning of the land under the EP&A Act and regulations and relevant instruments, and any other matter prescribed by regulation.

It is also proposed that *geographic restrictions* include, but not be limited to, the presence of significant water areas, mud flats, swamps, marshlands, steep slopes and other terrain on which residential or commercial development is virtually impossible due to physical limitations.

Further, it is proposed that *regulatory restrictions* be defined as laws or other permanent constraints imposed or agreed to in relation to the land that prevent development. This would include, but not be limited to, restrictions due to the land being subject to an *environmental agreement or instrument* prescribed by regulation, and being not otherwise exempt from rates.

Where a parcel of land is determined to be mixed use land, like rating of business land, councils will be able to apportion rates based on the portion of the land that falls within each rating category, as currently set out under the *Valuation of Land Act 1916*. This is currently not provided for under that law. Comment is sought on the manner of determining the apportionment of rates where a parcel of land could properly be categorised as environmental and the remainder could be categorised under one or more other rating category.

It is also proposed that, as for land in other rating categories, councils may create subcategories for environmental land to allow different environmental land rates to be set.

For this purpose, it is proposed that councils be enabled to create different rating subcategories based on whether or not there is a conservation agreement or similar instrument in place, and/or, based on geographic location.

Where a council chooses to rely on geographic location to create subcategories, it will need to define the different residential areas by reference to geographic names published by the Geographical Names Board, rather than by drawing 'lines on a map'.

Consultation question/s

6. Do you agree with the proposal about how to create a new rating category for environmental land, including how environmental land is proposed to be defined?

- ☐ Yes
- ☐ No
- ☐ Neutral

Comment:

7. Do you agree that a portion of land that is subject to a conservation agreement or other similar instrument should be categorised by councils according to the proposed definition of environmental land?

- ☐ Yes
- ☐ No
- ☐ Neutral

Comment:

3.3 Enabling different business rates to be set for industrial land and commercial land

IPART recommendation	Key sections of the Act	To come into effect
Recommendation 30	s.529	By proclamation

The Government's commitment

Currently, the Act only allows councils to create different categories of business rates according to whether business land falls within a 'centre of activity'. This is essentially, therefore, limited to location, rather than the activities taking place on each property. It also means that, where businesses are not clustered together, they are most often only charged a general business rate.

IPART recommended, and the Government supported, changing this so that different rating subcategories can also be created for land where industrial and commercial activities are occurring.

This recognises that land where these activities take place typically have different access to, demand for or cost associated with providing council services and infrastructure. It also recognises that these parcels of land may, or may not, be clustered together within a local government area.

The proposal in the Bill

It is proposed that councils be given the option of setting different rates for business land based on whether it is industrial or commercial land. This would apply in addition to maintaining the current option of setting different rates based on whether there is a 'centre of activity'.

It is proposed that councils that choose to take up this option determine whether business land is industrial or commercial, as necessary, based on whether industrial activities are predominantly taking place. This approach means that property zoning is relevant but not determinative for rating purposes, as intended by IPART, and creates a clear approach for councils and ratepayers that can be updated as necessary over time.

It is further proposed that, if the 'dominant' activity conducted on a parcel of land does not fall within a list of *industrial activities* prescribed in regulations, they may be categorised as commercial. Activities which may be prescribed as industrial include, for example, manufacturing, warehousing, abattoirs and works depots.

Consultation question/s

8. Do you agree with the proposal about how to enable different business rates for industrial and commercial land?

- ☐ Yes
- ☐ No
- ☐ Neutral

Comment:

3.4 Enabling different rates for residential, business or mining land that is vacant

IPART recommendation	Key sections of the Act	To come into effect
Recommendation 31	s.519, s.529	By proclamation

The Government's commitment

Under the Act, before making an ordinary rate, a council must have declared each parcel of rateable land in its area to be within one of four rating categories – farmland, residential, mining or business. As above, it is now proposed to create a fifth rating category for environmental land (see 3.2).

At present, councils must rate a parcel of land as residential, farming or mining land if it determines the land falls within one of those categories whether or not it is vacant. If the land does not clearly fall into one of these categories, council must rate it according to its designated use under an environmental planning instrument or, in the absence of such an instrument, based on the predominant surrounding land.

In either case, councils are not permitted to rate land differently because it is vacant. For example, an empty block of land in a residential estate is charged the same rate as the houses in the estate.

IPART recommended that, after completing the current rating categorisation process for vacant land, councils be able to set a different rate for vacant land to that set for other land in the same rating category for residential, business and mining land.

The Government has accepted this recommendation, which would provide additional flexibility for councils to tailor their rates to the needs of local communities.

The proposal in the Bill

It is proposed to give effect to this reform by allowing councils to create rating subcategories for vacant land within the residential, business or mining land categories. This type of rating subcategory will not be able to be created for environmental or farming land.

In determining whether a parcel of land is vacant, a council will need to have regard to factors including whether the land has a *substantial and permanent* structure. For this purpose, a building or other structure may be considered substantial and permanent if it is:

- significant in size or value
- not incidental to the purpose of another structure or proposed structure
- not related to, reliant on, or existing to support use or function of a structure, and
- fixed and enduring, rather than built for a temporary purpose.

These proposed factors build on relevant aspects of the approach taken by the Australian Tax Office definition of vacant land for income tax purposes.

It is also proposed to provide guidance to councils about:

- how councils may determine whether a specific parcel of land is to be treated as vacant land and, where relevant, to which rating category it belongs
- factors councils should take into account in setting the rate to be paid for vacant land, and
- how high or low the rate for vacant land should be relative to the principal rating category.

Consultation question/s

9. Do you agree with the proposal to allow subcategories for vacant land to be created for residential, business and/or mining land, including the proposed factors set out above?

- ☐ Yes
- ☐ No
- ☐ Neutral

Comment:

3.5 Allowing different farmland rates to also be set based on geographic location

IPART recommendation	Key sections of the Act	To come into effect
Recommendation 32	s.529	By proclamation

The Government's commitment

Currently, councils can only sub-categorise farmland according to intensity of land use, 'irrigability' of the land or economic factors affecting the land.

Concern has been raised that, while some regional and rural councils are able to rely on these factors, it is inflexible, subjective and difficult to apply in many local government areas in an equitable way. IPART found that the majority of councils with farmland properties do not create subcategories and are applying a single rate even if there are substantial differences in the intensity of farming.

IPART therefore recommended that councils should be able to set different farmland rates based on geographic location. This reflects the view that location-based rating for farmland, like residential and business land, can better reflect access to council infrastructure and services as well as the productivity of land. It suggested that areas may be defined by locality or geographical markers (such as a riverbank or escarpment) or major infrastructure (such as a highway).

The Government supported this recommendation. This will allow councils flexibility to more fairly distribute the rating burden by creating rating subcategories that better reflect productivity, are easier to assess and may be more likely to reflect access to council services by landholders.

The proposal in the Bill

It is proposed that councils be given the option of setting different rates for farmland based on geographic location. If this option is chosen, councils will need to:

- create subcategories by reference to the geographic names published by the Geographical Names Board rather than drawing 'lines on a map', and
- have regard to certain matters prescribed by regulation in creating subcategories for farmland and determining rates to be levied for each geographic location.

This new option would apply in addition to maintaining the current option of setting different rates based on intensity of land use, 'irrigability' or economic factors affecting the land. This approach is intended to minimise disruption for councils in regional and rural NSW with rating structures that rely on the current provisions.

Relevantly, the new approach to creating rating subcategories for farmland may also be utilised by relevant councils to assist with harmonisation, or, to maintain current farmland rating structures across their former council areas, should they choose to do so, in consultation with their communities.

Consultation question/s

10. Do you agree with the proposal to enable councils to also set farmland rates based on geographic location?

- ☐ Yes
- ☐ No
- ☐ Neutral

Comment:

4 CHANGING SPECIFIC EXEMPTIONS FROM ORDINARY AND SPECIAL RATES

4.1 Removing mandatory rates exemptions for land with new conservation agreements

IPART recommendation	Key sections of the Act	To come into effect
Recommendation 18	s.529, s.555, s.558	By proclamation

The Government's commitment

Under the Act, land subject to certain conservation agreements is exempt from all rates. This exemption was introduced to provide a financial incentive for land holders to enter into agreements for future conservation which impose costs and reduce the development potential of their land.

Over a period of time, different types of conservation agreements and similar instruments have been created and used to manage potential impacts of proposed developments on native species, cultural heritage or to address other environmental, community or development-based concerns. Some of these arrangements are exempt from rates while others are not.

IPART recommended removing rating exemptions for private land with conservation agreements and that councils rate the land under the new environmental land rating category (see above at 3.2). This reflected the finding that these parcels of land should not always be exempt from rates as owners have exclusive possession, derive private benefits, use services and impose other costs on the council and broader community.

The Government accepted IPART's recommendation in part, subject to further consultation on issues with respect to the range of agreements in force and the preservation of environmental, historical and Aboriginal cultural heritage outcomes.

The proposal in the Bill

It is proposed that there no longer be a mandatory rating exemption for private land for which a new conservation agreement is entered into after this reform comes into effect.

Instead, these properties will be categorised for rating purposes by the relevant council and may be rated under the new environmental land rating category. Further, as set out above at 3.2, councils will be permitted to create rating subcategories, and therefore to set different rates for environmental land based on whether or not there is conservation agreement or other instrument prescribed by regulation.

Importantly, to ensure fairness for parties to existing conservation agreements, it is proposed that those lands that currently benefit from this exemption continue to do so. This maintains a significant financial incentive that was taken into account by land holders when deciding whether to enter into an agreement which, in the vast majority of cases, is now binding on themselves and future owners.

Consultation question/s

11. Do you agree with the proposal to remove the requirement for councils to apply a rating exemption for land subject to new conservation agreements?

- ☐ Yes
- ☐ No
- ☐ Neutral

Comment:

4.2 Removing certain mandatory exemptions from special rates for water and sewerage

IPART recommendation	Key sections of the Act	To come into effect
Recommendation 24	ss.555-558	By proclamation

The Government's commitment

Some councils are responsible for providing water and sewerage services, particularly in regional and rural NSW. To fund these services, in addition to regular service charges, councils may levy special rates as a fee for service, in addition to ordinary rates. These special rates appear on rates notices.

Under the Act, councils are prevented from levying special rates for water and sewerage on the whole, or part, of a range of specific types of property, including:

- Crown land not leased for a private purpose
- land within a National Park, historic site, nature reserve, state game reserve or karst conservation reserve, whether or not the land is affected by a lease, licence, occupancy or use,
- land that is subject to a conservation agreement
- land that is vested in, owned by, held on trust by or leased by the (now) Biodiversity Conservation Trust
- land that is within a special area or controlled area for Sydney Water that is either Crown land or land vested in Sydney Water
- land that is within a special area for Hunter Water that is Crown land or vested in Hunter Water
- land that is vested in or owned by Water NSW that is in, on or over which water supply works are installed
- land that is within a special area for a water supply authority that is Crown land or vested in that authority
- land that belongs to a religious body and is occupied and used in connection with:
  - a church or other building used or occupied for public worship, or
  - a building used or occupied solely as the residence of a minister of religion in connection with any such church or building, or
  - a building used or occupied for the purpose of religious teaching or training, or
  - a building used or occupied solely as the residence of the official head and/or the assistant official head of any religious body in NSW or any diocese in NSW,
- land that belongs to and is occupied and used in connection with a government school, non-government school or certain schools with exemptions under s.78 of the *Education Act 1990*
- a playground that belongs to and is used in connection with the school, and
- a building occupied as a residence by a teacher, employee or caretaker of the school that belongs to and is used in connection with the school,
- land that is vested in the NSW Aboriginal Land Council (ALC) or a local ALC if it is declared under the *Aboriginal Land Rights Act 1983* to be exempt from rates,
- land vested in or owned by Residual Transport Corporation NSW or a public transport agency and in, on or over which rail infrastructure facilities are installed,

- land vested in or owned by Transport Asset Holding Entity of New South Wales and in, on or over which rail infrastructure facilities are installed,
- land that is vested in or owned by Sydney Metro and in, on or over which rail infrastructure facilities are installed, and
- land below the high-water mark used for aquaculture relating to the cultivation of oysters.

Under the Act, councils are also able, but not required, to choose to exempt other types of land from these types of special rates – this includes, for example, public reserves, hospitals and charities.

IPART found that it may not be appropriate for some parcels of land that fall within the above list to be exempt from paying special rates for water and sewerage as they would receive these services for free with significant private benefit. Instead, IPART recommended that the Government allow councils discretion to choose whether to exempt these properties from special rates. The Government accepted this recommendation.

It is understood, however, that in practice very few councils in regional and rural NSW levy special rates for water and sewerage, as compared to annual or service charges.

The proposal in the Bill

It is proposed that councils be able to choose whether to exempt those properties listed above from special rates, noting that these special rates are unlikely to be applied.

Importantly, it is intended that the Government provide guidance to any councils levying special rates about how best to exercise their discretion in relation to whether to continue to exempt specific types of land that were previously required to be exempt from these special rates. This guidance may specify relevant factors to consider, for example, the type of land, the land's permitted use, the land's actual use/s and access to relevant council infrastructure and services.

Consultation question/s

12. Do you agree with the proposal to remove certain mandatory exemptions from special rates for water and sewerage?

☐ Yes

☐ No

☐ Neutral

Comment:

5 IMPROVING PUBLIC CONFIDENCE IN THE RATING SYSTEM

5.1 Narrow scope to postpone rates and let councils choose whether to write them off

IPART recommendation	Key sections of the Act	To come into effect
Recommendation 40	s.585, s.595	By proclamation

The Government's commitment

Under the Act, a ratepayer is able to postpone paying higher rates if their land is rezoned, the rates payable increase after rezoning and the ratepayer does not intend to redevelop the land according to the new land uses that are permitted under the new zoning. Further, councils are required to write-off any rates and accrued interest postponed under this process after five years.

This postponement option allows people to retain properties with higher permitted uses without paying higher council rates. It is available to land consisting of a single dwelling house or rural land zoned to allow subdivision and applies to both ordinary and special rates.

IPART found that the cost to councils of administering postponement arrangements is high and is inconsistent with the taxation principles of simplicity, efficiency and equity. In particular, the postponement option:

- does not acknowledge the wealth gained in land value from rezoning
- does not recognise that the increased rates are a small proportion of the increased value of the land asset, and
- acts as a disincentive to develop land and does not promote growth and urban renewal.

IPART therefore recommended that the option to postpone rates in these circumstances should be removed, and that councils no longer be required to write-off postponed rates after five years. This would not affect the continuing ability for ratepayers to apply for rates relief on hardship grounds. The Government accepted this recommendation.

The proposal in the Bill

It is proposed to provide appropriate limits on the postponement of rates. These include:

- limiting who can postpone rates to those ratepayers that would face substantial hardship as a result of paying the higher rates attributable to rezoning
- restricting the amount of rates that can be postponed under the postponement of rates provisions to the difference between the rate applied under the former zoning, and the amount that will apply under the new zoning, and
- removing the requirement for councils to write off postponed rates after five years, while still giving them flexibility to do so in appropriate circumstances.

The Government understands that, if the provisions in relation to the postponement of rates were simply removed, ratepayers may face significant rate increases and, if unable to pay, may need to sell their properties.

These proposals are designed to limit the potential significant financial impact for some owners of properties when they face a zoning change in relation to their land. The proposals also acknowledge potential hardship for some of these ratepayers, particularly owner occupiers of residential or rural residential land already facing financial stress.

Importantly, to ensure fairness, it is proposed that those ratepayers that currently benefit from such an arrangement, or have applied to do so, continue to do so under the current provision after the reform comes into effect.

The Government believes that these proposals will create a fairer rates postponement framework that enables ratepayers needing to postpone rates for legitimate reasons to do so, while enabling councils to collect much needed rates to meet the cost of services provided to that land, and to lessen the burden on other ratepayers.

Consultation question/s

13. Do you agree with the proposal to restrict who can seek postponement of rates?

- ☐ Yes
- ☐ No
- ☐ Neutral

Comment:

14. Do you agree with the proposal to remove the requirement to write off rates debts?

- ☐ Yes
- ☐ No
- ☐ Neutral

Comment:

5.2 Allow councils to sell properties for unpaid rates after three years

IPART recommendation	Key sections of the Act	To come into effect
Recommendation 36	s.713	On assent

The Government's commitment

Under the Act, a council may seek to sell a property that is not vacant to recover the cost of rates and charges, including interest, that remain unpaid after five years in certain circumstances. Specific provisions set out when properties may be sold and the process that must be followed by councils.

IPART recommended that the period of time after which these properties may be sold should be reduced from five years to three years. The Government accepted this recommendation, which is designed to improve the simplicity of the rating system, bring NSW in line with other States, and is likely to reduce costs and delays currently experienced by councils in recovering outstanding rates.

The proposal in the Bill

It is proposed that councils be permitted to seek to sell properties that are not vacant for unpaid rates and charges after 3 years rather than 5 years.

This would apply from the date of commencement of the provision and would not apply in respect of properties for which a ratepayer already owes unpaid rates and/or charges to council at that time.

Importantly, the *COVID-19 Legislative Amendment (Emergency Measures-Miscellaneous) Act No.2 2020* currently operates to prevent councils from commencing legal action to recover rates and charges for six months unless certain specific matters have been considered.

This temporary measure was put in place to help households that are under significant pressure to remain sustainable during the COVID19 pandemic and as steps towards economic recovery begin. It is therefore not intended to commence these new provisions while this temporary measure remains in place.

Consultation question/s

15. Do you agree with the proposal to enable councils to sell properties for unpaid rates after 3 years?

- ☐ Yes
- ☐ No
- ☐ Neutral

Comment:

Section Three – Other rating reforms

1 ALLOWING COUNCILS' GENERAL INCOME TO RISE IN LINE WITH POPULATION GROWTH

The Government's commitment

The Minister, under the Act, may specify the percentage by which councils' general income may be varied for a specific year – the 'rate peg'. IPART performs this function under delegation.

IPART has traditionally calculated the Rate Peg by reference to the Local Government Cost Index (LGCI) and improvements in productivity (a productivity factor). The LGCI measures price changes for operational inputs—including labour—used by an average council over the previous year. This overall approach to calculating the rate peg has been in place since 2010.

IPART does not take into account, directly or indirectly, the differing impacts of population growth between councils in setting the rate peg. Instead, the current methodology implicitly assumes that the cost of serving each ratepayer will be, on average, the same, or that a special rate may be levied in areas where serving groups of ratepayers involve higher and special costs. Alternatively, councils may apply to IPART for a Special Rate Variation to levy rates above the rate peg.

While this rate peg model means that council areas with higher populations can levy a greater number of ratepayers and, therefore, will have higher revenue, it is not able to take into account that certain types of residents associated with population growth (such as young families) increase demand for services more than the same number of residents in an established area, and that councils often face these costs before the future ratepayers can begin to pay for them.

The Government has committed to allowing councils to align their income with population growth. This will be achieved by adjusting how the rate peg is calculated. This will help to ensure that adequate local infrastructure and services are provided in local government areas with growing populations.

How this reform will be delivered

The Minister for Local Government, with the approval of the Premier, has asked IPART to deliver a report recommending a rate peg methodology that allows the general income of councils to be varied annually in a way that accounts for population growth. Terms of Reference have already been provided to IPART for this review, which is expected to be completed within nine months.

The Terms of Reference for IPART's review clarify that the methodology proposed by IPART should not negatively impact the income growth that councils with stable or declining populations would have achieved under a rate peg calculated using the LGCI and productivity factor. They also state that the Government will not consider further change to the rate peg or maximum allowable income at this time.

In undertaking the review, IPART has been asked to have regard to matters including:

- the Government's commitment to protecting ratepayers from sudden or excessive rate rises, while improving the financial sustainability of local government
- ensuring the rate peg model can be understood by councils and the communities they serve
- the differing needs and circumstances of councils and communities in metropolitan, regional, and rural areas of the State, and
- any other matter it considers relevant.

To ensure that this reform may be given effect as simply and clearly as possible, the Bill puts beyond debt that more than one rate peg can be applied to the local government sector, if required.

2 ENCOURAGING COUNCILS TO LEVY RATES ON MINING LAND TO REFLECT ADDITIONAL COSTS

The Government's commitment

Under the Act, before levying an ordinary rate, a council must have declared each parcel of rateable land in its area to be within one of four rating categories – farmland, residential, mining or business. The council then determines what rate to levy for land that falls in each of these categories.

IPART analysed the rates applied by councils to mining land and found that they varied widely. Further, IPART found that the different rates that applied to land within this category was unlikely to reflect differences in costs of providing council services to these types of properties. Rather, it appeared that some councils may be setting rates based primarily on 'capacity to pay' principles.

In principle, IPART recommended that mining rates should be set, relative to rates for business land, primarily to reflect differences in the cost of providing council infrastructure and services to these properties. The Government accepted this recommendation.

How this reform will be delivered

This reform will be implemented through guidance rather than seeking to amend the Act through the Bill. This will provide maximum flexibility to make adjustments in future and to cater to the different circumstances of local councils and communities across NSW.

Guidance will be issued to specify that councils should set mining rates, relative to rates for business land, primarily to reflect differences in the cost of providing council infrastructure and services. Further, if a council does apply a higher rate to mining land than business land in a specific financial year, that council should explain, as part of its Revenue Policy:

- how the rate has been set and why, and
- any additional costs in providing services to mining properties.

Consultation question/s

16. Do you agree with the proposal to implement this reform through guidance?

☐ Yes

☐ No

☐ Neutral

Comment:

3 RETAINING THE RATING CATEGORY FOR BUSINESS AS THE 'RESIDUAL' RATING CATEGORY

The Government's commitment

Under the Act, before making an ordinary rate, a council must have declared each parcel of rateable land in its area to be within one of four rating categories – farmland, residential, mining or business. If a parcel of land does not fall within the residential, farmland or mining rating categories, it is treated as business land (the residual category).

IPART noted that using the rating category for business as the residual category may, in some areas, lead to certain properties being more highly rated than is equitable. It therefore recommended that councils should have flexibility to choose a different 'residual' category based on the profile of local properties. The Government supported this recommendation.

How this reform will be delivered

Following further consultation and consideration of how each reform of rating categories and subcategories may be implemented by councils, this reform will not be progressed at this time. There is a real risk that allowing alternative residual categories could result in perverse outcomes, inconsistency and uncertainty for councils and ratepayers, particularly given the complexities of categorising and subcategorising land for rating purposes.

Consultation question/s

17. Do you agree with the proposal to retain the business land rating category as the residual category?

- ☐ Yes
- ☐ No
- ☐ Neutral

Comment:

4 REQUIRING COUNCILS TO REPORT THE VALUE OF EXEMPTIONS THEY GRANT EACH YEAR

The Government's commitment

IPART has identified that councils, generally, do not have a strong indication of the 'cost' of exemptions because they do not affect council's total general income, which is limited by the rate peg. As such, the cost of the exemption is effectively made up for by other ratepayers.

As rates are a tax, this should be as transparent a process as possible so that all parties involved can understand the costs and benefits of providing for exemptions.

With that in mind, IPART recommended that councils publish the estimated value of rating exemptions within their local government area in their annual reports or other information made available to the public. The Government accepted this recommendation, which is designed to improve consistency between councils as well as improving transparency of the rating system for ratepayers.

How this reform will be delivered

It is understood that most councils do not have ready access to information on the value of all exemptions and that obtaining this information would impose a significant additional burden, particularly where that would require additional land valuations at council expense.

Given this, it is proposed that councils include in their annual report an estimate of the value of those exemptions granted as a result of a decision of that council. This estimate need only be made by applying a simple, prescribed methodology based on information on each parcel of land that is available to council at the time of its decision to grant the rating exemption.

As those matters that must be included in a council's annual report may be prescribed by regulation, this reform does not feature in a provision of the Bill.

Consultation question/s

Do you agree with the proposal that councils report on the value of exemptions they choose to grant through their annual reports?

- ☐ Yes
- ☐ No
- ☐ Neutral

Comment:

Glossary & Abbreviations

The Act	*Local Government Act 1993*
OLG	Office of Local Government
Regulation	Local Government (General) Regulation 2005
DPIE	NSW Department of Planning, Industry and Environment
IPART	Independent Pricing and Regulatory Tribunal

Appendix A

Template feedback form – *Towards a Fairer Rating System* consultation

Privacy Notice

When you give us your feedback, the Office of Local Government (OLG) in the NSW Department of Planning, Industry and Environment (DPIE) will collect some personal information about you, including:

- your name
- your email address
- the name of your organisation (if provided), and
- any personal information you decide to put in additional 'general comments' fields.

All feedback received through this consultation process may be made **publicly available**. Please do not include any personal information in your feedback that you do not want published.

This information is being collected by OLG as part of the **Towards a Fairer Rating System consultation** to help the Government develop a final Bill to amend the *Local Government Act 1993* and supporting regulations, as necessary. As part of that process, we may need to share your information with people outside OLG, including other public authorities and government agencies. We may also use your email address to notify you about further feedback opportunities or the outcome of consultation.

You should also be aware there may be circumstances when OLG is required by law to release information (for example, in accordance with the requirements of the *Government Information (Public Access) Act 2009*. There is also a Privacy Policy located on OLG's website that explains how some data is automatically collected (such as your internet protocol (IP) address) whenever you visit OLG's website. The link to that policy is https://www.olg.nsw.gov.au/about-us/privacy-policy/

Submitting this completed feedback form

Please print your completed form and mail or email by **COB 5 February 2021** to:

Office of Local Government, NSW Department of Planning, Industry and the Environment
Towards a Fairer Rating System
Locked Bag 3015
Nowra NSW 2541

olg@olg.nsw.gov.au

About you

TYPE	PLEASE SELECT ALL APPLICABLE
Council – Metropolitan	
Council – Metropolitan Fringe	
Council – Regional	
Council – Rural	
Council – Large Rural	
Private sector organisation	
Ratepayer	
NSW State agency	
Other	

FEEDBACK FORM – Towards a Fairer Rating System

Section Two – Local Government Amendment (Rating) Bill 2020	
1. Allowing gradual rates harmonisation	
Q.1.	Are you from a local government area newly formed in 2016 that has not yet harmonised rates?
A.1.	☐ Yes ☐ No
Q.2.	Do you agree with the proposal to enable new councils to gradually harmonise rates across former council areas over four years?
A.2.	☐ Yes ☐ No ☐ Neutral **Comment:**

2. Allowing councils to levy special rates for jointly funded infrastructure	
Q.3.	Do you agree with the proposal in relation to levying special rates for jointly funded infrastructure?
A.3.	☐ Yes ☐ No ☐ Neutral **Comment:**

3. Increasing flexibility through new rating categories and subcategories	
3.1 Allowing councils to set different residential rates in contiguous urban areas	
Q.4.	Do you agree with the proposal to allow for different residential rates in contiguous urban areas?
A.4.	☐ Yes ☐ No ☐ Neutral **Comment:**
Q.5.	Do you agree with the proposal to limit the highest rate structure across all residential subcategories to no more than 1.5 times the average rate structure?
A.5.	☐ Yes ☐ No ☐ Neutral **Comment:**
3.2 Creating a new rating category for environmental land	
Q.6.	Do you agree with the proposal about how to create a new rating category for environmental land, including how environmental land is proposed to be defined?
A.6.	☐ Yes ☐ No ☐ Neutral **Comment:**

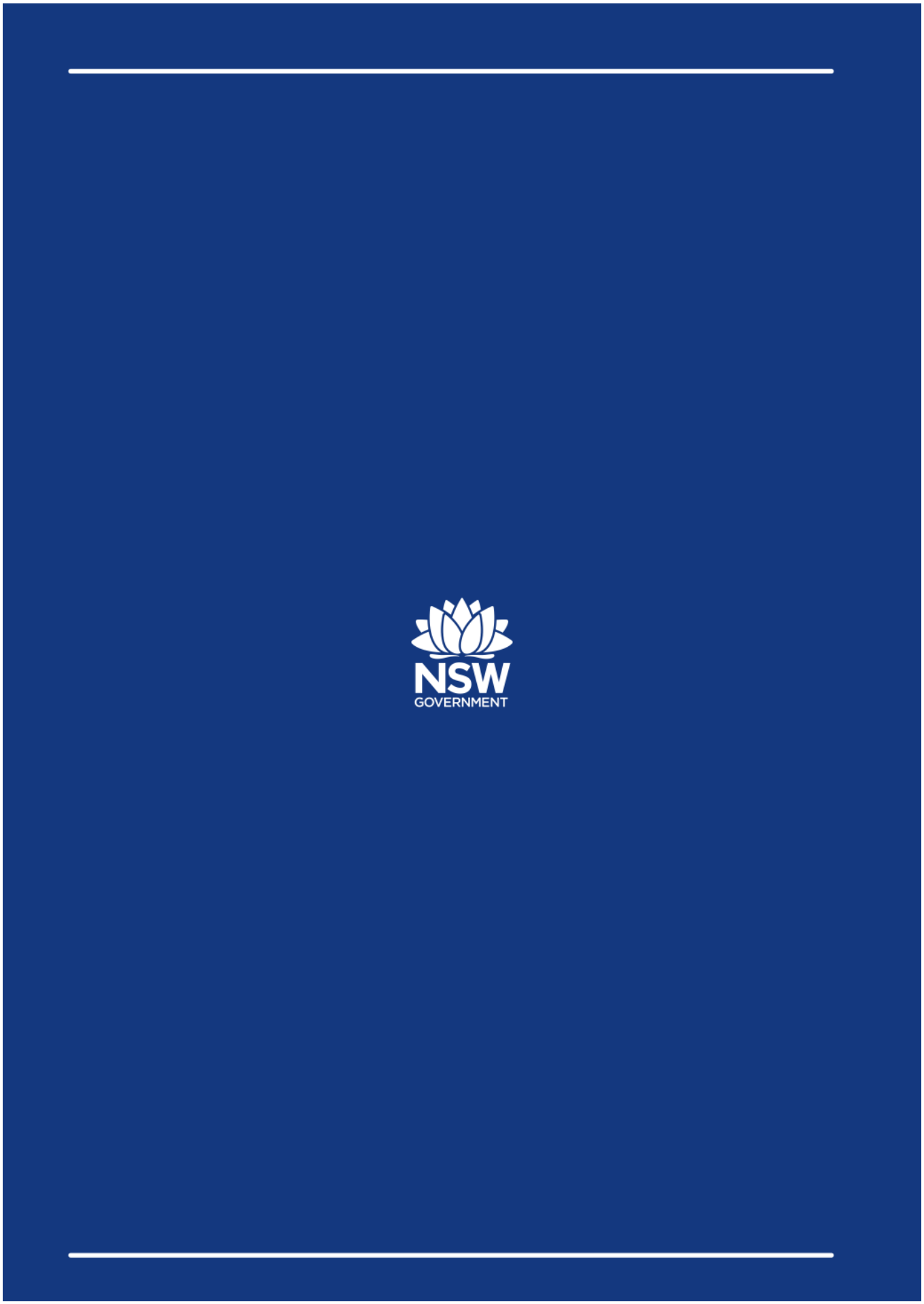
Q.7.	Do you agree that a portion of land that is subject to a conservation agreement or other similar instrument should be categorised by councils according to the proposed definition of *environmental land*?
A.7.	☐ Yes ☐ No ☐ Neutral **Comment:**
3.3 Enabling different business rates to be set for industrial land and commercial land	
Q.8.	Do you agree with the proposal about how to enable different rates for industrial and commercial land?
A.8.	☐ Yes ☐ No ☐ Neutral **Comment:**
3.4 Enabling different rates for residential, business or mining land that is vacant	
Q.9.	Do you agree with the proposal to allow subcategories for vacant land to be created for residential, business and/or mining land, including the proposed factors set out above?
A.9.	☐ Yes ☐ No ☐ Neutral **Comment:**

3.5 Enabling different rates for residential, business or mining land that is vacant	
Q.10.	Do you agree with the proposal to enable councils to also set farmland rates based on geographical location?
A.10.	☐ Yes ☐ No ☐ Neutral **Comment:**

4 Changing specific exemptions from ordinary and special rates	
4.1	**Removing mandatory rates exemptions for land with new conservation agreements**
Q.11.	Do you agree with the proposal to remove the requirement for councils to apply a rating exemption for land subject to new conservation agreements?
A.11.	☐ Yes ☐ No ☐ Neutral **Comment:**
4.2	**Removing certain mandatory exemptions from special rates for water and sewerage**
Q.12.	Do you agree with the proposal to remove certain mandatory exemptions from special rates for water and sewerage?
A.12.	☐ Yes ☐ No ☐ Neutral **Comment:**

5 Improving public confidence in the rating system	
5.1 Narrow scope to postpone rates and let councils choose whether to write them off	
Q.13.	Do you agree with the proposal to restrict who can seek postponement of rates?
A.13.	☐ Yes ☐ No ☐ Neutral **Comment:**
Q.14.	Do you agree with the proposal to remove the requirement to write off rates debts?
A.14.	☐ Yes ☐ No ☐ Neutral **Comment:**
5.2 Allow councils to sell properties for unpaid rates after three years	
Q.15.	Do you agree with the proposal to enable councils to sell properties for unpaid rates after 3 years?
A.15.	☐ Yes ☐ No ☐ Neutral **Comment:**

Section Three – Other rating reforms	
2 Encouraging councils to levy rates on mining land to reflect additional costs	
Q.16.	Do you agree with the proposal to implement this reform through guidance?
A.16.	☐ Yes ☐ No ☐ Neutral **Comment:**
3 Retaining the rating category for business as the 'residual' rating category	
Q.17.	Do you agree with the proposal to retain the business land rating category as the residual category?
A.17.	☐ Yes ☐ No ☐ Neutral **Comment:**
4 Requiring councils to report the value of exemptions they grant each year	
Q.18.	Do you agree with the proposal that councils report on the value of exemptions they choose to grant through their annual reports?
A.18.	☐ Yes ☐ No ☐ Neutral **Comment:**
General Comments	


NSW
GOVERNMENT

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Towards a Fairer Rating System
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About you

TYPE	PLEASE SELECT ALL APPLICABLE
Council – Metropolitan	Northern Beaches Council
Council – Metropolitan Fringe	
Council – Regional	
Council – Rural	
Council – Large Rural	
Private sector organisation	
Ratepayer	
NSW State agency	
Other	

FEEDBACK FORM – Towards a Fairer Rating System

Section Two – Local Government Amendment (Rating) Bill 2020	
1. Allowing gradual rates harmonisation	
Q.1.	Are you from a local government area newly formed in 2016 that has not yet harmonised rates?
A.1.	☒ Yes ☐ No

Q.2.	Do you agree with the proposal to enable new councils to gradually harmonise rates across former council areas over four years?
A.2.	☒Yes ☐No ☐Neutral **Comment:** This recommendation is supported. The design of the proposed four-year period to allow for gradual change, while setting a reasonable period to limit how long some ratepayers are subsidising others offers councils the flexibility to introduce a new and fairer rates system while being mindful of the impacts any sudden changes may have on individual ratepayers. Likewise, it also gives councils the ability to harmonise their rates all at once in 2021-22 if this is what ratepayers prefer. We note that the draft legislation provides for the harmonisation of rates to ensure a uniform rating structure for each category of land (such as residential) and that the harmonisation within each category of land can be achieved in one of 3 ways. However, we note that the consultation guide ''Towards a fairer rating system – December 2020'' states, ''it is proposed that each council formed in 2016 have the option to gradually harmonise new rates for residential and farmland rates from 2021-2022 over four years''. Based on the consultation guide gradual harmonisation only applies to the residential and farmland categories which is not consistent with the wording in the draft Bill. Excluding categories such as business fails to recognise the

	extraordinarily tough period for many of our businesses as a result of COVID-19. From a fairness, simplicity and consistency basis, gradual harmonisation provisions should apply to all categories of ordinary rates, not just residential and farmland as is proposed in the consultation guide. Legislation should ensure that gradual harmonisation provisions apply to all categories and sub-categories of the ordinary rate. Likewise, from a fairness, simplicity and consistency basis, gradual harmonisation provisions should apply to all components of a rate including ad valorem, minimum and base amounts. Currently it is not clear whether gradual harmonisation provisions can be applied to both ad valorem and minimum rates. Confirmation is required that no amendment is needed to Section 548 Minimum amounts, to provide for the gradual harmonisation of minimum rates and to facilitate different minimum amounts continuing to apply to the former Local Government Areas during the gradual harmonisation period. In addition, confirmation is required that no amendment is needed to regulation 126 ''Minimum amounts of a rate'' of Local Government (General) Regulation 2005 to reflect gradual harmonisation provisions to ensure that there is no conflict with this regulation when gradually harmonising a minimum rate. Accordingly, the Office of Local Governments ''Special guidelines for new councils applying to harmonise minimum rates on 1 July 2021 issued in November 2020'' should be amended to facilitate, clarify and confirm the process for application and approval of the gradual harmonisation of minimum rates over the gradual harmonisation period.

2. Allowing councils to levy special rates for jointly funded infrastructure	
Q.3.	Do you agree with the proposal in relation to levying special rates for jointly funded infrastructure?
A.3.	☒ Yes ☐ No ☐ Neutral **Comment:** This recommendation is supported. We support the Government's commitment to establish an equitable and effective funding framework for infrastructure associated with development, and, ensuring that growing communities have adequate and effective infrastructure needed to support that growth. Having this special rate outside of a council's general income should serve to encourage councils to participate in partnering with other spheres of government for new infrastructure or urban renewal projects.

3. Increasing flexibility through new rating categories and subcategories

3. 1 Allowing councils to set different residential rates in contiguous urban areas

Q.4.	Do you agree with the proposal to allow for different residential rates in contiguous urban areas?
A.4.	☒ Yes ☐ No ☐ Neutral **Comment:** This recommendation is supported. The existing restrictions within the Act currently prevents councils from applying different residential rates on properties within a single centre of population. We agree with IPART's recommendation that councils be able to set different residential rates in contiguous urban areas, but only where there is on average, different access to, demand for, or cost of, providing services and infrastructure. We also support the proposal that councils use geographic markers to define these areas, including postcodes, suburbs, geographic features and/or major infrastructure. The most important aspect of this proposal is that it would facilitate additional rating flexibility in circumstances where communities within an local government area (LGA) have different access to, demand for, or costs of providing council services or infrastructure relative to other areas within the LGA.

Q.5.	Do you agree with the proposal to limit the highest rate structure across all residential subcategories to no more than 1.5 times the average rate structure?
A.5.	☐ Yes ☒No ☐ Neutral **Comment:** This recommendation is supported in principle but the rigid application of the principle to limit the highest rate structure across all residential subcategories to no more than 1.5 times the average rate structure may not be appropriate in all circumstances. It is acknowledged that a cap on the difference between the lowest rate structure and the highest rate structure is important to ensure a degree of consistency with the application of ability to pay principle. A 1.5 times differential may be a suitable limitation for a council with limited differences in valuations but may only provide limited assistance for a council where valuations differences between areas within the LGA are significant. Accordingly, it is suggested that 1.5 times is not be the appropriate measure and our preferred position is that each council be permitted to develop a rating structure that it determines is the most appropriate fit for its community. If this includes differential rating that exceeds the 1.5 times maximum difference, then there should be a mechanism for a council to seek IPART approval that does not necessarily require a full Special Variation application.

3.2 Creating a new rating category for environmental land	
Q.6.	Do you agree with the proposal about how to create a new rating category for environmental land, including how environmental land is proposed to be defined?
A.6.	☒ Yes ☐ No ☐ Neutral **Comment:** This recommendation is supported. It is appropriate to have a separate rating category for environmental land to provide for appropriate rating of land that cannot be developed due to geographic or regulatory restrictions. It would be relevant for any future proposed alignment with a levy such as the previously proposed Emergency Services Property Levy (ESPL) as that levy would have required councils to maintain a new data set of property classifications for the purposes of collecting the ESPL. Likewise, we agree that the proposed definition of environment land in that it is both robust and broad in that it takes account of appropriate factors in respect nature and use as well zoning and other regulatory restrictions.

Q.7.	Do you agree that a portion of land that is subject to a conservation agreement or other similar instrument should be categorised by councils according to the proposed definition of *environmental land*?
A.7.	☒ Yes ☐ No ☐ Neutral **Comment:** We support this recommendation. We agree with IPART's rationale that land that is subject to a conservation agreement or other similar instrument should be categorised by councils in a way that enables it to be rateable as the owner of the land has exclusive possession and derives private benefits from it, while the broader community receives a more limited benefit than they would if the land was public, and the owner uses council services and imposes costs on councils. We believe that it is preferable to be able to set an appropriate ad valorem rate as environmental land rather than having to use the residential or farmland rate. We believe the definition of environmental land is appropriately robust and broad to include land that is subject to a conservation agreement or other similar instrument. However, to avoid any doubt as to the appropriateness of categorizing such land as environmental land we suggest specifically including the term conservation agreement within the definition.

3.3 Enabling different business rates to be set for industrial land and commercial land	
Q.8.	Do you agree with the proposal about how to enable different rates for industrial and commercial land?
A.8.	☐Yes ☒ No ☐Neutral **Comment:** This recommendation is supported in principle, however, it should go further, with the amendment allowing further subcategories of business and residential land, for example multi-dwelling non-strata title residential land; car parking spaces and storage units on separate title (both residential and business developments). The Act presently provides that subcategories of the business category may be determined according to a "centre of activity". Only limited guidance is provided in the Act as to the definition of "centre of activity" and this restricts the applicability of such sub-categories to specific geographical areas (such as an industrial estate). Consequently, a Council may have to determine separate sub-categories for each such separate "centre of activity" within its LGA rather than determining a sub-category that applies across the whole of its LGA. The definition of "centre of activity" needs to be more accurately and more practically defined within the Act to provide greater flexibility and efficiency for Councils in determining business sub-categories. Councils should be able to establish one sub-category that can be applied across multiple identical developments based on the predominant use.

3.4 Enabling different rates for residential, business or mining land that is vacant	
Q.9.	Do you agree with the proposal to allow subcategories for vacant land to be created for residential, business and/or mining land, including the proposed factors set out above?
A.9.	☒Yes ☐ No ☐Neutral **Comment:** We support this recommendation. This amendment will give councils the flexibility to apply different rates for vacant land in the residential, business and mining land categories. This amendment would allow council to set a higher rate on vacant land which is likely to discourage prevent land banking and encourage the development and urban renewal that is required to meet the current and future needs of the community.

3.5 Enabling different rates for residential, business or mining land that is vacant	
Q.10.	Do you agree with the proposal to enable councils to also set farmland rates based on geographical location?
A.10.	☒Yes ☐ No ☐Neutral **Comment:** This recommendation is supported. Northern Beaches Council only has a small number of farmland properties and it is highly unlikely that Council would need to create sub-categories based of geographical location. However, it is acknowledged that for some councils, location-based rating for farmland, like residential and business land, may better reflect access to council infrastructure and services as well as the productivity of land. As such allowing councils the flexibility to more fairly distribute the rating burden by creating rating subcategories is appropriate.

4 Changing specific exemptions from ordinary and special rates	
4.1	**Removing mandatory rates exemptions for land with new conservation agreements**
Q.11.	Do you agree with the proposal to remove the requirement for councils to apply a rating exemption for land subject to new conservation agreements?
A.11.	☒Yes ☐ No ☐Neutral **Comment:** This recommendation is supported. Refer also A7. We agree with the proposal that there will no longer be a mandatory rating exemption for private land for which a new conservation agreement is entered. Likewise, we agree that these parcels of land should not always be exempt from rates as owners have exclusive possession, derive private benefits, use services and impose other costs on the council and broader community.
4.2 Removing certain mandatory exemptions from special rates for water and sewerage	
Q.12.	Do you agree with the proposal to remove certain mandatory exemptions from special rates for water and sewerage?
A.12.	☐Yes ☐ No ☒Neutral **Comment:** No position on this recommendation. Northern Beaches Council is not a water and sewerage authority.

5 Improving public confidence in the rating system	
5.1 Narrow scope to postpone rates and let councils choose whether to write them off	
Q.13.	Do you agree with the proposal to restrict who can seek postponement of rates?
A.13.	☒Yes ☐ No ☐Neutral **Comment:** This recommendation is supported. We acknowledge that these proposals are designed to limit the potential significant financial impact for some owners of properties when they face a zoning change in relation to their land. Likewise, we agree with the proposal that those ratepayers that currently benefit from postponement continue to do so under the current provision after the reform comes into effect. Currently, postponed rates are often confusing for ratepayers and even council staff at times face difficult in explaining how it applies. The proposal will simplify rating administration.
Q.14.	Do you agree with the proposal to remove the requirement to write off rates debts?
A.14.	☒Yes ☐ No ☐Neutral **Comment:** This recommendation is supported. Removing the requirement for councils to write off postponed rates, will reduce administration whilst still providing Council with the flexibility to consider writing off postponed rates in appropriate circumstances. Ratepayers may also apply for relief under Council's Hardship Policy providing a uniform approach for all ratepayers.
5.2 Allow councils to sell properties for unpaid rates after three years	
Q.15.	Do you agree with the proposal to enable councils to sell properties for unpaid rates after 3 years?
A.15.	☒Yes ☐ No ☐Neutral **Comment:** This recommendation is supported. We agree that this will improve the simplicity of the rating system and reduce the costs and delays in recovering outstanding rates. Council has a responsibility to recover monies owing to it in a timely, efficient and effective manner to finance its operations and ensure effective financial management. However, Council recognises that some owners may experience financial difficulties in meeting their Rates commitments. Council seeks to assist owners to make arrangements that are consistent with the owner's capacity to make regular payments. Accordingly, councils must ensure that is supported by appropriate and compassionate debt management practices and policies. This would only ever be used as a last resort for recovery of rates.

Section Three – Other rating reforms

2 Encouraging councils to levy rates on mining land to reflect additional costs

Q.16. Do you agree with the proposal to implement this reform through guidance?

A.16.

☐Yes

☐ No

☒Neutral

Comment:

No position on this recommendation.

Northern Beaches Council does not have properties categorised as mining. However, we do agree that mining rates should be set relative to other business categories primarily to reflect differences in the cost of providing council services to these properties.

3 Retaining the rating category for business as the 'residual' rating category

Q.17. Do you agree with the proposal to retain the business land rating category as the residual category?

A.17.

☐Yes

☒ No

☐Neutral

Comment:

This recommendation is not supported.

The current mandatory residual category is the Business category which can be inequitable, for example a jetty on separate title.

We agree with IPART that using the rating category for business as the residual category may, in some areas, lead to certain properties being more highly rated than is equitable. This affects a range of rateable properties from jetties to garages within apartment blocks that cannot in certain circumstances be aggregated. We support an amendment which would allow the residual category to be selected on a case by case basis. e.g. car parking spaces and storage units on separate title (both residential and business developments) need to be categorised based on the dominant development use. We regularly receive correspondence expressing concern and confusion about the application of the current residual rating category. As an example, a unit and its garage may be held by separate legal owners as a result of lending arrangement that may existed under a self-managed superannuation fund. In which case it is not possible to aggregate the properties as a single residential rates assessment, leading to the garage being required to be assessed as a business minimum as it does not meet the residential property definition. Given the business minimum for our Council is must higher than the residential minimum this is far from fair and equitable.

We would contend that the current use of the business category as the residual category already leads to perverse outcomes, inconsistency and uncertainty for councils and ratepayers, particularly given the complexities of categorising and subcategorising land for rating purposes. The present process does not always result in a fair and equitable outcome for ratepayers and contend that allowing the residual category to be assessed on a case by case basis would be fairer and more equitable.

4 Requiring councils to report the value of exemptions they grant each year	
Q.18.	Do you agree with the proposal that councils report on the value of exemptions they choose to grant through their annual reports?
A.18.	☐Yes ☒ No ☐Neutral **Comment:** This recommendation is not supported. Calculating the cost of only some of the rate exemptions would provide limited transparency to council and ratepayers on the impact of rate exemptions and a limited comparison of rate exemption impact between councils. As noted in the consultation guidelines most councils do not have ready access to information on the value of all exemptions and that obtaining this information would impose a significant additional burden, particularly where that would require additional land valuations at council expense. Many rate exempt properties are currently unvalued in accordance with the provisions of the Valuation of Land Act and we are concerned as how a proposed simple prescribed methodology based on information on each parcel of land that is available to council at the time of its decision to grant the rating exemption would resolve these issues. This process will still add administrative burden and cost to council and understate the true cost of all exemptions.

General Comments

draft

NEW SOUTH WALES

DRAFT GOVERNMENT BILL

CABINET-IN-CONFIDENCE

Local Government Amendment (Rates) Bill 2021

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draft

NEW SOUTH WALES

DRAFT GOVERNMENT BILL

CABINET-IN-CONFIDENCE

Local Government Amendment (Rates) Bill 2021

No , 2021

A Bill for

An Act to amend the *Local Government Act 1993* to give effect to certain recommendations made by the Independent Pricing and Regulatory Tribunal concerning the local government rating system; and for other purposes.

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Local Government Amendment (Rates) Bill 2021 [NSW]

The Legislature of New South Wales enacts—

1 Name of Act

This Act is the *Local Government Amendment (Rates) Act 2021*.

2 Commencement

(1) This Act commences on a day or days to be appointed by proclamation, except as provided by this section.

(2) The following provisions of this Act commence on the date of assent to this Act—

(a) Schedule 1[5],

(b) Schedule 1[12]–[14],

(c) Schedule 1[30],

(d) Schedule 1[31].

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Schedule 1 Amendment of Local Government Act 1993 No 30

[1] Section 493 Categories of ordinary rates and categories of land

Omit "4 categories" wherever occurring in section 493(1). Insert instead "5 categories".

[2] Section 493(1)

Insert after the first dot point—

- environmental

[3] Section 495 Making and levying of special rates

Insert at the end of section 495—

(3) Without limiting subsection (1) or (2), a special rate may be levied for or towards meeting the costs of works, services, facilities or activities (the ***intergovernmental project***) provided or undertaken, or proposed to be provided or undertaken, by the council together with one or more other government entities (a ***project partner***).

(4) The following provisions apply for a special rate levied for an intergovernmental project—

(a) before the rate is levied, the council must include the following information in the draft operational plan for the year in which it is proposed to be levied—

(i) the anticipated benefits to the council's area or local community of the intergovernmental project,

(ii) the basis of the council's opinion, under subsection (2), for the different application of the rate, if any, in relation to different land,

(iii) the estimated cost of the intergovernmental project (both for the year and in total),

(iv) the estimated contributions to the intergovernmental project, including financial and in-kind contributions, to be made by the council and each project partner (both for the year and in total),

(v) the amount of money estimated to be levied by the rate (both for the year and in total),

(b) the intergovernmental project does not need to be works, services, facilities or activities within the functions of the council,

(c) if the cost of the intergovernmental project is partly funded by another person or under another arrangement, charge or contribution—the rate levied may be limited to what is needed to fund the proportion of the cost for which the council is responsible,

(d) money raised from the rate may be used only for the purpose of funding the intergovernmental project,

(e) money raised from the rate is not to be treated as part of the general income of the council,

(f) the annual report of the council is to include the following information—

(i) the actual cost of the intergovernmental project, and the actual contributions to the intergovernmental project made by the council and each project partner, during the year of the report,

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(ii) a statement explaining the difference, if any, between the actual cost and contributions and the estimated cost and contributions in the council's draft operational plan,

(iii) the total revenue generated by the rate during the year of the report,

(iv) the outcomes of the project, and the benefits to the council's area and the local community of the project, during the year of the report,

(i) despite sections 498(3)(b) and 499(4)(b), the Minister does not need to approve the different application of the rate, if any, in relation to different land.

(5) Subsection (4) applies despite any other provision of this Act to the contrary.

(6) In this section—

another Australian jurisdiction means the Commonwealth or another State or a Territory.

government entity means each of the following—

(a) the State or another Australian jurisdiction (including the Crown in right of the State or another Australian jurisdiction),

(b) a Minister of the government of the State or another Australian jurisdiction,

(c) a government sector agency (within the meaning of the *Government Sector Employment Act 2013*) or a Department or other agency of another Australian jurisdiction,

(d) a public authority of the State or another Australian jurisdiction,

(e) a person acting on behalf of the State or another Australian jurisdiction (or the Crown in right of the State or another Australian jurisdiction),

(f) a person or body (whether of this State or another Australian jurisdiction) declared by the regulations to be a government agency for this section,

but does not include a council or county council or a local authority of another Australian jurisdiction.

[4] Section 503 What is the relationship between rates and charges?

Insert after section 503(2)—

(3) This section does not prevent a charge being made for a water supply service or sewerage service on land that is the subject of a conservation agreement within the meaning of the *National Parks and Wildlife Act 1974*.

Note. Section 557 limits the levying of water supply special rates and sewerage special rates being levied on land that is the subject of a conservation agreement.

[5] Section 506 Variation of general income

Insert at the end of the section—

(2) Without limiting subsection (1), the order may—

(a) specify different percentages for different areas of councils, and

(b) specify a methodology for calculating a percentage rather that specifying a particular percentage, including by specifying a base percentage to which an additional figure may be added in specified circumstances.

draft

[6] Section 514 Categorisation of land for purposes of ordinary rates

Insert after the first dot point in section 514—

- environmental

[7] Section 514, note

Insert "environmental," after "farmland,".

[8] Section 515A

Insert after section 515—

515A Categorisation as environmental

(1) Land is to be categorised as ***environmental*** if it is a parcel of rateable land valued as 1 assessment and—

(a) its use is constrained because of one or more of the following—

(i) the land has limited value relative to its size and location,

(ii) development cannot be carried out on the land,

(iii) the land has low development potential for business, residential or farming activity, and

(b) it is subject to geographical restrictions or regulatory restrictions.

(2) In determining whether the matters mentioned in subsection (1)(a)(ii) or (iii) apply, the council must consider—

(a) the zoning, if any, of the land under an environmental planning instrument,

(b) matters that may be prescribed by the regulations.

(3) In this section—

geographical restrictions, in relation to land, include the water areas, mud flats, swamps, marshlands, steep slopes or other terrain resulting in physical limitations preventing the carrying out of all, or almost all, residential or commercial development on the land.

Consultation note. Comments are sought on the way for determining the apportionment of rates if part of a parcel could properly be categorised as environmental, and the remainder could be categorised under one or more of the other categories.

[9] Section 518 Categorisation as business

Insert "environmental," after "farmland,".

[10] Section 519 How is vacant land to be categorised?

Omit "section 515, 516 or 517". Insert instead "sections 515–517".

[11] Section 519(2)

Insert at the end of the section—

(2) Despite subsection (1), land that is vacant land may also be categorised according to a sub-category of vacant land determined under section 529.

[12] Section 529 Rate may be the same or different within a category

Omit section 529(2). Insert instead—

(2) A sub-category may be determined as follows—

(a) for the category "farmland"—according to—

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(i) the location of the land, or
(ii) the intensity of land use, or
(iii) the irrigability of the land, or
(iv) economic factors affecting the land,

(b) for the category "environmental"—according to one or both of the following—
(i) the location of the land,
(ii) whether the land is subject to a conservation agreement,

(c) for the category "residential"—according to—
(i) the location of the land, or
(ii) whether the land is rural residential land, or
(iii) whether the land is in a centre of population, or
(iv) whether the land is in a residential area or in part of a residential area,

(d) for the category "mining"—according to the kind of mining involved, or

(e) for the category "business"—according to 1 or more of the following—
(i) the location of the land,
(ii) whether the land is in a centre of commercial or industrial activity,
(iii) whether the land is industrial land,
(iv) whether the land is non-industrial land.

(2A) A sub-category may be determined for subsection (2)(c)(iv) only if the council is satisfied that it is necessary to identify residential areas because of significant differences between the areas in relation to access to or demand for, or the cost of providing, services or infrastructure.

(2B) For subsection (2)(e)(iii) and (iv)—

(a) land is industrial land if the activities carried out on the land are predominately industrial activities,

(a) land is non-industrial land if the activities carried out on the land are predominately not industrial activities.

(2C) A sub-category of vacant land may be determined for each of the categories mentioned in subsection (2)(c)–(e).

(2D) Without limiting the factors that are relevant, regard must be had to whether there is a substantial and permanent structure located on land in determining whether the land is to be sub-categorised as vacant land.

(2E) A sub-category must be identified by reference to geographical names if—

(a) the sub-category is identified by reference to the location of the land, or

(b) the sub-category is identified by reference to the factor mentioned in subsection (2)(c)(iv).

[13] Section 529(5) and (6)

Insert after section 529(4)—

(5) The regulations may make provision for or with respect to the following—

(a) the factors that may or may not be taken into account in determining a sub-category for a category of land for which a sub-category may be determined,

(b) the kinds of activities that are, or are not, industrial activities or non-industrial activities for the purposes of this section,

(c) the factors that may or may not be taken into account in determining a sub-category of vacant land for a category of land for which a sub-category of vacant land may be determined,

(d) public consultation requirements to be followed by councils in determining a sub-category, including by applying, with or without modification, provisions of the Act, the regulations or guidelines concerning the preparation, exhibition and publication of strategic council planning documents.

(6) In this section—

conservation agreement means—

(a) a conservation agreement within the meaning of the *National Parks and Wildlife Act 1974*, or

(b) another agreement relating to the conservation of the land of a kind prescribed by the regulations.

geographical name has the same meaning as in the *Geographical Names Act 1966*.

strategic council planning document means a community strategic plan, resourcing strategy, delivery program or operational plan mentioned in Chapter 13, Part 2.

[14] Section 530

Insert after section 529—

530 Special provisions for residential sub-categories

(1) This section applies in relation to determining a sub-category (a ***residential sub-category***) under section 529 for the category "residential" (the ***residential category***) for rateable land in a council's area.

(2) The highest ordinary rate for rateable land in a contiguous urban locality must not be more than a factor of 1.5 times, or any other factor prescribed by the regulations, the average ordinary rate payable for other rateable land in the contiguous urban locality.

(3) Despite subsection (2), the Minister may by written instrument given to a council on its application—

(a) determine a factor for the council that is greater than the factor mentioned in subsection (2), and

(b) impose conditions in relation to the use of the determined factor.

(4) The Minister may, by a further written instrument given to a council on its application, vary or revoke a determination, or a condition of a determination, made or imposed for the council under subsection (3).

(5) If a council decides to make different ordinary rates for residential sub-categories, the council must—

(a) publish the reasons for doing so on its website as soon as practicable after making the rates, and

(b) set out the reasons in the council's statement of revenue policy in its operational plan for year concerned.

(6) The Minister may, from time to time, issue written directions to councils concerning—

(a) the factors or circumstances that may, or may not, be used by councils in determining a residential sub-category or the ordinary rate for a residential sub-category, and

(b) matters to be included in reasons published for subsection (5)(a).

(7) A council must comply with directions given by the Minister under subsection (6).

(8) The regulations may make provision for or with respect to—

(a) the methodology for calculating the average ordinary rate payable for other rateable land for subsection (2), and

(b) the circumstances in urban land is, or is not, to be treated as being completed separated from land that is not in the residential category for paragraph (b) of the definition of ***contiguous urban locality*** in subsection (9).

(9) In this section—

contiguous urban locality means urban land—

(a) that is in the residential category, and

(b) no part of which is completely separated from the rest of the land by land that is not in the residential category.

[15] Section 555, heading

Insert "**, other than water supply special rates and sewerage special rates**" after "**rates**".

[16] Section 555(1)

Insert ", other than water supply special rates and sewerage special rates" after "all rates".

[17] Section 555(1)(b)

Omit section 555(1)(b) and (b1). Insert instead—

(b) land reserved or acquired under the *National Parks and Wildlife Act 1974*,

[18] Section 555(1A)

Insert after section 555(1)—

(1A) Without limiting subsection (1), the following land is also exempt from all rates, other than water supply special rates and sewerage special rates—

(a) land that is a public place,

(b) land used for a public reserve and vested in the Crown, a public body or trustees,

(c) land used for a common and vested in the Crown, a public body or trustees,

(d) land used for a public cemetery and vested in the Crown, a public body or trustees,

(e) land used solely for a free public library and vested in the Crown, a public body or trustees,

(f) land acquired under an environmental planning instrument for the public purpose specified in the instrument and not leased for private purposes,

(g) land that is held under a lease from the Crown for private purposes and is the subject of a mineral claim granted under Division 4 of Part 9 of the *Mining Act 1992* and that the council has declared is not rateable,

(h) land that belongs to a public benevolent institution or public charity and is used or occupied by the institution or charity for the purposes of the institution or charity,

(i) land that belongs to a public hospital,

(j) land that is vested in the Minister for Health, the Health Administration Corporation or the New South Wales Health Foundation,

(k) land that is vested in a local health district constituted under the *Health Services Act 1997*,

(l) land that is vested in a university, or a university college, and is used or occupied by the university or college solely for its purposes,

(m) land that is vested in the Crown or Venues NSW and is described in Schedule 4A, Parts 1, 2 or 3 of the *Sporting Venues Authorities Act 2008* and is used or occupied for the purposes of or in accordance with that Act,

(n) land that is vested in the Crown or the Zoological Parks Board and is used or occupied by the Board for its purposes,

(o) land that—

(i) is vested in the mines rescue company, within the meaning of the *Coal Industry Act 2001*, and

(ii) is used for the purposes of a mine rescue station controlled by that company,

(p) land that is managed by the Teacher Housing Authority and on which a house is erected,

(q) land that is leased to the Crown for the purpose of cattle dipping,

(r) land that is specified or described in the regulations as being exempt from all rates, other than water supply special rates and sewerage special rates,

(s) land that is vested in an Aboriginal Land Council and that is reserved under Part 4A of the *National Parks and Wildlife Act 1974*.

[19] Section 555(3)

Omit the subsection.

[20] Section 555(4)

Insert "or (1A)(h)–(o)" after "subsection (1)(e), (f), (g) and (g1)".

[21] Section 555(5)

Omit the subsection. Insert instead—

(5) A parcel of rateable land is to be valued in accordance with section 28A of the *Valuation of Land Act 1916* to enable rates to be levied on a part of the parcel that is not exempt from rates under this section if it is—

(a) a parcel belonging to a religious body partly occupied and used in a way described in subsection (1)(e) and partly in a way that would result in part of the parcel not being exempt from rates under this section, or

(b) a parcel belonging to a public benevolent institution or public charity partly used or occupied by the institution or charity for its own purposes and partly for a purpose that would result in part of the parcel not being exempt from rates under this section.

[22] Section 556

Omit sections 556 and 557. Insert instead—

556 What land is exempt from water supply special rates and sewerage special rates?

(1) Water supply special rates may not be levied on land to which the council has resolved not to supply water.

(2) Sewerage special rates may not be levied on land which the council has resolved not to connect to the council's sewers.

(3) Subject to subsection (4), water supply special rates and sewerage special rates may not be levied on land that is the subject of a conservation agreement within the meaning of the *National Parks and Wildlife Act 1974*.

(4) If part of a single parcel of land is the subject of a conservation agreement, any rate levied on that whole parcel is to be reduced by the following percentage—

$$P = \frac{CA}{WA}$$

P is the percentage.

CA is the area of that part of the parcel that is the subject of the conservation agreement, and

WA is the area of the whole parcel.

Note. For example, if a parcel of land would normally be subject to a rate of $1,000, but 40% of the area of the land is subject to a conservation agreement, that rate is to be reduced by 40% to $600.

[23] Section 558, heading

Omit "**water supply special rates and sewerage special**".

[24] Section 558(1)

Omit "water supply special rates and sewerage special".

[25] Section 558(6)

Insert after section 558(5)—

(6) The regulations may make provision for or with respect to—

(a) the considerations councils may, or may not, take into account in granting an exemption, or a kind of exemption, under this section, and

(b) the publication of reasons by councils for exemptions they grant.

[26] Section 558A

Insert after section 558—

558A Information about estimated cost of rate exemptions

(1) A council must, at the start of each rating year, ensure that the estimated costs of rate exemptions in its area are calculated to the extent it is reasonably practicable to do so, based on information available to the council.

(2) The council must ensure that the estimated costs are published—

(a) in the draft operational plan for the year in which the costs are proposed to be incurred, or

(b) on the website of the council.

(3) The regulations may make provision for or with respect to—

(a) exempting councils from some or all of the requirements of this section, and

(b) the methodologies to be used in calculating estimated costs of rate exemptions, and

(c) the kinds of rate exemptions for which estimated costs must be calculated, and

(d) when and how the estimated costs of rate exemptions are to be published in draft operational plans or on websites of councils.

(4) In this section—

rate exemption means a kind of exemption from a requirement to pay an ordinary rate or special rate—

(a) given by a provision of this Act or the regulations, or

(b) granted by the council under a provision of this Act or the regulations.

[27] Chapter 15, Part 8, Division 2

Omit the note at the beginning of the Division.Insert instead—

Note—

This Division enables a ratepayer to apply for a postponement in certain cases of hardship.

This Division also entitles particular public bodies to a 25% rebate for ordinary rates payable for certain land.

Other rating concessions may be provided under other Acts. For example, section 127 of the *Heritage Act 1977* provides for rates to be levied on heritage valuations determined in accordance with that Act instead of on other valuations.

[28] Section 591

Omit the section. Insert instead—

591 Postponement of rates

(1) A council must, in accordance with this section, postpone the payment of rates for land in any rating year for which a determination or redetermination of the attributable part of the land value is in force if satisfied that the rateable person for the land would suffer substantial hardship if required to pay the rates.

(2) For land for which no base amount of a rate is specified, the amount of the rate postponed is to be the same proportion of the rate as the attributable part of the land value bears to the land value.

(3) For land for which a base amount of a rate is specified, the amount of the rate postponed is to be the same proportion of the ad valorem amount of the rate as the attributable part of the land value bears to the land value.

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[29] Section 595

Omit the section. Insert instead—

595 Postponed rates may be written off after 5 years

(1) This section applies if 5 years have elapsed since the commencement of a rating year for which part of the rates levied on land have been postponed under this Division.

(2) The council may write off the part postponed and any interest accrued on that part.

(3) This section does not affect the right of the council to recover rates and interest, even though they have been written off under this section, if it subsequently appears to the council that they should not have been written off.

[30] Section 713 Sale of land for unpaid rates and charges

Omit "5 years" wherever occurring in section 713(1) and (2). Insert instead "3 years".

[31] Schedule 8 Savings, transitional and other provisions consequent on the enactment of other Acts

Insert at the end of the Schedule, with appropriate Part and clause numbering—

Part Provisions consequent on enactment of Local Government Amendment (Rates) Act 2021

Definitions

In this Part—

amending Act means the *Local Government Amendment (Rates) Act 2021*.

Consultation note. Finalised savings and transitional provisions will be included following consultation.

In particular, for Councils affected by amalgamation and having a preserved rate structure that is due to expire in 2021, a transitional provision will be included to provide for the harmonisation of rates to ensure a uniform rating structure for each category of land (such as residential).

Harmonisation within each category of land can be achieved in one of 3 ways—

(a) by the levying of a new rate for the category of land, with effect from 1 July 2021,

(b) by the use of sub-categorisation of the category of land (as provided for elsewhere in this draft Bill),

(c) by gradual harmonisation of rates for the category over no more than 4 years.

If rates for a category are harmonised over 4 years, in each year the increase in rates for the category must not exceed 50% of the difference between—

(a) the preserved rate structure for the category, and

(b) the rate structure that is to be achieved at the end of harmonisation for the category.

It is noted that harmonisation is not expected to affect the requirements of the Act that limit variation in a Council's income from rates.

Council Policy

Draft Pensioners' Rates and Charges Concession Policy

Purpose

To provide a framework for the administration of concessions provided by Council to eligible pensioners on rates and annual charges and clear principles and guidelines for the granting of those concessions ensuring the requirements of Local Government Act 1993 ("Act") and the Local Government (General) Regulation 2005 ("Regulations") are satisfied.

Principles

- In managing Council's Rates and Domestic Waste Management Services (DWMS) Charge, it is important to ensure that a fair and equitable policy exists to support and assist particular sections of the community, who may experience difficulty in meeting the payment of these annual charges, without becoming a burden on other ratepayers.
    - The Act allows pensioners to obtain mandatory concessions in respect of the aggregated total of their ordinary rates assessment and their domestic waste management services charge: (Section 575).
    - Councils also have the discretion to provide voluntary concessions: (Section 582).
- Statutory pensioner concessions against ordinary rates and domestic waste management services charges must be managed in accordance with the requirements of Section 575 of the Act.
- Voluntary pensioner concessions against ordinary rates and domestic waste management services charges must be managed in accordance with the requirements of Section 582 of the Act.
- The concessions on ordinary rates and domestic waste management services charges will be shown on the annual rate notice and will be deducted from the total amount owing.
- To claim the concessions on rates, the pensioner must be responsible for payment of rates and occupy the dwelling to which they are paying rates as their sole or principal place of living.
- Regardless of how many lots of land the ratepayer owns, the council pensioner concession will only apply to the property occupied by the ratepayer as their sole or principal place of living.
- For the purpose of this policy, life tenants are deemed as owners.

1. Statutory Pensioner Rates and Annual Charges Concessions

Eligible Pensioners

In relation to the rates or charges levied on land on which a dwelling is situated means a person who is a member of a class of persons prescribed by the Regulations (as detailed in points 1. (a) to (e)), and who occupies that dwelling as his or her sole or principal place of living.

(a) persons who receive a pension, benefit or allowance under Chapter 2 of the Social Security Act 1991 of the Commonwealth, or a service pension under Part III of the Veterans' Entitlements Act 1986 of the Commonwealth, and who are entitled to a pensioner concession card issued by or on behalf of the Commonwealth Government,

(b) persons who receive a pension from the Commonwealth Department of Veterans' Affairs as:

(i) a war widow or war widower within the meaning of the Veterans' Entitlements Act 1986 of the Commonwealth, or

(ii) the unmarried mother of a deceased unmarried member of the Australian Defence or Peacekeeping Forces, or

(iii) the widowed mother of a deceased unmarried member of the Australian Defence or Peacekeeping Forces,

and do not have income and assets that would prevent them from being granted a pensioner concession card (assuming they were eligible for such a card),

(c) persons who have received a lump sum mentioned in section 234(1)(b) of the Military Rehabilitation and Compensation Act 2004 of the Commonwealth or are receiving a weekly amount mentioned in that paragraph, and do not have income and assets that would prevent them from being granted a pensioner concession card (assuming they were eligible for such a card),

(d) persons who receive a general rate of pension adjusted for extreme disablement under section 22(4) of the Veterans' Entitlements Act 1986 of the Commonwealth, or a special rate of pension under section 24 of that Act,

(e) persons who receive, or who at some point in their life have been eligible for, a Special Rate Disability Pension under the Military Rehabilitation and Compensation Act 2004 of the Commonwealth.

2. Voluntary Pensioner Rates and Annual Charges Concessions

Eligible Pensioners

Rates

In relation to a rate levied on land on which a dwelling is situated means a person who is a member of a class of persons as detailed in points 2. (a) to (e) below, and who occupies that dwelling as his or her sole or principal place of living.

(a) persons who meet the requirements of 1. (a) to (e) and have not reached the accepted retirement age

(b) persons in receipt of the blind pension

(c) persons who have reached the accepted retirement age and continue to receive either the Carer Payment or Disability Support Pension from Centrelink

(d) persons who receive either the Totally and Permanently Incapacitated (TPI) Pension or the Extreme Disablement Adjustment (EDA) Pension from the Department of Veteran Affairs.

Domestic Waste Management Services Charge

In relation to the domestic waste management services charge on land on which a dwelling is situated means a person who is a member of a class of persons as detailed in points 1. (a) to (e) above, and who occupies that dwelling as his or her sole or principal place of living.

3. Amount of Concessions

(a) In accordance with Section 575(3)(a) of the Act the amount of the Statutory Pensioner Rates and Annual Charges Concession is 50% of rate and charge up to a maximum of $250, or such other amount determined by the NSW Government.

(b) The amount of Council's Voluntary Rates Pensioner Concession is a maximum of $150 or as determined in Council's Annual Operational Plan.

(c) The amount of Council's Voluntary Domestic Waste Management Services Charge Pensioner Concession is as determined in Council's Annual Operational Plan. This amount is adjusted annually in line with the percentage change in the domestic waste standard service charge.

4. Application Process

(a) Application for a pension concession must be made by completing the prescribed pensioner concession application form. All information must be provided before the application can be assessed including either a copy of the pension concession card or an electronic version of the pension concession card sighted and verified by a Council officer.

(b) The application must be signed by the applicant or a person with power of attorney for the applicant.

(c) The property must be the applicant's sole or principle place of living.

(d) Once assessed, the applicant will be notified in writing of Council's decision and the amount of rates and charges payable.

(e) The applicant(s) must hold a current Government issued Pensioner Concession Card. Senior's Cards and Health Care Cards are not accepted.

5. Date of Effect

(a) In accordance with Section 575 of the Act if a person becomes an eligible pensioner part way through the rating year, a proportional concession will apply based on the number of full quarters remaining for that financial year after the person became eligible. Accordingly, where a person becomes an eligible pensioner after the commencement of a quarterly instalment period, the concession will commence from the start of the next quarterly instalment period.

(b) In accordance with Section 584 of the Act where a person ceases to qualify as an eligible pensioner, or sells the property to which the concession applies, the concession will cease at the end of that instalment quarter and be written back proportionally according to the number of full periods left in the rating year

(c) In relation to Council's voluntary concessions, the proportionate concession and ending of concessions will apply in the same manner as the Act dictates for mandatory concessions.

6. Backdated concessions

(a) The pensioner's initial application for a pensioner concession should be made within one year of receiving the pensioner concession card. However, where due to an oversight the application is not received during the year, pensioner concessions will be granted in the year the application is made.

(b) An eligible pensioner can only claim a maximum concession dating back to the 1st of July in the current rating year.

7. Verification of pensioner status

(a) Validation of eligible pensioner reference card holders will be carried out using Centrelink's Confirmation eServices (CCeS) when an application is lodged.

(b) We are not able to validate eligibility without first obtaining consent (each individual person requesting a concession must provide their consent) unless the eligible pensioner provides

another acceptable form of proof from Centrelink or the Department of Veterans' Affairs confirming their eligibility to the concession (required each quarter where consent is not provided).

(c) If a current pensioner applies for a concession and the name record held in Council's records differs to what is on the pension card, the person must provide Council with sufficient legible documentation to verify they are the legal owner. Such documents for example would be a marriage certificate, change of name certificate, birth certificate, divorce documents, a current driver's licence or a Centrelink name history report. Without such documents Council is unable to issue a pension concession.

8. Pensioner Concession Card Eligibility Changes

(a) Council confirms all pensioners' eligibility annually in late May or early June. At this time if a pensioner's eligibility is not confirmed (no reason is given by Centrelink), Council is not able to grant a concession on their Rate Assessment issued in July.

(b) Council may also confirm all pensioners' eligibility at other times during the year. If eligibility has ceased the entitlement is taken to cease on the last day of the quarterly instalment period during which those circumstances occur.

(c) If the validation results in the eligibility not being confirmed, Council will remove any further concession. Reinstatement of a concession will require reapplication.

(d) In these circumstances pensioners must re-apply upon issue of their new rate assessment. A common reason for rejection of a concession at the annual confirmation run is that the pensioner is overseas at the time of confirmation, and accordingly is ineligible to receive a Pensioner Concession Card (PCC). As part of the application process, it is required that in addition to the supply of a copy of their PCC card, information regarding their length of stay overseas in the form of a statutory declaration, will need to be given. If the pensioner is unable or unwilling to divulge such information, a check using the Centrelink online confirmation service will be made to confirm the eligibility status. Adjustments to any concession granted or about to be granted, will then be made.

9. Joint Owners

(a) On land that is jointly owned and for which the liability for payment of the rates is shared with ratepayers who are not eligible pensioners, the concession amount will be calculated proportionally according to the percentage of ownership as prescribed by Land and Property Information NSW.

(b) If joint owners are eligible for a pensioner concession and they are not spouses, a separate form will need to be completed by each owner to receive the maximum concession, otherwise only a partial concession will be granted. If the property is owned by a couple and their spouse's name appears on the same Pensioner Concession Card, a separate form should still be completed for each pensioner to provide consent.

10. Periods of absence from your home

(a) Ratepayers remain eligible for concessions notwithstanding that they are required to leave their principal place of living for a temporary period for the purpose of receiving medical care, with an intention to return to their home subject, during the time of their absence, to the property being:

(i) unoccupied for a maximum period of one (1) year, or;

(ii) occupied only by the ratepayer's spouse or an immediate family member.

(b) If a ratepayer is in receipt of a pension concession card, currently receiving a pension concession on the property considered to be their sole or principal place of living and is then required to enter an aged care facility for health or care reasons, the pension concession will continue to apply as long as the property is not being rented.

11. Accruing Rates and Charges

In further supporting eligible Pensioners:

(a) Where in Council's opinion the payment of Rates and Charges would cause hardship, eligible pensioners over the accepted retirement age may be allowed to accrue Rates and Charges against their estate or until the property is sold or the ratepayer no longer is an eligible pensioner.

(b) Payment of the debt is to be made on the future sale or transfer of the property.

(c) Interest charges are to accrue on overdue Rates and Charges on a daily basis in accordance with Section 566 of the Act. Accrued interest is to be applied to assessments on a weekly basis subject to procedures for issuing Notices.

(d) Subject to paragraph (a) above, should an eligible pensioner move from their principal place of living, Council will allow such deferment to continue for up to one (1) year, provided that the property remains untenanted. Council may require evidence to support such deferment.

12. Assistance to extend pensioner concession to avoid hardship

Section 577 of the Act, enables Council to make an order deeming:

(a) certain persons who are jointly liable with an eligible pensioner(s) or solely liable, but who are not themselves eligible, to be eligible pensioners for the purpose of a mandatory reduction in rates and charges to avoid hardship.

(b) An eligible pensioner, not the owner of the property, has a life interest in the property and is responsible for the payment of rates.

Council requires confirmation in writing with a copy of the will of a deceased estate, copy of the Certificate of Title if a life tenancy is registered, Deed of Agreement or relevant documentation to validate a life tenancy agreement.

13. Abandonment of Pensioners' Rates and Charges

Under Section 582 of the Act Council may waive or reduce rates, charges and interest due by any person prescribed by the regulations who receives a pension, benefit or allowance under Chapter 2 of the Social Security Act 1991 of the Commonwealth and is the holder of a pensioner concession card issued by or on behalf of the Commonwealth Government.

14. Deferral of Recovery Proceedings against Eligible Pensioners that are entitled to receive a Concession on Rates and Charges

Where in Council's opinion payment of Rates and Charges would cause hardship, eligible pensioners over the accepted retirement age may be allowed to accrue Rates and Charges against their estate. Interest charges are to accrue on overdue Rates and Charges on a daily basis in accordance with Section 566 of the Act. Accrued interest is to be applied to assessments on a weekly basis subject to procedures for issuing Notices.

Council recognises the large number of pensioner ratepayers in the community and recognises the difficulties some pensioner ratepayers have in meeting their Rates and Annual Charges payments.

Under Section 712 of the Act proceedings for the recovery of a rate or charge may commence at any time within twenty years from the date when the rate or charge became due and payable. The Local Government Rating and Revenue manual advises Councils have discretion to accrue rates, charges and interest against a pensioner's estate. The Office of Local Government advises if Councils wish to utilise this discretion, agreement is required from the pensioner ratepayer.

Where the eligible pensioner requests a delay in recovery action to allow outstanding rates, charges and interest to accrue against their estate and is willing to enter into an agreement, Council will:

(a) Provide an annual rates notice of all outstanding rates, charges and interest as it does for all ratepayers as well as instalment reminders.

(b) Not commence recovery action until there is a change in ownership of the property, either or both ratepayers leave the property (except where the pensioner is in a care facility on a temporary basis) or either or both become ineligible for a concession. Should any of these events occur, rates and annual charges will become due and payable.

(c) However, given the constraints set out in Section 712 of the Act, Council will require pensioners to commence payment of overdue Rates and Annual Charges such that their total debt to Council does not exceed twenty years.

15. Apportionment of statutory pensioner concessions between ordinary rates and domestic waste management services charge

It is important that an accurate apportionment of pensioner concessions between rates and domestic waste management services charge is undertaken where the cost of providing the concessions is part of the reasonable cost calculations used when setting the domestic waste management services charge.

Accordingly, the apportionment is to be in the same proportions as the levels of rates and domestic waste management services charge. The pensioner concessions are treated as a cost of providing the domestic waste management service, consequentially, the amount of government reimbursement is to be deducted from the calculation of the cost of providing the pensioner concession.

Scope and application

This Policy applies to ratepayers who meet pensioner eligibility requirements.

References and related documents

- Local Government Act 1993
- Local Government (General) Regulation 2005
- Division of Local Government – Council Rating and Revenue Raising Manual
- Northern Beaches Council Strategic Community Plan
- Rates and Annual Charges Hardship Policy

Responsible Officer

Chief Financial Officer

Review Date

The Policy will be due for review in four years if adopted.

Revision History

Revision	Date	Change	TRIM Ref
1	24 November 2020	Draft Pensioners Rates and Charges Concession Policy Replaces former Warringah Policy PL 511	2020/612046

Council Policy
Rates and Annual Charges Hardship Policy

Purpose

To fulfil the statutory requirements of the Local Government Act, 1993 (the Act) with respect to both the recovery of outstanding Rates, Annual Charges and Interest and the provision of assistance to those ratepayers who are experiencing genuine financial hardship with the payment of their Rates and Annual Charges. A key objective is to work with ratepayers to achieve flexible alternatives to legal action where possible.

In developing this Policy, Council has taken into account the Debt Management and Hardship Guidelines issued under Section 23A of the Act by the Office of Local Government.

Policy Statement

Council acknowledges that ratepayers will, for various reasons from time to time, fail to pay rates when they become due and payable to Council. It is not the intention to cause hardship to any ratepayer through Council's recovery procedures and consideration will be given to acceptable arrangements to clear the debt prior to the end of the current financial year, where possible.

Council recognises there are cases of genuine financial hardship requiring respect and compassion in special circumstances. This policy establishes guidelines for assessment of a hardship application applying the principles of fairness, integrity, confidentiality and compliance with statutory requirements. It applies to all applications for waiving, alternative payment arrangements or writing off rates, fees, annual charges and interest accrued on such debts.

Principles

1. Debt Recovery

Council has a responsibility to recover monies owing to it in a timely, efficient and effective manner to finance its operations and ensure effective financial management.

Council aims to ensure effective control over overdue rates, charges and interest and to establish debt management procedures for the efficient collection and recovery of outstanding debts including deferment and alternative payment arrangements.

The key principles that will apply to the collection of overdue rates and charges are as follows:

- Council's aim is to collect all rates and charges by the end of each rating year;
- A fair and reasonable approach to recovery will apply;
- Council will individually assess cases of financial hardship;
- Council will not reduce rates or charges, but will consider alternative approaches to dealing with cases of financial hardship;
- Council will consider periodical payment arrangements in cases of hardship or extenuating circumstances;
- Council may utilise the services of Mercantile Agents where required to conduct all or part of any legal or other recovery proceedings on behalf of the Council. Any costs incurred by the Council in connection with these legal and recovery proceedings will be added to the ratepayers outstanding account and will accrue against the applicable property;
- Council will review all matters before commencing legal action to recover debts and make reasonable efforts to contact ratepayers before commencing legal action;

- Council will not provide financial advice to ratepayers and when considered relevant will recommend to ratepayers experiencing financial hardship that they should seek their own independent legal and financial advice;
- Council will aim to achieve the Office of Local Government's performance benchmark in relation to the Rates and Annual Charges Ratio, however, it will not pursue through legal action the collection of outstanding Rates and Annual Charges from pensioners;
- Council will apply the provisions of the Act relating to the sale of land to recover overdue Rates, Annual Charges and Interest when appropriate;
- Council will suspend debt recovery, legal action and interest accrual while a ratepayer's hardship application is awaiting determination by Council.

2. Customer Contact

Council will make reasonable effort to contact a customer with an overdue account before instigating any legal recovery action. Contact efforts may (at Council's option) include using:

- known mailing and/or property address details recorded on Council's rating system
- telephone, mobile phone/SMS and email details recorded in Council's systems
- internet and other searches to find contact details
- company searches where appropriate
- using the resources of Council's Mercantile Agents (who may also attend the property in person)

It should be noted that it is the ratepayer's responsibility to promptly notify Council of changes to their contact and address information relating to property rating for each property that they own (or part own) and to ensure that contact information is kept up to date.

3. Hardship Assistance

This policy recognises that due to exceptional circumstances, owners may at times encounter financial hardship, making it difficult for them to pay their rates and charges as they fall due, or adhere to a regular payment arrangement.

Exceptional circumstances to be considered by Council may include (but are not limited to) such matters as the loss of employment, loss of income, illness, separation or divorce, family violence, impacts of unforeseeable events (such as the impacts of a pandemic or natural disasters), significant changes to rates and charges related to legislative and regulatory changes, impacts following a general revaluation of land by the Valuer General and impacts due to significant changes to a Council's rating structure (such as changes required to harmonise rates and charges due to council amalgamations or boundary changes).

The Act provides Council with the following options for providing assistance to ratepayers who are finding it difficult to pay their rates and charges because of financial hardship:

(a) Assistance by Periodical Payment Arrangements

Section 564 of the Act provides that Council may accept payment of rates and charges due and payable by a person in accordance with an agreement made with the person and may write off or reduce interest accrued on rates or charges if the person complies with the agreement.

(b) Assistance by writing off accrued interest and costs

Under Section 567 of the Act Council may write off accrued interest on rates or charges payable by a person if, in its opinion

- The person was unable to pay the rates or charges when they became due and payable for reasons beyond the person's control, or
- The person is unable to pay the accrued interest for reasons beyond the person's control, or
- Payment of the accrued interest would cause the person hardship.

(c) Assistance to extend pensioner concession to avoid hardship

Section 577 of the Act, enables Council to make an order deeming certain persons who are jointly liable with an eligible pensioner(s) or solely liable, but who are not themselves eligible, to be eligible pensioners for the purpose of a mandatory reduction in rates and charges to avoid hardship.

(d) Abandonment of Pensioners' Rates and Charges

Under Section 582 of the Act Council may waive or reduce rates, charges and interest due by any person prescribed by the regulations who receives a pension, benefit or allowance under Chapter 2 of the Social Security Act 1991 of the Commonwealth and is the holder of a pensioner concession card issued by or on behalf of the Commonwealth Government.

(e) Assistance due to General Revaluation of Land in the Local Government Area and Changes to the Rating Category of Properties.

Under Section 601 of the Act a ratepayer who, as a consequence of the making and levying of a rate on a valuation having a later base date than any valuation previously used by a council for the making and levying of a rate, suffers substantial hardship, may apply to the council for relief under this section.

Council has the discretion to waive, reduce or defer the payment of the whole or any part of the increase in the amount of the rate payable by the ratepayer in such circumstances, for such period and subject to such conditions as it thinks fit.

(f) Deferral of Recovery Proceedings against Eligible Pensioners that are entitled to receive a Rebate of Rates and Charges

Where in Council's opinion payment of Rates and Charges would cause hardship, eligible pensioners over the accepted retirement age may be allowed to accrue Rates and Charges against their estate. Interest charges are to accrue on overdue Rates and Charges on a daily basis in accordance with Section 566 of the Act. Accrued interest is to be applied to assessments on a weekly basis subject to procedures for issuing Notices.

Council recognises the large number of pensioner ratepayers in the community and recognises the difficulties some pensioner ratepayers have in meeting their Rates and Annual Charges payments.

Under Section 712 of the Act proceedings for the recovery of a rate or charge may commence at any time within twenty years from the date when the rate or charge became due and payable. The Local Government Rating and Revenue manual advises Councils have discretion to accrue rates, charges and interest against a pensioner's estate. The Office of Local Government advises if Councils wish to utilise this discretion, agreement is required from the pensioner ratepayer.

Where the eligible pensioner requests a delay in recovery action to allow outstanding rates, charges and interest to accrue against their estate and is willing to enter into an agreement, Council will:

- Provide an annual rates and charges notice of all outstanding rates, charges and interest as it does for all ratepayers as well as instalment reminders.

- Not commence recovery action until there is a change in ownership of the property, either or both ratepayers leave the property (except where the pensioner is in a care facility on a temporary basis) or either or both become ineligible for a concession. Should any of these events occur, rates and annual charges will become due and payable.

- However, given the constraints set out in Section 712 of the Act, Council will require pensioners to commence payment of overdue Rates and Annual Charges such that their total debt to Council does not exceed twenty years.

4. Procedures

(a) Payment Arrangements

(i) Assistance by Periodical Payment Arrangements

Council recognises that some ratepayers may experience financial difficulties in meeting their Rates commitments. Council will seek to assist ratepayers to make arrangements that are consistent with the ratepayer's capacity to make regular payments.

Relevant factors in assessing an individual's capacity to pay may include (at Council's sole discretion) consideration of a ratepayers personal circumstances including (but are not limited to):

- the ratepayers total disposable income and current financial commitments
- the number of children and/or dependents of the ratepayer, and/or
- advice from an accredited financial counsellor

Ratepayers experiencing financial hardship are encouraged to seek their own independent financial advice from suitably qualified financial counsellors.

Payment arrangements may (at Council's discretion) include an extension of time to pay or an agreement to regular manageable payments. In assessing a proposed payment arrangement, Council may also consider an applicant's previous history in relation to compliance with prior payment arrangements (where applicable).

(ii)Payment Arrangements - Guidelines

Subject to Council's agreement, a ratepayer may at any time make arrangements to pay off their outstanding rates and annual charges by regular payments, subject to the following guidelines:

- The amount and frequency of the payments under the arrangement are to be acceptable to Council. As a general principle, the applicant/s will be required to enter into and maintain a payment arrangement which will pay all rates or charges including future interest charges (where applicable), as they fall due or accrue, and/or, significantly reduce any arrears at the end of the payment arrangement period.

- Arrangements should seek to have the outstanding rates and annual charges cleared within a 6 to 12 month period or such other period acceptable to Council. A further hardship application may be considered after this period.

- All payment arrangements must be agreed in writing and acknowledged by the ratepayer in writing or such other means as acceptable to Council. This may include such matters as the duration of the arrangement, amount and timing of payments, the requirement for the ratepayer to contact Council promptly should the ratepayer's circumstances change, details of interest charges that may be accruing during the payment arrangement.

- To protect ratepayer privacy, payment arrangements can only be made with the ratepayer whose details are recorded on Council's property records or such other

person authorised in writing by the ratepayer to act on their behalf. Such authorisation to be to the satisfaction of Council and is accepted at Council's discretion.

- In accordance with Section 564 of the Act Council may enter into agreements with ratepayers that allow periodic payments to be made (at Council's discretion) and may (at Council's discretion) suspend or reduce interest accrual on rates or charges if the person complies with the approved payment arrangement.
- However, where an owner/ratepayer has not honoured a previous arrangement, Council has the discretion as to whether to accept a new arrangement or continue with further recovery action.
- Where the ratepayer fails to comply with their payment arrangement or fails to contact Council in advance of the payment due date to advise Council of any financial difficulties or other relevant circumstances, the total amount outstanding becomes due and payable (including any accrued interest) and is subject to Council's normal recovery procedures.

(b) Hardship Assistance

(i) General Principles

All applications for Hardship Assistance must be made on the Hardship Rate Relief Application Form. This form is available from Council's website or Customer Service Centres. Council (at its sole discretion) may waive the requirement to complete the Hardship Rate Relief Application Form where extenuating circumstances impact on a ratepayer's capacity to complete the form and provided that sufficient and relevant information has been provided to Council to assess the application.

The form must be completed in a legible fashion and contain sufficient information for Council to assess the application. If the form is not legible and/or does not include sufficient information Council may reject the application and/or request clarification and/or further relevant information.

The applicant must be an owner or part owner of the property or be the person liable for the payment of the rates on the property (or such other person authorised in writing by the ratepayer to act on their behalf).

Council will suspend debt recovery, legal action and interest accrual while a ratepayer's hardship application is awaiting determination by Council.

Ratepayers experiencing financial hardship are encouraged to seek their own independent financial advice from suitably qualified financial counsellors. Where relevant, a ratepayer may provide evidence of such advice to Council to assist Council in assessing their hardship application.

(ii) Assessment Guidelines

Upon receipt, an applicant's Hardship Rate Relief Application will be assessed by the relevant Council Officers.

Factors to be considered in assessing applications may include, but are not limited to whether:

- appropriate evidence of financial and/or other hardship has been provided
- sufficient relevant information has been provided for Council to consider and assess an individual's capacity to pay
- the applicant receives Centrelink and/or Department of Veteran Affairs benefits
- the applicant receives other benefits (e.g. emergency relief funding)

- the applicant could be considered in acute financial hardship, for example, if an individual earns below 75% of the minimum weekly wage
- the applicant is experiencing domestic or family violence involving financial abuse
- the applicant has been referred by an accredited financial counsellor, welfare agency or legal assistance service
- the property is categorised as residential or farmland or business for rating purposes
- the ratepayer previously had a good payment record
- the ratepayer has defaulted on previous payment arrangements

If Council is satisfied the circumstances falls within a category of hardship, it has the capacity (at its sole discretion) to consider deferring the payment, negotiating flexible payment arrangements and to consider writing off any accrued interest.

It is Council's intention that whilst rates will not be reduced or waived, Council has the authority to defer payment of rates for a maximum period of 2 years once a hardship application is approved. This ensures that Council's Rate revenue is protected. Where the application is approved and payments are made in accordance with the arrangement, interest charges may (at Council's discretion) be waived.

Scope and application

This Policy applies to ratepayers suffering financial hardship.

References and related documents

- Local Government Act 1993
- Local Government (General) Regulation 2005
- Civil Procedures Act 2005
- Corporations Act 2001
- Interpretation Act 1987
- Division of Local Government – Council Rating and Revenue Raising Manual
- Office of Local Government – Debt Management and Hardship Guidelines – November 2018
- Pensioners' Rates and Charges Concession Policy

Definitions

Arrangement	An agreement accepted by Council or its agents for a person to repay a debt within a specific period of time and with conditions applying thereto.
Person	Includes an individual, a corporation and a body corporate or politic

Responsible Officer

Chief Financial Officer

Review Date

This Policy was first adopted by Council on 27 September 2016 and was due for review in 2020.

The Policy is due for review in four years.

Revision History

Revision	Date	Change	TRIM #
1	27 September 2016	Policy adopted by Council with amendments following exhibition	2016/322779
2	24 November 2020	Draft for exhibition with minor amendments	2020/501483



Rates Harmonisation Analysis

northern beaches council

RATES HARMONISATION ANALYSIS

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Introduction

Northern Beaches Council is required to harmonise the rating structures of the former Manly, Pittwater and Warringah Councils by 1 July 2021. The purpose of this report is to explain the issues that need to be addressed by Council in adopting a new rating structure and to provide an analysis of the rates modelling that has been undertaken. It should be noted that all Councils amalgamated in 2016 are required to harmonise their rates by 1 July 2021.

Background

Legislative Requirements

Amalgamation Proclamation

In the Local Government (Council Amalgamations) Proclamation 2016 under paragraph 25 Rating structure and categorisation of land for rating purposes sub-paragraph 6 it was stated that the rating structure is to be reviewed within the first term of the new council following the first election of the council. The NSW Government amended the Local Government Act 1993 which allowed the Minister to require that the former councils rating structures stay in place for 4 rating years, from 1 July 2016 to 30 June 2020. This enabled the government to achieve its policy that there will “be no change to the existing rate paths for newly merged Councils for 4 years” (The Rates Path Freeze). The NSW Government subsequently amended the Local Government Act 1993 to provide for an additional year for amalgamated councils to harmonise rates by 1 July 2021.

In its public announcements on the rate path freeze policy, the NSW Government stated that:

- there would be no change to existing rate paths for newly merged councils. This provides ratepayers with certainty about their rates, and
- ratepayers in new councils would have their rates protected against future increases during the rate path freeze period, meaning they will pay no more for their rates than they would have in their pre-merger council area for four years.

In implementing the rate path freeze policy, Northern Beaches Council was firstly required to consider the general income of each former council area in 2016 when the amalgamation occurred. This general income for each of the former councils was then adjusted annually by the following external factors:

1. the rate peg or any special variation that has been approved for a former council
2. the expiry of any temporary special variations that apply to a former council,

The following rate increases have applied to each of the former council areas since amalgamation.

Former Manly Council	2016/17	2017/18	2018/19	2019/20	2020/21	Total
Rate Peg	1.8%	1.5%	2.3%	2.7%	2.6%	10.9%
Less: Expiring Special Rate Variation	-	(2.02%)	-	-	-	(2.02%)
Total	1.8%	(0.52%)	2.3%	2.7%	2.6%	8.88%

Former Pittwater Council	2016/17	2017/18	2018/19	2019/20	2020/21	Total
Rate Peg	1.8%	1.5%	2.3%	2.7%	2.6%	10.9%
Special Rate Variation	-	-	-	-	-	-
Total	1.8%	1.5%	2.3%	2.7%	2.6%	10.9%

Former Warringah Council	2016/17	2017/18	2018/19	2019/20	2020/21	Total
Rate Peg	1.8%	1.5%	2.3%	2.7%	2.6%	10.9%
Add: Approved Special Rate Variation	1.2%	7.9%	-	-	-	9.1%
Total	3.0%	9.4%	2.3%	2.7%	2.6%	20.0%

The current legislation is as prescribed under section 218CB (2) of the Local Government Act 1993 and it requires all amalgamated councils to harmonise their rating structures by 1 July 2021. As the process of rates harmonisation is a legislative requirement there is no discretion in this requirement and its timeline.

As with changes in general land revaluations harmonisation redistributes rates and does not result in an increase in Council's rates yield (Income)

Existing Limitations

The Local Government Act 1993 currently does not allow an amalgamated council to progressively harmonise their rates over more than one year. As such it does not recognise the significant dollar differential that may exist in property valuations and therefore the rates to be paid by ratepayers across former council areas as a result of harmonisation. The legislation also does not make provision for council to reasonably afford compassion to those ratepayers who will be most affected by a significant change in the amount of rates they are required to pay as a result of harmonisation.

The Mayor and CEO have been actively working with the Minister for Local Government for the gradual introduction of harmonisation for a 10% cap of annual increase excluding the rate peg and in relation to IPART's role not being required in setting the minimum rate.

The NSW Government has indicated to the Mayor and Chief Executive Officer of their intention to introduce changes to the Local Government Act 1993 to allow the phasing of rates to those ratepayers who will be most affected by a significant change in the amount of rates as the result of harmonisation. We understand that the draft legislation regarding gradual harmonisation is currently being reviewed by a government committee and information in relation to the legislation is expected to be released in the coming weeks.

We have now been advised by the Office of Local Government that a new temporary, alternative pathway for the harmonisation of minimum rates has been made available to amalgamated councils for determination through the Department of Planning, Industry and Environment. This measure has been taken to assist new councils to harmonise their minimum ordinary rates.

A new council is only eligible to apply under this temporary, alternative pathway if it seeks to set a harmonised minimum rate for ordinary rates across its new council area that is higher than the current statutory limit of $554 but is no higher than the highest minimum rate of any one of the former councils or part of a former council area that was previously approved by IPART (plus the 2021-22 rate peg).

The Office of Local Government has issued Special Guidelines for new councils applying to harmonise minimum rates on 1 July 2021.

This temporary delegation does not enable the Deputy Secretary of the Local Government, Planning and Policy to approve Special Rate Variation (SRV) applications for 2021-22, and any new council applying to use this pathway to vary their minimum rate does not change the process for them applying to IPART for any Special Rate Variation in 2021-22.

Councils seeking to utilise the provisions outlined in these Special Guidelines are required to submit their applications and supporting documentation directly to OLG by no later than 26 February 2021.

Applications must be in writing and must include a copy of the council's Resolution, ensuring the Resolution has been passed to clearly apply to the Minister for Local Government to set minimum ordinary rates in the council area for 2021-22 for any rating category or subcategory that is above the statutory limit and it is equal to or below the highest minimum ordinary rates previously approved by IPART for a former council or part of a former council area.

Revenue Policy Considerations

Taxation Principles

Council's rating structure determines the share of rates contributed by each category and subcategory of ratepayer. It does not change the total amount of rates income that is levied and as such a reduction provided to any category must be borne by an increase to ratepayers in other categories.

The Henry Report noted that raising revenue should be done is such a way as to do least harm to economic efficiency, provide equity (horizontal, vertical and intergenerational), and minimise complexity for taxpayers and the community.

The following information about the key taxation principles is intended to provide background information and generate discussion and feedback about the relative importance placed on the various taxation principles.

- Efficiency

  Efficiency comprises two main sub-principles: the benefits principle, and the principle that taxes should minimise changes in behaviour.

  - Benefits Principle - The income raised from rates is generally used to fund (or partly fund) infrastructure and services that have the characteristics of public goods. The benefits principle is that each person's share of funding for public goods should be proportional to the benefits they receive from these goods.

    However, the benefits principle is difficult to apply because people generally understate their willingness to pay for the benefits that they receive from public goods. In practice, proxies that are correlated with people's willingness to pay for public goods, such as the value of the property they own, are used to estimate benefits received.

  - Taxes should minimise changes in behaviour - Taxes that minimise changes to production and consumption decisions are more efficient. The more that taxes that are designed to raise general revenue change behaviour, the greater the welfare loss. The Henry Tax Review found that local rates were the most efficient of all current taxes used by any level of government, because changes in behaviour from rate taxes are small.

- Equity

  Equity also has three sub-principles: the benefits principle (discussed above), the ability to pay principle and the intergenerational equity principle.

  - Ability to pay - People should contribute to funding public goods according to their ability to pay. Ability to pay has two components.

    - The horizontal equity principle requires people of equal capacity to pay the same amount of tax.

- The vertical equity principle requires people who are better off to pay more tax than those who are worse off, so the burden of tax is proportional to the taxpayer's means.

  Property-based taxes such as rates are generally regarded as equitable, because property value correlates with wealth and ability to pay.

- Intergenerational equity - Taxes should also be equitable over time. This means the current generation of ratepayers should not pay the total costs of services that also benefit future generations (and vice versa). It is therefore important that rates income grows over time to meet the costs of servicing new dwellings and a larger population.

- Simplicity

  Taxes should be easily understood, difficult to avoid and have low costs of compliance and enforcement. If a tax is easy to understand and is fair, compliance is generally high.

IPART in its final report on the Review of the Local Government Rating System noted that setting residential rates may involve a trade-off between key taxation principles – particularly vertical equity and efficiency and that councils are best placed to decide how to balance these principles where they are in conflict and as such they should be able to choose which to prioritise when setting their residential rates.

Rating income is typically used to fund (or partly fund) infrastructure and services that are characterised as public goods or mixed goods where direct cost recovery is not practical or appropriate and where there are social reasons to distribute the cost of service provision across the community.

Rating and Financial Principles

Rates are calculated on land values. The distribution of rates within subcategories is based on the proportionate distribution of land values for the properties in the same subcategory.

For rates purposes, land valuations are calculated every 3 years by the NSW Valuer General. The total rates pool isn't affected by the revaluation, but individual property rates can be affected to a small or large extent because of disproportionate value changes across large and disparate areas.

The latest land revaluation took effect on Council's rating structure on 1 July 2020 with the application of the 2019 valuations.

The levying by local government of rates, based on property values has been the principal means of financing local government in Australia throughout this century. Local government is the level of government routinely providing public services which retain or enhance the value of private property (such as local roads, garbage disposal, parks, footpaths).

Thus, the "fairness" or "appropriateness" of rates may be considered in the light of these two criteria:

- The extent to which those who receive the benefits of council's services also pay for those services - the benefits principle.
- The extent to which those who pay for council's services have the ability to pay for those services - the ability to pay principle.

It goes without saying that a rate which is fair when judged by the benefit principle may not be fair according to the ability to pay principle, and vice versa.

The benefit principle has been often quoted as the main element in local government finance, as increasing attention is devoted to user charges.

However, the correlation between rates paid and services used is an elusive one. At best, the value of land can be said to "approximate" ability to pay. The value of land (particularly land which is not income producing) is often no indication of the means of the owner. A rate based solely on the value of rateable land ignores the cost and value of common services and facilities from which all properties benefit, regardless of their rateable value.

In many local government areas the making of a wholly ad valorem based rate could be seen by owners of highly valued land as causing unacceptably uneven distribution of the costs of local government because they might have to bear a higher share of the total rate burden than the owners of lower valued land.

The Local Government Act 1993 seeks to give councils more options and greater flexibility in the types and the nature of the rates and charges that may be made and levied. For example, choosing to levy a special rate as an adjunct to an ordinary rate and/or choosing to structure a rate with a base amount may represent a successful method for a council to use to flatten the incidence of rates across ratepayers, and thus reduce the magnitude of variations in rate levies between different properties of varying rateable value.

The opposite alternative of a rate based solely on land value may have been deemed unacceptable because the resulting rating burden it would have created, if used, would have departed too greatly from the "benefit" or, "ability to pay" principles.

Funding Sources

Section 491 of the Local Government Act 1993 (the Act) sets out the main sources of a council's income. They are as follows:

- rates
- charges
- fees
- grants
- borrowings
- investment

Types of rates - Section 492 of the Act provides that rates are of 2 types:

- ordinary rates
- special rates.

The ordinary rate - By virtue of section 494 of the Act, council is required to make and levy an ordinary rate for each year on all rateable land in its area. This is a mandatory requirement. In that regard, it has been held that a council can be compelled by a court order to make an ordinary rate.

The special rate - Council has a discretion whether to make a special rate. Special rates must be made pursuant to section 495 of the Act but may be levied under either section 495 or the provisions of Division 2 of Part 5 of Chapter 15. In the former instance, the special rates may be levied for works or services provided or proposed to be provided by council (e.g. town improvement works benefiting a specific locality, tourism promotion benefiting a particular ratepayer sector) or for other special purposes.

Legislative Framework - Local Government Act 1993

The legislative framework for setting rates and designing rating structures is set out in the Local Government Act 1993. Growth in Council's overall rates income is restricted by the rate pegging limit or special rate variation percentage as approved by IPART.

Council sets the rating structure to determine how to distribute the rates between categories and subcategories of ratepayers and has the option to charge ordinary rates and special rates within its total allowable rates income.

A rate, whether ordinary or special, may consist of:

- an ad valorem amount (which may be subject to a minimum amount), or
- a base amount to which an ad valorem amount is added.

Revenue Policy

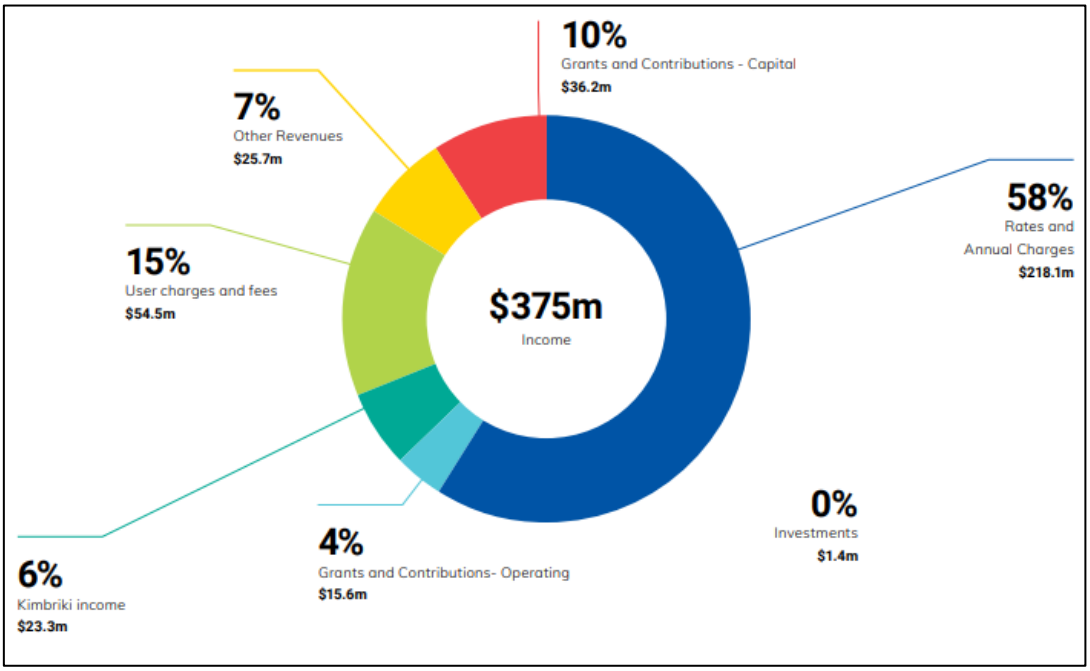
It is a requirement of Section 405 of the NSW Local Government Act 1993 for a Council to have a statement of Council's Revenue Policy each year**.**

At the expiry of the 'rates freeze period' (30 June 2021) all councils are required to have rates and revenue policies that comply with the Local Government Act. This requires the preparation of a harmonised rating structure to cover the Northern Beaches local government area.

The objectives of the Revenue Policy are:

- To meet statutory requirements;
- To establish the total revenue required to fund Councils' activities within budgetary constraints; and
- To identify the revenue sources available to Council.

The existing breakdown of the components of Council's revenue is shown in the following Funding Summary from Council's Operational Plan and Budget 2020/21.



Council's rating structure is a fundamental component of Council's broader revenue policy. Rates must be harmonised on 1 July 2021. To date Council has:

- progressively harmonised User Fees and Charges since amalgamation; and
- progressively harmonised Domestic Waste Management Services Charges with full harmonisation being completed by 1 July 2019

The following tables show the impact of rate changes and the harmonisation of Domestic Waste Management Services Charges since amalgamation.

Residential Rates Notice movement (minimum rate) 2015/16 – 2020/21

	Former Manly				Former Pittwater				Former Warringah			
	Rates	Domestic Waste Charge	Storm-water Charge	Total Rates & Charges Notice	Rates	Domestic Waste Charge	Storm-water Charge	Total Rates & Charges Notice	Rates	Domestic Waste Charge	Storm-water Charge	Total Rates & Charges Notice
2015/16	788.00	640.00	12.50	1,440.50	836.86	580.00	12.50	1,429.36	842.29	364.00	0.00	1,206.29
2016/17	798.40	660.00	12.50	1,470.90	851.92	598.00	12.50	1,462.42	867.55	382.00	0.00	1,249.55
2017/18	802.20	630.00	12.50	1,444.70	864.70	609.00	12.50	1,486.20	949.10	389.00	0.00	1,338.10
2018/19	816.76	536.00	12.50	1,365.26	884.58	518.00	12.50	1,415.08	970.93	389.00	0.00	1,359.93
2019/20	838.81	405.00	12.50	1,256.31	908.30	405.00	12.50	1,325.80	997.02	405.00	0.00	1,402.02
2020/21	849.72	425.50	12.50	1,287.72	920.11	425.50	12.50	1,358.11	1,009.98	425.50	0.00	1,435.48
Total Increase/ Decrease	7.8%	(33.5%)	0.0%	(10.6%)	9.9%	(26.6%)	0.0%	(5.0%)	19.9%	16.9%	0.0%	19.0%
Average Increase/ Decrease	1.6%	(6.7%)	0.0%	(2.1%)	2.0%	(5.3%)	0.0%	(1.0%)	4.0%	3.4%	0.0%	3.8%

Residential Rates Notice movement (average rate) 2015/16 – 2020/21

	Former Manly				Former Pittwater				Former Warringah			
	Rates	Domestic Waste Charge	Storm-water Charge	Total Rates & Charges Notice	Rates	Domestic Waste Charge	Storm-water Charge	Total Rates & Charges Notice	Rates	Domestic Waste Charge	Storm-water Charge	Total Rates & Charges Notice
2015/16	1,288.91	640.00	25.00	1,953.91	1,520.53	580.00	25.00	2,125.53	1,205.00	364.00	0.00	1,569.00
2016/17	1,312.11	660.00	25.00	1,997.11	1,547.90	598.00	25.00	2,170.90	1,241.15	382.00	0.00	1,623.15
2017/18	1,305.55	630.00	25.00	1,960.55	1,571.12	609.00	25.00	2,205.12	1,357.82	389.00	0.00	1,746.82
2018/19	1,335.58	536.00	25.00	1,896.58	1,607.25	518.00	25.00	2,150.25	1,389.05	389.00	0.00	1,778.05
2019/20	1,371.64	405.00	25.00	1,801.64	1,650.65	405.00	25.00	2,080.65	1,426.55	405.00	0.00	1,831.55
2020/21	1,396.68	446.00	25.00	1,867.68	1,677.21	446.00	25.00	2,148.21	1,451.97	446.00	0.00	1,897.97
Total Increase/ Decrease	8.4%	(30.3%)	0.0%	(4.4%)	10.3%	(23.1%)	0.0%	1.1%	20.5%	22.5%	0.0%	21.0%
Average Increase/ Decrease	1.7%	(6.1%)	0.0%	(0.9%)	2.1%	(4.6%)	0.0%	0.2%	4.1%	4.5%	0.0%	4.2%

Rating Income

The total income that can be raised from levying rates on property is capped by the State Government based on a determination by the Independent Pricing and Regulatory Tribunal (IPART). IPART has determined that general income from rates in 2021/22 may be increased by a maximum of 2.0% (For the 2020/21 year the maximum increase was 2.6%).

In accordance with the Local Government (Council Amalgamations) Proclamation 2016 and the Local Government Amendment Bill 2019 the current rate structure including categories and sub-categories of the former Manly, Pittwater and Warringah LGAs have been maintained in 2020/21. For all former LGAs, rate assessments are based entirely upon property valuations (ad valorem) but with minimum rates applying where appropriate. Rates for 2020/21 were assessed on land values having a date of 1 July 2019.

The increase allowed by IPART relates to general income in total and not to an individual ratepayers' rates. Individual rates are also affected by other factors such as land valuations by the NSW Valuer General. As such, rates for individual ratepayers may vary by more or less than the percentage allowable, depending on how an individual ratepayers' land valuation has changed in a particular year compared to the land values of other ratepayers.

The next General Land Revaluation is due in July 2022 and will be used to determine rates for the 2023/2024 year. It is noted that this may add considerable variability to rates for individual ratepayers.

Likewise, harmonisation of rates can also result in considerable and significant impacts on ratepayers, particularly on ad valorem ratepayers depending on the size of the difference between the ad valorem rate of the former local government area compared to the proposed harmonised rate.

Differences in Sources of Rating Income

2020/21 Rating Income Summary for the Northern Beaches Council LGA

	Total Rates Income ($m)			Rates Income (%)		
	Manly	Pittwater	Warringah	Manly	Pittwater	Warringah
Residential						
Ordinary Rates	**24,726,790**	**39,520,070**	**78,979,984**	**17.26%**	**27.59%**	**55.14%**
Business						
Ordinary Rates	5,594,303	4,778,653	18,186,859	19.59%	16.73%	63.68%
Business Special Rates						
Manly Business Centre Improvement	1,275,063	-	-			
Balgowlah Business Centre Improvement	88,127	-	-			
	1,363,190	-	-	100.00%		
Total Business	**6,957,493**	**4,778,653**	**18,186,859**	**21.96%**	**10.78%**	**18.72%**
Farmland	**-**	**15,093**	**-**	**0.00%**	**100.00%**	**0.00%**
Total	**31,684,283**	**44,313,816**	**97,166,843**	**18.30%**	**25.59%**	**56.11%**

The above table highlights that only the former Manly Local Government Area collects special rates for Business Centre Improvement. This is an obvious difference in the funding structure between the 3 former Councils.

Only the former Pittwater LGA collects rates from the farmland category, however the income from the farmland category is not a significant component of total rates income.

The other noticeable difference is the proportion of revenue collected by residential rates versus business rates across the three former Councils. In the former Manly Council, businesses pay 21.96% of the $31.68 million in rates collected, compared to 10.78% of the $44.31 million in rates collected in the former Pittwater Council and 18.72% of the $97.16 million in rates collected in the former Warringah Council.

Current Rating Structures

Introduction

As a result of the requirement to merge its revenue policy, Northern Beaches Council is required to revisit the principles in setting a fair and equitable rating structure across the new local government area. In doing so, Council has the difficult challenge of attempting to minimise the number of assessments that experience large and sudden changes because of harmonising the three current rating structures.

When combined across the new local government area, the share of rates burden compared with land ownership within each former area is only partly aligned. The former Warringah area is contributing a higher income percentage as a proportion of land values with the former Pittwater area next and the former Manly area contributing the lowest income percentage as a proportion of land values.

Overview

The following tables summarise the current rating structures for Northern Beaches Council and the former Manly, Pittwater and Warringah Local Government Area's (LGA's) for the 2020/21 financial year:

2020/21 Rating Structure for the former Manly LGA

Type	Category/subcategory	Number	Ad valorem rate	Minimum $	Rate Income $
Ordinary	Residential	17,704	0.122489	860.62	24,726,790
Ordinary	Business – Manly CBD	628	0.554388	1,123.74	3,862,223
Ordinary	Business - Other	514	0.297311	1,123.74	1,732,080
Special	Manly Business Centre Improvement	628	0.188953		1,275,063
Special	Balgowlah Business Centre Improvement	84	0.118074		88,127
		19,558			**31,684,283**

Land in the former Manly Council is categorised for rating as residential or business. There is one business sub-category for Manly CBD and special rates for Manly business centre improvement and Balgowlah business centre improvement.

Properties covered by the Manly CBD business sub-category and the Manly business centre improvement special rate are shown in the map below.



This special rate is for the provision of ongoing and proposed capital and maintenance works, including the Manly Business Centre, The Corso and ocean beach front.

Properties covered by the Balgowlah business centre improvement special rate are shown in the map below.



This special rate is for the provision of ongoing and proposed capital and maintenance works, including the off-street car parks in Condamine Street.

2020/21 Rating Structure for the former Pittwater LGA

Type	Category/subcategory	Number	Ad valorem rate	Minimum $	Rate Income $
Ordinary	Residential	23,563	0.159125	931.92	39,520,070
Ordinary	Business	1,897	0.341180	1,189.82	4,681,080
Ordinary	Business – Warriewood Square	1	0.375280		97,573

Ordinary	Farmland	7	0.054932	931.92	15,093
		25,468			**44,313,816**

Land in the former Pittwater Council is categorised for rating as residential, farmland or business. There is one business sub-category for Warriewood Square Shopping Centre. Properties covered by the Warriewood Square Shopping Centre Sub-category are shown in the map below.



2020/21 Rating Structure for the former Warringah LGA

Type	Category/subcategory	Number	Ad valorem rate	Minimum $	Rate Income $
Ordinary	Residential	54,395	0.163768	1,022.94	78,979,984
Ordinary	Business	3,982	0.470670	1,313.33	17,131,772
Ordinary	Business – Warringah Mall	1	0.780102		858,112
Ordinary	Ordinary Business – Strata Storage Units	327	0.442242	602.37	196,975
		58,705			**97,166,843**

Land in the former Warringah Council is categorised for rating as residential or business. The business sub-categories are Warringah Mall Regional Shopping Centre and Strata Storage Units. Properties covered by the Warringah Mall Regional Shopping Centre Sub-category are shown in the map below



Comparison of Current Rating Structures and Contributions

Within the three current rating structures, the relative rate contributions from residential, business and farmland ratepayers are different.

The following table provides a snapshot of the three existing rating structures, illustrating the historical determinations of the former councils to share the rates burden between the four rating categories.

Category	Number of Assessments	Land Value %	Rates %
Manly			
Residential	17,704	93.47%	78.04%
Business	1,854	6.53%	21.96%
Sub-total	19,558	100.00%	100.00%
Pittwater			
Residential	23,563	95.18%	89.18%
Business	1,898	4.71%	10.78%
Farmland	7	0.11%	0.03%
Sub-total	25,468	100.00%	100.00%
Warringah			
Residential	54,395	92.30%	81.28%
Business	4,310	7.70%	18.72%
Sub-total	58,705	100.00%	100.00%
Northern Beaches			
Residential	95,662	93.35%	82.71%
Business	8,062	6.62%	17.28%
Farmland	7	0.03%	0.01%
Total	103,731	100.00%	100.00%

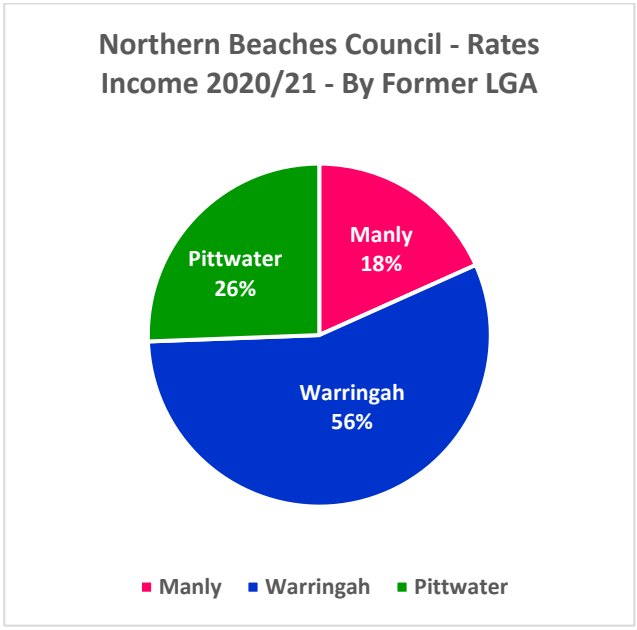
Comparison of Rates Income and Land Valuations by former LGA

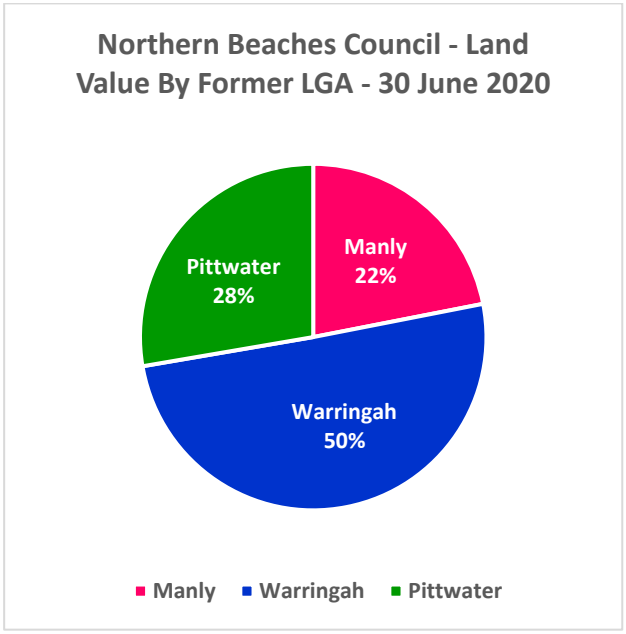
When combined across the new local government area, the share of rates burden compared with land ownership within each former area is only partly aligned. The former Warringah area is contributing a higher income percentage as a proportion of land values with the former Pittwater

area next and the former Manly area contributing the lowest income percentage as a proportion of land values.

Total Rates Income 2020/21 - By Former LGA				
	Manly	Warringah	Pittwater	Total
Rates	31,684,283	97,166,843	44,313,816	173,164,941
%	18%	56%	26%	100%

Land Value at 30 June 2020 - By Former LGA				
	Manly	Warringah	Pittwater	Total
Land Value	19,242,404,705	44,222,544,392	24,306,599,239	87,771,548,335
%	22%	50%	28%	100%





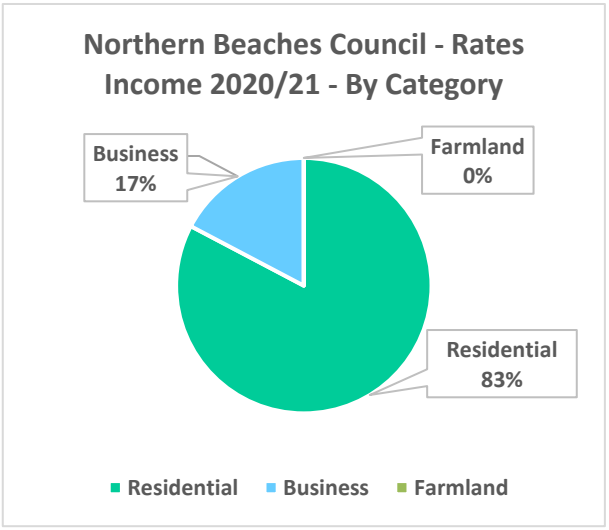
Comparison of Rates Income and Land Valuations by Category by former LGA

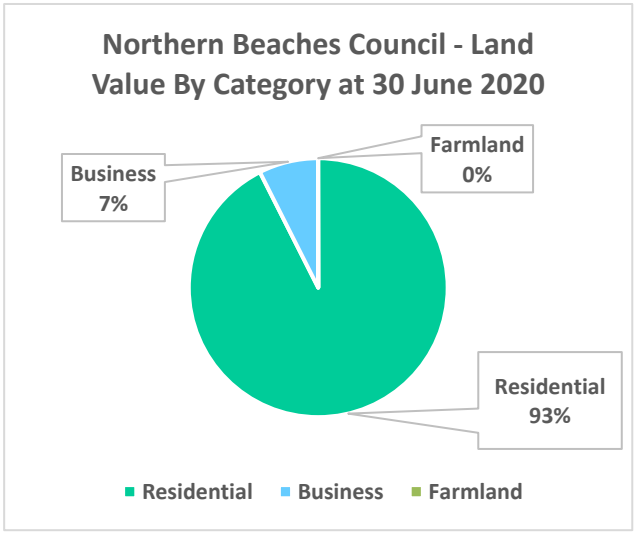
Within each of the current rating structures, the former councils have followed different philosophies for categorisation with the current rating structures incorporating different levels of contribution from the business, residential and farmland rating categories.

When combined, as shown below, the total rates contribution from residential ratepayers is 83%, business ratepayers contribute 17%, while farmland contributed less than 1%.

Northern Beaches Council - Rates Income 2020/21 By Category				
	Residential	Business	Farmland	Total
Rates Revenue	143,226,844	29,923,004	15,093	173,164,941
%	83%	17%	0%	100%

Northern Beaches Council - Land Value at 30 June 2020 By Category				
	Residential	Business	Farmland	Total
Land Value	81,237,315,126	6,507,073,209	27,160,000	87,771,548,335
%	93%	7%	0%	100%





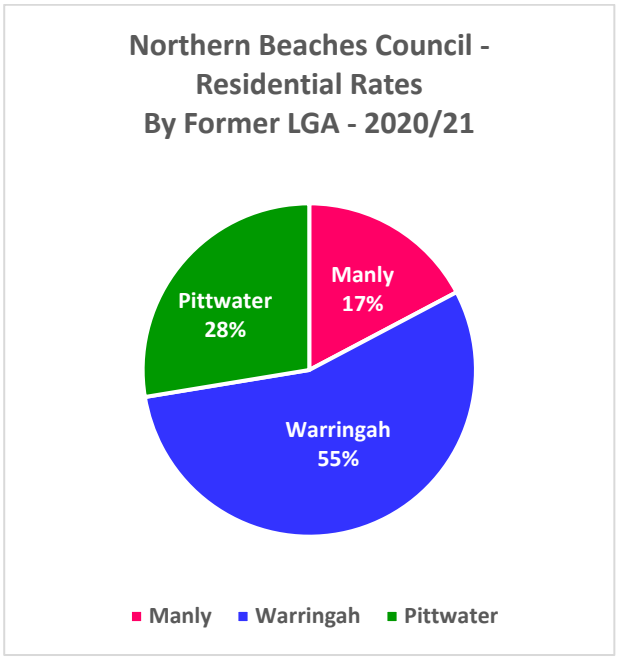
Residential Rates

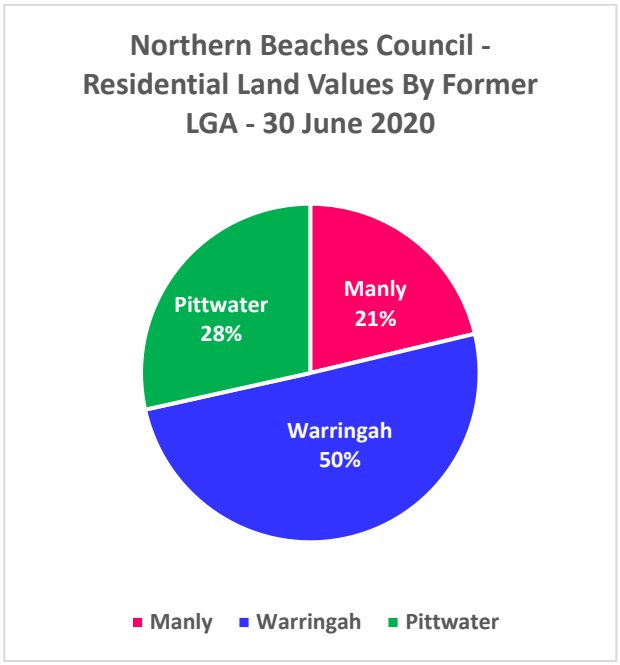
Comparison of Residential Rates Income and Land Valuations by former LGA

Whilst the land value of the former Warringah residential ratepayers represents 50% of Northern Beaches Council's total residential land values, the former Warringah residents contribute 55% of rates income. The land values for former Manly residents represent 21% of total land value, however former Manly residents only contribute 17% of residential rates income.

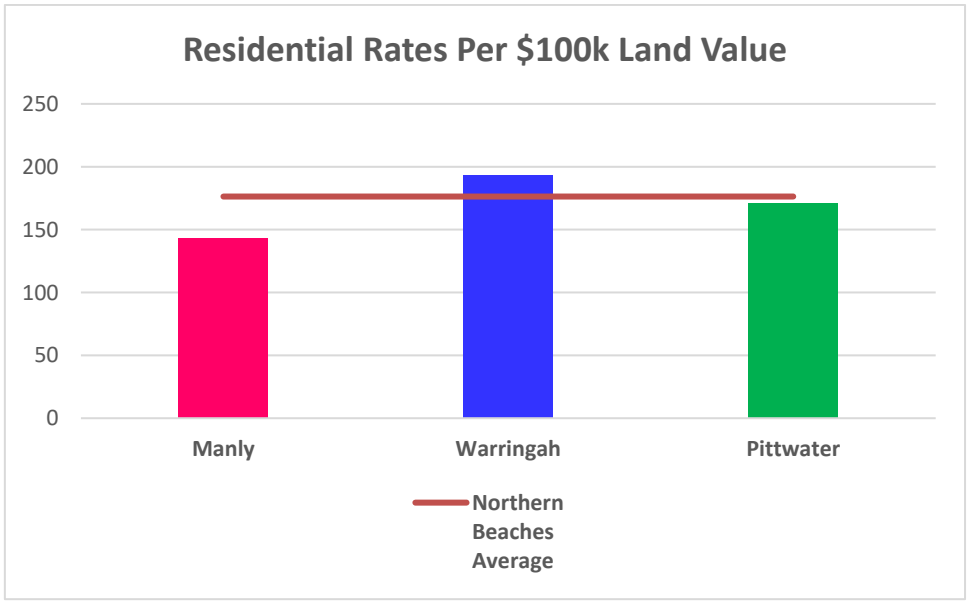
Residential Rates Income 2020/21 - By Former LGA				
	Manly	Warringah	Pittwater	Total
Rates Income	24,726,790	78,979,984	39,520,070	143,226,844
%	17%	55%	28%	100%

Residential Land Values at 30 June 2020 - By Former LGA				
	Manly	Warringah	Pittwater	Total
Land Value	17,285,582,484	40,817,849,935	23,133,882,707	81,237,315,126
%	21%	50%	28%	100%





Average Residential rates per $100,000 land value

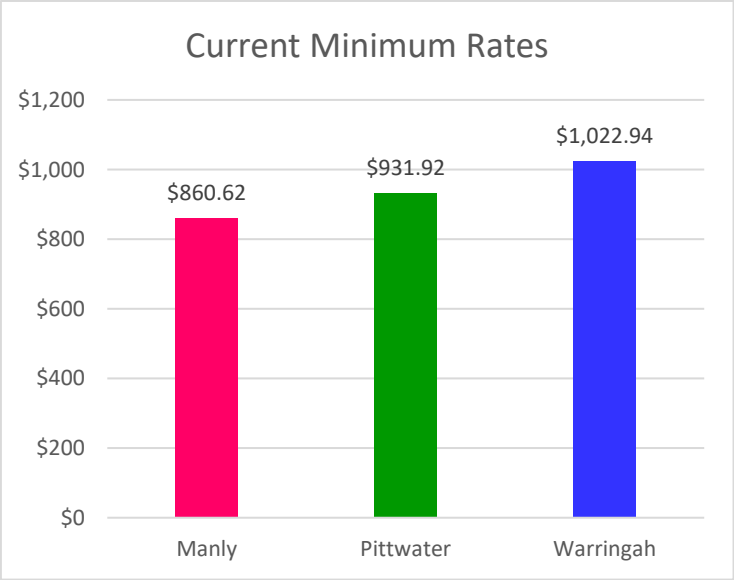


The above chart demonstrates the differences in average rates per $100,000 of land value between the three former LGAs and in relation to the average for Northern Beaches Council with former Warringah residents contributing more than the Northern Beaches Council Average and the residents of the former Manly and Pittwater LGAs contributing less than the average.

Current Minimum Residential Rates (Before COVID-19 Subsidy)

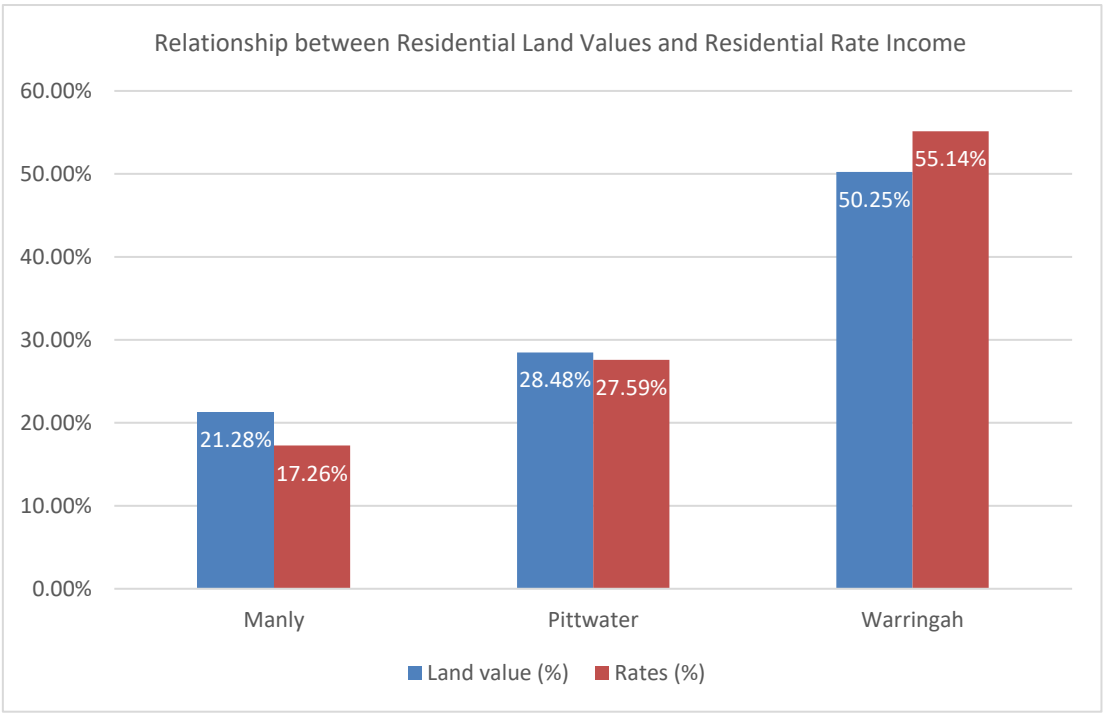
Shown in the table below is a comparison of the minimum residential rates applied across the three former Local Government Area's for the 2020/21 financial year:

2020/21	Manly	Pittwater	Warringah
Minimum Rate	860.62	931.92	1,022.94



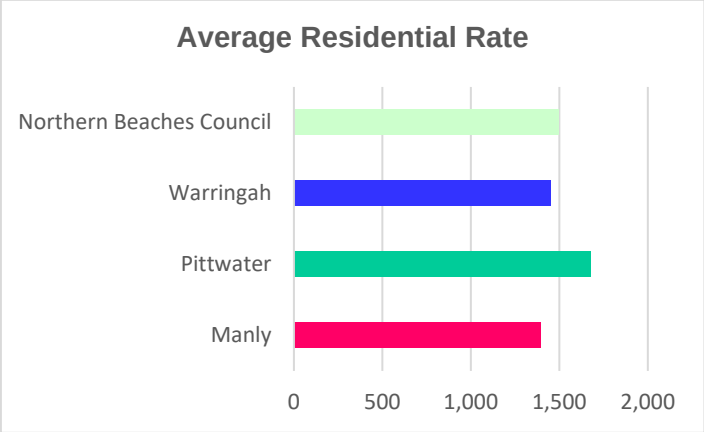
Currently, the minimum rate for residential ratepayers from the former Manly Council is $860.62, compared to $931.92 for residential ratepayers from the former Pittwater Council a difference of $71.30 (8%) and $1,022.94 for residential ratepayers from the former Warringah Council a difference of $162.32 (19%).

Comparison of Average Rates



The table and graph below compares the average residential rates under the current rating structures. The former Manly average residential rate of $1,397 and the former Warringah average residential rate of $1,452 are both lower than the Northern Beaches Council average of $1,497, whereas the former Pittwater average residential rate of $1,677 is higher.

	Manly	Pittwater	Warringah	Northern Beaches Council
Average Residential Rate	1,397	1,677	1,452	1,497



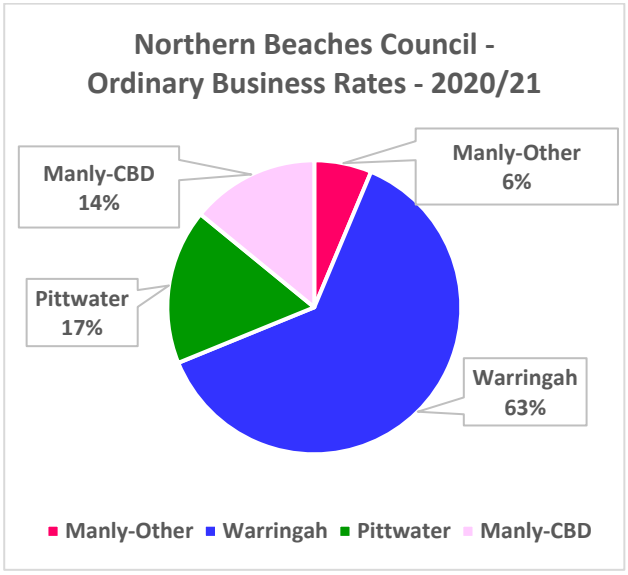
Business Rates

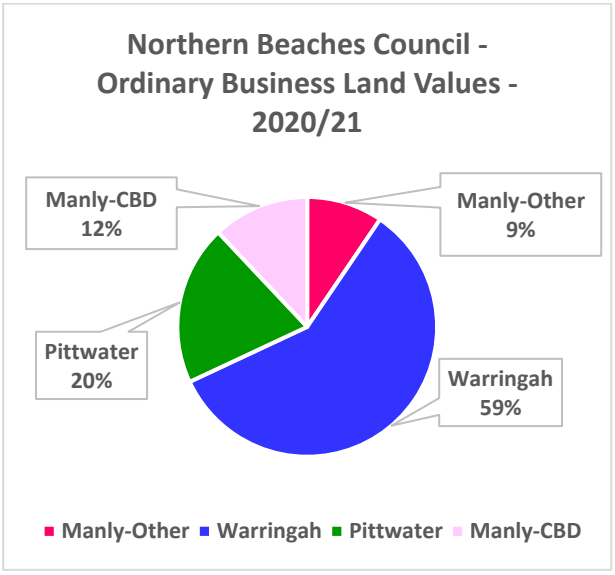
Comparison of Ordinary Business Rates Income and Land Valuations by former LGA

Whilst the land values for ratepayers paying the ordinary business rate in the former Warringah LGA represent 59% of the total land valuations for the ordinary business category, the former Warringah business ratepayers contribute 63% of ordinary business rates income.

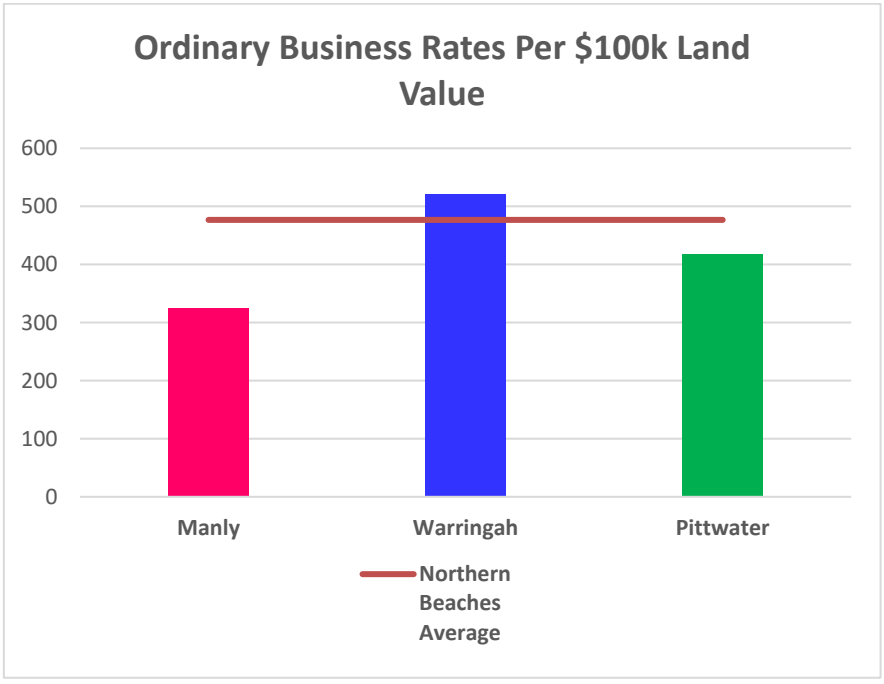
Ordinary Business Rates Income 2020/21 - By Former LGA					
	Manly-Other	Warringah	Pittwater	Manly-CBD	Total
Rates Income	1,732,080	17,131,772	4,681,080	3,862,223	27,407,154
%	6%	63%	17%	14%	100%

Land Values Ordinary Business Rates 2020/21 - By Former LGA					
	Manly-Other	Warringah	Pittwater	Manly-CBD	Total
Land value	532,576,460	3,286,704,678	1,119,556,532	674,804,186	5,613,641,856
%	9%	59%	20%	12%	100%





Average Ordinary Business Rates per $100,000 land value



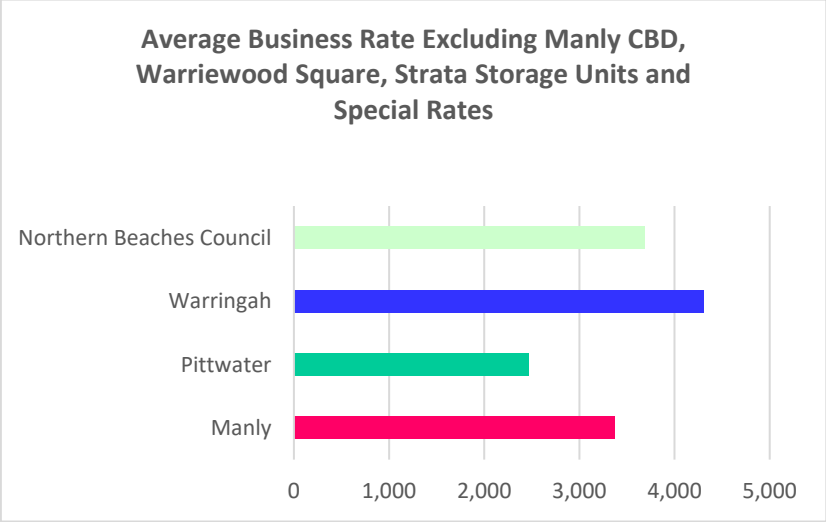
The above chart demonstrates the differences in average rates per $100,000 of land value between the three former LGAs and in relation to the average for Northern Beaches Council with former Warringah business ratepayers contributing more than the Northern Beaches Council Average and the residents of the former Manly and Pittwater LGAs contributing less than the average.

Average Ordinary Business Rates

The table below shows the average ordinary business rate for the former areas compared to the Northern Beaches Council average. The average ordinary business rate for Warringah ratepayers is higher than the Northern Beaches Council average and both Manly and Pittwater are below the Northern Beaches Council average.

	Manly	Pittwater	Warringah	Northern Beaches Council
Average Business Rate*	3,370	2,468	4,302	3,683
*Excluding Subcategories (Manly CBD, Warriewood Square, Warringah Mall, Strata Storage Units and Special Rates				

The following graph compares the average general business rate assessments between the current rating structures. The Northern Beaches average ordinary business rate is $3,683 and there are 3,982 business assessments in the former Warringah area paying a higher average of $4,302 while in the former Manly area there are 514 business assessments paying a lower average of $3,370 and in the former Pittwater area there are 1,897 business assessments paying a lower average of $2,468.



Rating Categories – Other Considerations

Rural Residential

Rural residential land is defined in the Dictionary at the end of the Act to mean land that:

- is the site of a dwelling and
- is not less than 2 hectares and not more than 40 hectares in area; and
- is either:
  - not zoned or otherwise designated for use under an environmental planning instrument; or
  - zoned or otherwise designated for use under such an instrument for non-urban purposes; and
- does not have a significant and substantial commercial purpose or character.

Forty-eight regional councils have a Rural Residential Rating Sub-Category. There is no consistency in the application of the Rural Residential Rate some are higher than the Residential Category and some are lower.

No Council in Sydney or on the fringes of the metropolitan area have a Rural Residential Rating Sub-Category.

- In 2017 Hawkesbury removed their Rural Residential Rating Sub-Category due to "issues with the administration and outcomes derived". 4,406 properties were impacted with most experiencing an increase in Rates.
- Penrith City Council has considered the application of a Rural Residential Rating Sub-Category and rejected it for the following reason:

  "The option of using a different rate for rural residential properties restricts eligibility depending on the size and occupation of the land with less than half of rural properties owners actually being eligible. This means that a majority of rural owners would experience an increase that would fund the discount for the eligible rural owners. Under the current rules, Council believes that this option is not viable or equitable."

In Duffys Forest and Terrey Hills there are 331 ratepayers in the RU4 zone and only 92 would meet eligibility in terms on the size of their properties. Therefore, adjoining properties may have differences in the rating structure in relation to categorisation and the ad valorem rate applied.

Business Rates – Shopping Centres

IPART note in their Final Report on the Review of the Local Government Rating System - December 2016 that a number of metropolitan councils are attempting to replicate the demand and use of council services from individual businesses through targeted differential rating and that they do this by defining small areas or single shopping centres as a separate subcategory or business 'centre of activity'.

Northern Beaches Council currently has the following shopping centres as sub-categories of the business rate which were part of the rating structures of the former Councils:

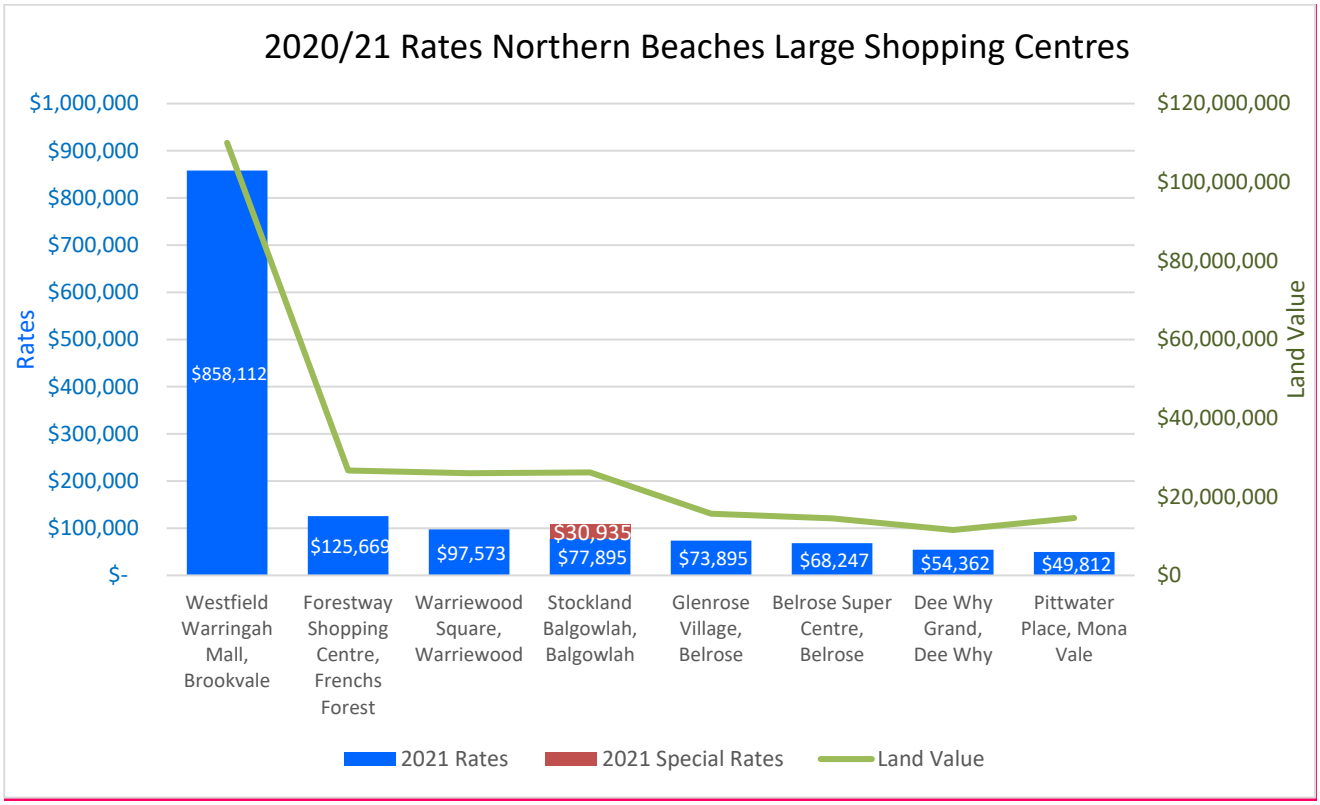
- Warringah Mall - former Warringah sub-category
- Warriewood Square - former Pittwater sub-category
- Manly CBD – former Manly sub-category (+ Special Improvement Rate)

While IPART also notes that multi-floor shopping centres generate a higher demand on council services relative to a single storey set of shops, this is also the case for other high intensity shopping and business districts such as the Manly CBD.

The following is a breakdown of the principal shopping centres within the LGA:

- Warringah Mall: 388 shops including 10 anchor tenants
  Rates $858,112 (66% higher than Warringah ordinary business rate)
- Warriewood Square: 111 shops including 4 anchor tenants
  Rates $97,573 (10% higher than Pittwater ordinary business rate, but 20% lower than the current Warringah ordinary business rate)

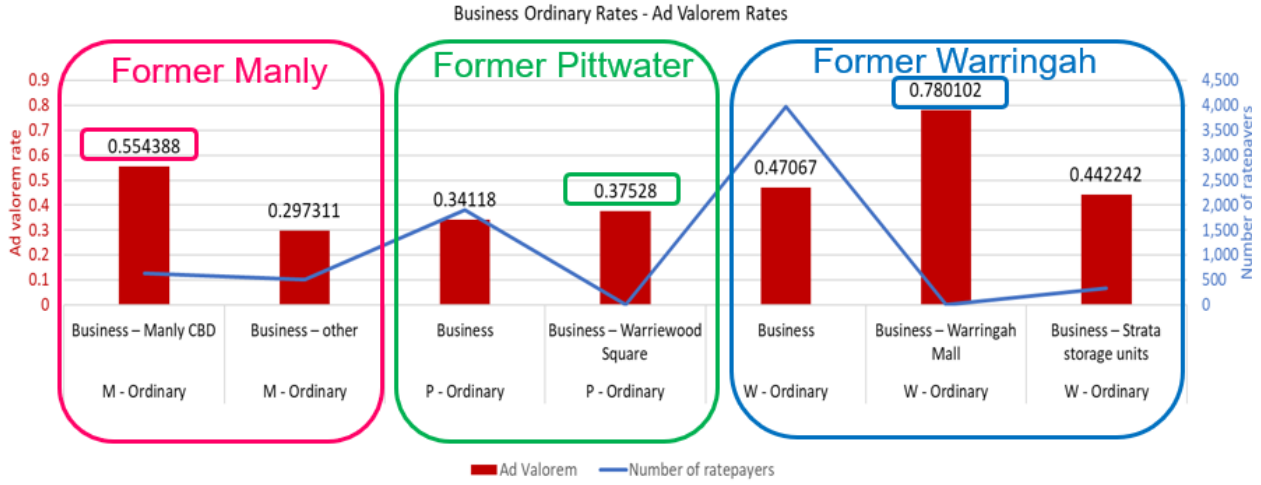
There are around 30 to 50 shops with 1 or 2 anchor tenants in the remaining shopping centres in the LGA. An anchor tenant refers to a considerably larger tenant in a shopping mall, often a department store or retail chain which due to their broad appeal, they are intended to attract a significant cross-section of the shopping public to the centre.



The above table reflects the rates current being paid for a range of shopping centres across the local government area.

The following compares the differences between ordinary business rates for each of the former Councils and the rates applied to the business sub-categories.

2020/21 Rates – Large Shopping Centres



The following tables provide a comparison within other local government areas and highlights the inconsistency in the differential between ordinary business rates and shopping centres sub-categories due to the difficulties assessing the demand and use of council services or factors such as movements in land valuations. Historically movements in shopping centre land valuations had created anomalies for some councils, with their rates decreasing significantly over a period of time compared to other businesses within the ordinary business category whilst the consumption of council services remained constant or increased. This has been a primary driver for the creation of

shopping centre business sub-categories and was a factor in the creation of both the Warringah Mall and Warriewood Square sub-categories.

Shopping Centre – Comparison with Ordinary Rates

			Differential over Ordinary Business Rate	
	Ordinary Business Ad valorem	Shopping Centres Ad valorem	Ad valorem Difference	% Difference
Waverley	0.00493670	0.00815630	0.00321960	65%
Warringah	0.00470670	0.00780102	0.00309432	66%
Willoughby#1	0.00462275	0.01616850	0.01154575	250%
Willoughby#2	0.00462275	0.01504220	0.01041945	225%
Central Coast	0.00417268	0.01266792	0.00849524	204%
Sutherland#1	0.00351701	0.01058856	0.00707155	201%
Sutherland#2	0.00351701	0.00540868	0.00189167	54%
Hornsby	0.00346706	0.01393456	0.01046750	302%
Pittwater	0.00341180	**0.00375280**	0.00034100	10%
Manly	0.00297311	**0.00554388**	0.00257077	86%

Manly Central Business District

The former Manly Council had created a business sub-category for the Manly Business Centre, The Corso and ocean beach front due to it being a high intensity shopping and tourist precinct as a reflection of the demand and use of council services.

There is both a business sub-category for this precinct and a special rate the uses of which include the provision of ongoing and proposed capital and maintenance works.

Manly CBD Ordinary Rates and Special Rates 2020/21	
Number of properties	628 properties
Manly CBD Ordinary Rate	$3,862,223 (86% higher than Manly ordinary business rate)
Manly CBD Improvement Special Rate	$1,275,063

Since we saw no consistencies in the differential applied these business rating sub-categories will need further assessment in the future to ensure the rates levied reflect the demand and use of council services and fairness and appropriateness of the rates in terms of the benefits principle and the ability to pay principle.

Accordingly, we are not proposing to change the basis or amount of rates levied as part of the harmonisation process, with the exception of establishing a rate for the Warriewood Square business sub-category that is the greater of their existing rate under the existing structure (plus the IPART rate peg as determined for the 2021/22 financial year) or 10% more than the ad valorem rate for the ordinary business rating category (plus the IPART rate peg as determined for the 2021/22 financial year).

Pensioner Concessions and Hardship

Rate Reductions for Eligible Pensioners

Mandatory Concession

The Act provides for eligible pensioners to be able to receive a rate reduction of 50% of their total rates, up to a maximum of $250. This amount is subsidised by the NSW Government. By virtue of section 575, an eligible pensioner may apply to council for a concession on a rate or charge.

The maximum concession is $250/per property. The concession is apportioned, dependent upon whether:

- The person is solely liable or jointly liable with one or more jointly eligible occupiers but with no other person for the rate or charge (full concession allowable); or
- The person is jointly liable with one other person who is not a jointly eligible occupier or with 2 or more other persons any of whom is not a jointly eligible occupier (pro rata concession).

The data in the tables below refers to the number of properties (not the number of pensioners/eligible occupiers) where one or more eligible occupiers have applied for and are receiving all or a proportion of the concession. At 30 June 2020, there were approximately 11,000 eligible pensioners in the Northern Beaches LGA.

Under the mandatory concession, there are 9,837 properties where an eligible occupier is receiving all or part of the mandatory concession of $250:

Details	Manly	Pittwater	Warringah	Total
Number of properties	1,082	2,566	6,189	9,837
Amount (Gross)	$255,809	$631,011	$1,515,091	$2,401,911
Approximate Subsidy	($140,695)	($347,056)	($833,300)	($1,321,051)
Estimated Net Cost	$115,114	$238,955	$681,791	$1,080,860

Note: Information as at 30 June 2020

The mandatory concession relates to all eligible pensioners under the Act (Reg 134). Under the Act – Holders of the cards listed below are eligible for the concession:

- Holders of a Pensioner Concession Card (PCC);
- Holders of a gold card embossed with 'TPI' (Totally Permanently Incapacitated);
- Holders of a gold card embossed with 'EDA' (Extreme Disablement Adjustment)
- War widow or widower or wholly dependent partner entitled to the DVA income support supplement.

Voluntary Concessions

Section 582 of the Act enables a council to waive or reduce rates, charges and accrued interest due by any person prescribed by the regulations who is in receipt of a pension, benefit or allowance under the Social Security Act 1991. Thus, councils may, in their absolute discretion, further reduce on a voluntary basis (with no subsidy from the state government) rates and charges otherwise payable by an eligible pensioner.

In addition to the mandatory concession, eligible pensioners are granted additional voluntary concessions under policies of the three former Councils. These concessions are not subsidised by the NSW Government.

The additional concessions available to eligible pensioners is determined based on these policies and where they reside is as follows:

Former Manly LGA:

An additional concession of between $20 and $30 for the environmental rate levy.

Number of properties	1,077
Amount	$27,500

Note: Information as at 30 June 2020

This concession is paid to all eligible pensioners under the Act and is a concession on the Environmental Levy. (This isn't a levy as such but part of the ordinary rate which was split out this way under Council resolution in the 1990's). The concession to those paying the minimum rate is $20 (Number of properties: 481) and $30 for those paying ad valorem rates (Number of properties: 596).

Former Pittwater LGA:

An additional concession up to $150 for pensioners under the accepted retirement age.

Number of properties	146
Amount	$21,031

Note: Information as at 30 June 2020

This concession is paid to all eligible pensioners under the Act who haven't reached the retirement age or those over the retirement age on a blind pension.

Former Warringah LGA:

An additional concession of $54.40 for domestic waste management services charge for eligible pensioners and $150 on rates to eligible pensioners under the accepted retirement age, and certain classes of pensioners who have reached the accepted retirement age.

	Rates	Domestic Waste
Number of properties	587	6,080
Amount	$84,516	$324,007

Note: Information as at 30 June 2020

The $150 voluntary concession is paid to all eligible pensioners under the Act who haven't reached the retirement age or those over the retirement age on either the Blind Pension, Carer Payment or Disability Support Pension from Centrelink or either the Totally and Permanently Incapacitated (TPI) Pension or the Extreme Disablement Adjustment (EDA) Pension from the Department of Veteran Affairs.

The voluntary concession on domestic waste management charge applies to all eligible pensioners under the Act that are charged a domestic waste standard service.

Summary of Voluntary Pensioner Concessions:

Details	Manly	Pittwater	Warringah	Warringah	Total
Voluntary Concession:	Environmental Levy	$150	$150	$54.40	
Number of properties:	1,077	146	587	6,080	N/A
Amount:	$27,500	$21,031	$84,516	$324,007	$457,054

Note: Information as at 30 June 2020

Policy Requirement/Discussion:

Council will need to consider developing a uniform policy for the provision of voluntary concessions to eligible pensioners as part of the harmonisation process. This will require a consistent definition of eligible pensioners for these voluntary concessions.

The following proposed definition may be considered in relation to the $150 Voluntary Concession:

> *All eligible pensioners under the Act who haven't reached the retirement age or those over the retirement age on either the Blind Pension, Carer Payment or Disability Support Pension from Centrelink or either the Totally and Permanently Incapacitated (TPI) Pension or the Extreme Disablement Adjustment (EDA) Pension from the Department of Veteran Affairs.*

If this definition was uniformly applied, approximately 120 additional pensioners would be entitled to the $150 voluntary concession at an approximate cost of $18,000.

As part of the harmonisation process, Council should also consider:

- Extending the $150 Voluntary Concession to all eligible pensioners in accordance with the definition proposed above. It is proposed that the voluntary concession would replace the current concession relating to the environmental levy for eligible pensioners in the former Manly LGA.
- Extending the current voluntary concession relating to the domestic waste management charge. Presently this concession only applies to the former Warringah LGA. Note, this concession currently applies to all eligible pensioners under the Act that are charged a domestic waste standard service.

Summary of Cost of Existing Voluntary Concessions:

Existing Rates Voluntary Concessions by Former LGA				
	Manly	Pittwater	Warringah	Total
Approximate QTY:	1,077	146	587	1,810
$150 Rates:	$0	$21,031	$84,516	$105,547
Environment Levy:	$27,500	$0	$0	$27,500
Total:	**$27,500**	**$21,031**	**$84,516**	**$133,047**

Existing Concession on the Domestic Waste Management Charge				
	Manly	Pittwater	Warringah	Total
Approximate QTY:	Nil	Nil	6,080	6,080
Concession: $50.40	$0	$0	$324,007	$324,007
Total:	**$0**	**$0**	**$324,007**	**$324,007**

Total Existing Voluntary Concessions				
	Manly	Pittwater	Warringah	Total
Total:	**$27,500**	**$21,031**	**$408,523**	**$457,054**

Summary of Impacts of Proposed Extensions:

Extension of $150 Voluntary Concession to all eligible pensioners in accordance with the definition proposed above and extending the domestic waste concession to Manly & Pittwater. These concessions would replace the existing Manly Environmental Levy concession.

Extension of the Rates Voluntary Concessions				
	Manly	Pittwater	Warringah	Total
Approximate QTY:	120	146	587	853
$150 Rates:	$18,000	$21,031	$84,516	$123,547
Environment Levy:	$0	$0	$0	$0
Total:	**$18,000**	**$21,031**	**$84,516**	**$123,547**

Extension of the Concession on the Domestic Waste Management Charge				
	Manly	Pittwater	Warringah	Total
Approximate QTY:	1,082	2,566	6,080	9,728
Concession: $50.40	$58,861	$139,590	$324,007	$522,458
Total:	**$58,861**	**$139,590**	**$324,007**	**$522,458**

Estimated Total Cost of Extending the Above Voluntary Concessions				
	Manly	Pittwater	Warringah	Total
Total:	**$76,861**	**$160,621**	**$408,523**	**$646,005**

Estimated Additional Cost of Extending the Existing Voluntary Concessions				
	Manly	Pittwater	Warringah	Total
Total:	**$49,361**	**$139,590**	**$0**	**$188,951**

Hardship

Council's rates and Annual Charges Hardship Policy has been reviewed and amended as required in order to ensure ongoing compliance with legislative requirements and with the Office of Local Government's Debt Management and Hardship Guidelines issued in November 2018.

Council's revised policy provides modern, fair and effective debt recovery and hardship processes and practices in line with the requirements of the Local Government Act 1993 and the guidelines issued under S23A of the Act by the NSW Office of Local Government, in conjunction with the NSW Department of Justice.

The revised policy sets out information that Council must take into account when developing and implementing debt management and hardship actions and ensures best practice in relation to debt management and hardship processes. This policy will work alongside Council's other financial management practices to enable Council to maintain financial sustainability and achieve financial performance benchmarks.

In reviewing the policy, consideration was given to ensure that the policy provided sufficient options for Council to provide appropriate hardship assistance to ratepayers suffering genuine financial hardship due to a variety of different circumstances. This included ensuring that the policy provided appropriate capacity for Council to provide appropriate assistance to those suffering genuine financial hardship due to such circumstances as environmental disasters, pandemics and hardship due to significant impacts due to legislative changes (such as those that may be caused by the rates harmonisation process).

The revised policy fulfils the statutory requirements of the Act with respect to both the recovery of outstanding Rates, Annual Charges and Interest and the provision of assistance to those ratepayers who are experiencing genuine financial hardship with the payment of their Rates and Annual Charges. A key objective of the policy is to work with ratepayers to achieve flexible alternatives to legal action where possible.

Proposed Harmonised Rating Structure

Consideration of Minimum and Base rates

For all former LGAs, rate assessments are based entirely upon property valuations (ad valorem) but with minimum rates applying where appropriate.

Most NSW metropolitan councils use minimum rate structures in high density areas, resulting in a high proportion of ratepayers paying the same minimum amount. Under the Act, rates are determined based on the unimproved capital value of land and in metropolitan areas that include significant number of high density unit and strata developments an ad valorem rate with a minimum amount is considered to provide an equitable and efficient basis for rates and an appropriate means for funding and maintaining Council's minimum service levels and financial sustainability objectives.

In initial modelling carried out in planning for the harmonisation process we also considered the implementation of a base rate and ad valorem rate structure. This structure resulted in significantly greater impacts on ratepayers and as such did not provide alignment with the taxation principles as outlined in the Henry Report as noted earlier in this document.

As part of our modelling we considered the impacts and benefits of both lower and higher minimum rates. A minimum rate applies on properties whose land valuation is equal to or lower that the land value cut-off threshold.

The land value threshold to determine whether a minimum or ad valorem rate applies is determined by a ratio of the minimum rate and the ad valorem rate being: Minimum rate divided by the ad valorem rate = land value threshold. Properties with valuations equal to or lower than the land value threshold will pay the minimum rate and properties whose land value is greater than the threshold will pay the ad valorem rate.

Whilst a lower minimum amount provided a benefit to those ratepayers paying the minimum amount it also results in a considerably higher ad valorem rate in order to maintain rates income yields required to fund and maintain Council services and financial sustainability.

In addition, a lower minimum amount combined with a higher ad valorem amount results in a lower land valuation threshold for determining eligibility/applicability of the lower minimum rate. In some cases, a lower minimum (such as the maximum minimum amount specified in the Regulation 126 of Local Government (General) Regulation 2005) resulted in a 33% reduction in the number of residential ratepayers that would pay the minimum rate and a 48% reduction in ordinary business ratepayers that would pay the minimum. In addition, this also resulted in considerable increases for those paying the ad valorem rate with increases up to 39% for some residential ad valorem ratepayers and increases up to 58% for some ordinary business ad valorem ratepayers.

Our modelling indicated that setting a higher minimum rate provided the better outcome for ratepayers in relation to the taxation principles of the Henry Report and also provided Council with a solid financial platform in relation to the delivery and maintenance of Council services and long-term financial sustainability.

The three rating structures for the former Manly, Pittwater and Warringah Local Government Areas have minimum amounts as their fixed charge component, and the former councils were applying minimum amounts across all categories and subcategories.

The analysis undertaken has been based on continuing with the minimum rate structure for the Northern Beaches Local Government Area.

Our modelling considered numerous scenarios relating to the proposed minimum rate including setting the proposed minimum rate at one of the current minimum rates currently applying to the former LGAs.

In addition, we also considered using a weighted average of the current minimum rates. The benefit of using a weighted average is that it allows the final average number to reflect the relative importance (weighting/frequency) of each number that is being averaged. In relation to determining an appropriate minimum rate to apply in a harmonised model, a weighted average of current minimum rates for the three former LGAs will take into account the number of ratepayers (weightings/frequency) within each former LGA that are currently paying the minimum rate.

We believe that this approach will produce a more balanced and equal interpretation for determining a harmonised minimum rate than would be achieved by calculating a simple arithmetic average (by adding the three current minimum rates together and dividing by three). In a simple arithmetic average all minimums are assigned an identical weight (ie there is no consideration about the number of ratepayers currently paying each minimum rate).

As such, we also believe that a weighted average more accurately achieves a fair and equitable outcome to the process of determining a harmonised minimum rate and is therefore in line with the principles of the Henry Report.

Harmonised Rating Scenarios

Four scenarios have been developed following detailed modelling to determine a proposed harmonised rating structure for consultation with the community. Following below is a summary and analysis of these four rates harmonisation scenarios.

The analysis provided is based on current rates and rates income yields and they do not include any provision for IPART's annual rate peg adjustment which will apply for the 2021/22 year. The exclusion of the 2021/22 rate peg adjustment from this analysis allows us to more clearly demonstrate the impacts relating to the harmonisation process.

The analysis is based on current legislation which presently requires the harmonisation process to be completed by the 2021/22 year. The Local Government Act 1993 currently does not allow an amalgamated council to progressively harmonise their rates over more than one year.

Provided in attachment 7 to this report is a copy of the detailed rating structure for each scenario:

Scenario 1 Existing Manly Minimums used for harmonisation

This scenario includes the following:

- Harmonisation redistributes rates and does not result in an increase in Council's rates yield (plus the IPART rate peg as determined for the 2021/22 financial year).
- The Ordinary Rates with the exception of the business sub-categories are harmonised across the former Manly, Pittwater and Warringah Local Government Areas.

- Setting the minimum rate for the residential rating category at an amount equivalent to the current former Manly Council minimum rate of $860.62 (plus the IPART rate peg as determined for the 2021/22 financial year).
- Setting the minimum rate for the business rating category at an amount equivalent to the current former Manly Council minimum rate of $1,123.74 (plus the IPART rate peg as determined for the 2021/22 financial year).
- The existing business sub-category Warringah Mall continues to be levied on the existing structure (plus the IPART rate peg as determined for the 2021/22 financial year).
- The existing business sub-category Warriewood Square be levied on the greater of their existing rate under the existing structure (plus the IPART rate peg as determined for the 2021/22 financial year) or 10% more than the ad valorem rate for the business rating category (plus the IPART rate peg as determined for the 2021/22 financial year).
- The existing business sub-category Manly CBD continues to be levied on the existing structure with a minimum equivalent to the business rating category above being $1,123.74 (plus the IPART rate peg as determined for the 2021/22 financial year).
- The existing business sub-category Strata Storage Units continues to be levied on the existing structure with the existing minimum (plus the IPART rate peg as determined for the 2021/22 financial year).
- The existing Manly Business Centre Improvement and Balgowlah Business Centre Improvement Special rates continued to be levied on the existing structure (plus the IPART rate peg as determined for the 2021/22 financial year).
- Setting the minimum rate for the farmland rating category at an amount equivalent to the proposed residential minimum rate above of $860.62 (plus the IPART rate peg as determined for the 2021/22 financial year).

RESIDENTIAL - USING CURRENT FORMER MANLY MINIMUM

	Land Value For Minimum Rates			Numbers Paying Minimum		
	Current	Proposed	Change	Current	Proposed	Change
Manly	$702,610	$541,284	($161,326)	8,570	7,296	(1,274)
Pittwater	$585,653	$541,284	($44,368)	5,362	5,161	(201)
Warringah	$624,628	$541,284	($83,343)	20,242	19,570	(672)
				34,174	**32,027**	**(2,147)**

	Minimum Rates				Ad Valorem Rates		
	Current	Proposed	Annual Change	% Change	Current	Proposed	% Change
Manly	$860.62	$860.62	$0	0%	0.122489	0.158996	30%
Pittwater	$931.92	$860.62	($71)	(8%)	0.159125	0.158996	(0%)
Warringah	$1,022.94	$860.62	($162)	(16%)	0.163768	0.158996	(3%)

	Rates Income			
	Current	Proposed	Annual Change	% Change
Manly	$24,726,790	$30,048,923	$5,322,133	22%
Pittwater	$39,520,070	$39,132,848	($387,222)	(1%)
Warringah	$78,979,984	$74,045,073	($4,934,911)	(6%)
	$143,226,844	**$143,226,843**	**$0**	

	Average Rates				Av. Rates Per $100k Land Value		
	Current	Proposed	Annual Change	% Change	Current	Proposed	% Change
Manly	$1,397	$1,697	$301	22%	$143	$174	22%
Pittwater	$1,677	$1,661	($16)	(1%)	$171	$169	(1%)
Warringah	$1,452	$1,361	($91)	(6%)	$193	$181	(6%)

Note: Information in the above tables is based on current rates information and does not include the IPART rate peg adjustment that will be applied for the 2021/22 year. Actual figures for the 2021/22 year will also be impacted by changes in other factors such as changes to land valuations by the NSW Valuer General during the 2020/21 year.

ORDINARY BUSINESS RATES - USING CURRENT FORMER MANLY MINIMUM

	Land Value For Minimum Rates			Numbers Paying Minimum		
	Current	Proposed	Change	Current	Proposed	Change
Manly	$377,968	$258,684	($119,284)	242	180	(62)
Pittwater	$348,737	$258,684	($90,052)	1,194	1,058	(136)
Warringah	$279,034	$258,684	($20,350)	2,211	2,139	(72)
				3,647	**3,377**	**(270)**

	Minimum Rates				Ad Valorem Rates		
	Current	Proposed	Annual Change	% Change	Current	Proposed	% Change
Manly	$1,123.74	$1,123.74	$0	0%	0.297311	0.434406	46%
Pittwater	$1,189.82	$1,123.74	($66)	(6%)	0.341180	0.434406	27%
Warringah	$1,313.33	$1,123.74	($190)	(14%)	0.470670	0.434406	(8%)

	Rates Income			
	Current	Proposed	Annual Change	% Change
Manly	$1,732,080	$2,405,371	$673,292	39%
Pittwater	$4,681,080	$5,519,450	$838,370	18%
Warringah	$17,131,772	$15,620,110	($1,511,661)	(9%)
	$23,544,931	**$23,544,931**	**$0**	

	Average Rates				Av. Rates Per $100k Land Value		
	Current	Proposed	Annual Change	% Change	Current	Proposed	% Change
Manly	$3,370	$4,680	$1,310	39%	$325	$452	39%
Pittwater	$2,468	$2,910	$442	18%	$418	$493	18%
Warringah	$4,302	$3,923	($380)	(9%)	$521	$475	(9%)

Note: Information in the above tables is based on current rates information and does not include the IPART rate peg adjustment that will be applied for the 2021/22 year. Actual figures for the 2021/22 year will also be impacted by changes in other factors such as changes to land valuations by the NSW Valuer General during the 2020/21 year.

Scenario 2 Existing Pittwater Minimums used for harmonisation

This scenario includes the following:

- Harmonisation redistributes rates and does not result in an increase in Council's rates yield (plus the IPART rate peg as determined for the 2021/22 financial year).
- The Ordinary Rates with the exception of the business sub-categories are harmonised across the former Manly, Pittwater and Warringah Local Government Areas.
- Setting the minimum rate for the residential rating category at an amount equivalent to the current former Pittwater Council minimum rate of $931.92 (plus the IPART rate peg as determined for the 2021/22 financial year).
- Setting the minimum rate for the business rating category at an amount equivalent to the current former Pittwater Council minimum rate of $1,189.82 (plus the IPART rate peg as determined for the 2021/22 financial year).
- The existing business sub-category Warringah Mall continues to be levied on the existing structure (plus the IPART rate peg as determined for the 2021/22 financial year).
- The existing business sub-category Warriewood Square be levied on the greater of their existing rate under the existing structure (plus the IPART rate peg as determined for the 2021/22 financial year) or 10% more than the ad valorem rate for the business rating category (plus the IPART rate peg as determined for the 2021/22 financial year).
- The existing business sub-category Manly CBD continues to be levied on the existing structure with a minimum equivalent to the business rating category above being $1,189.82 (plus the IPART rate peg as determined for the 2021/22 financial year).
- The existing business sub-category Strata Storage Units continues to be levied on the existing structure with the existing minimum (plus the IPART rate peg as determined for the 2021/22 financial year).
- The existing Manly Business Centre Improvement and Balgowlah Business Centre Improvement Special rates continued to be levied on the existing structure (plus the IPART rate peg as determined for the 2021/22 financial year).
- Setting the minimum rate for the farmland rating category at an amount equivalent to the proposed residential minimum rate above of $931.92 (plus the IPART rate peg as determined for the 2021/22 financial year).

RESIDENTIAL - USING CURRENT FORMER PITTWATER MINIMUM

	Land Value For Minimum Rates			Numbers Paying Minimum		
	Current	Proposed	Change	Current	Proposed	Change
Manly	$702,610	$598,229	($104,381)	8,570	7,866	(704)
Pittwater	$585,653	$598,229	$12,576	5,362	5,479	117
Warringah	$624,628	$598,229	($26,398)	20,242	20,011	(231)
				34,174	**33,356**	**(818)**

	Minimum Rates				Ad Valorem Rates		
	Current	Proposed	Annual Change	% Change	Current	Proposed	% Change
Manly	$860.62	$931.92	$71	8%	0.122489	0.155780	27%
Pittwater	$931.92	$931.92	$0	0%	0.159125	0.155780	(2%)
Warringah	$1,022.94	$931.92	($91)	(9%)	0.163768	0.155780	(5%)

	Rates Income			
	Current	Proposed	Annual Change	% Change
Manly	$24,726,790	$30,112,393	$5,385,603	22%
Pittwater	$39,520,070	$38,811,957	($708,113)	(2%)
Warringah	$78,979,984	$74,302,494	($4,677,490)	(6%)
	$143,226,844	**$143,226,844**	**$0**	

	Average Rates				Av. Rates Per $100k Land Value		
	Current	Proposed	Annual Change	% Change	Current	Proposed	% Change
Manly	$1,397	$1,701	$304	22%	$143	$174	22%
Pittwater	$1,677	$1,647	($30)	(2%)	$171	$168	(2%)
Warringah	$1,452	$1,366	($86)	(6%)	$193	$182	(6%)

Note: Information in the above tables is based on current rates information and does not include the IPART rate peg adjustment that will be applied for the 2021/22 year. Actual figures for the 2021/22 year will also be impacted by changes in other factors such as changes to land valuations by the NSW Valuer General during the 2020/21 year.

ORDINARY BUSINESS RATES - USING CURRENT FORMER PITTWATER MINIMUM

	Land Value For Minimum Rates			Numbers Paying Minimum		
	Current	Proposed	Change	Current	Proposed	Change
Manly	$377,968	$277,161	($100,807)	242	187	(55)
Pittwater	$348,737	$277,161	($71,576)	1,194	1,095	(99)
Warringah	$279,034	$277,161	($1,873)	2,211	2,209	(2)
				3,647	**3,491**	**(156)**

	Minimum Rates				Ad Valorem Rates		
	Current	Proposed	Annual Change	% Change	Current	Proposed	% Change
Manly	$1,123.74	$1,189.82	$66	6%	0.297311	0.429289	44%
Pittwater	$1,189.82	$1,189.82	$0	0%	0.341180	0.429289	26%
Warringah	$1,313.33	$1,189.82	($124)	(9%)	0.470670	0.429289	(9%)

	Rates Income			
	Current	Proposed	Annual Change	% Change
Manly	$1,732,080	$2,396,231	$664,151	38%
Pittwater	$4,681,080	$5,539,906	$858,826	18%
Warringah	$17,131,772	$15,608,795	($1,522,977)	(9%)
	$23,544,931	**$23,544,931**	**$0**	

	Average Rates				Av. Rates Per $100k Land Value		
	Current	Proposed	Annual Change	% Change	Current	Proposed	% Change
Manly	$3,370	$4,662	$1,292	38%	$325	$450	38%
Pittwater	$2,468	$2,920	$453	18%	$418	$495	18%
Warringah	$4,302	$3,920	($382)	(9%)	$521	$475	(9%)

Note: Information in the above tables is based on current rates information and does not include the IPART rate peg adjustment that will be applied for the 2021/22 year. Actual figures for the 2021/22 year will also be impacted by changes in other factors such as changes to land valuations by the NSW Valuer General during the 2020/21 year.

Scenario 3 Existing Warringah Minimums used for harmonisation

This scenario includes the following:

- Harmonisation redistributes rates and does not result in an increase in Council's rates yield (plus the IPART rate peg as determined for the 2021/22 financial year).
- The Ordinary Rates with the exception of the business sub-categories are harmonised across the former Manly, Pittwater and Warringah Local Government Areas.
- Setting the minimum rate for the residential rating category at an amount equivalent to the current former Warringah Council minimum rate of $1,022.94 (plus the IPART rate peg as determined for the 2021/22 financial year).
- Setting the minimum rate for the business rating category at an amount equivalent to the current former Warringah Council minimum rate of $1,313.33 (plus the IPART rate peg as determined for the 2021/22 financial year).
- The existing business sub-category Warringah Mall continues to be levied on the existing structure (plus the IPART rate peg as determined for the 2021/22 financial year).

- The existing business sub-category Warriewood Square be levied on the greater of their existing rate under the existing structure (plus the IPART rate peg as determined for the 2021/22 financial year) or 10% more than the ad valorem rate for the business rating category (plus the IPART rate peg as determined for the 2021/22 financial year).
- The existing business sub-category Manly CBD continues to be levied on the existing structure with a minimum equivalent to the business rating category above being $1,313.33 (plus the IPART rate peg as determined for the 2021/22 financial year).
- The existing business sub-category Strata Storage Units continues to be levied on the existing structure with the existing minimum (plus the IPART rate peg as determined for the 2021/22 financial year).
- The existing Manly Business Centre Improvement and Balgowlah Business Centre Improvement Special rates continued to be levied on the existing structure (plus the IPART rate peg as determined for the 2021/22 financial year).
- Setting the minimum rate for the farmland rating category at an amount equivalent to the proposed residential minimum rate above of $1,022.94 (plus the IPART rate peg as determined for the 2021/22 financial year).

RESIDENTIAL - USING CURRENT FORMER WARRINGAH MINIMUM

	Land Value For Minimum Rates			Numbers Paying Minimum		
	Current	Proposed	Change	Current	Proposed	Change
Manly	$702,610	$675,637	($26,973)	8,570	8,442	(128)
Pittwater	$585,653	$675,637	$89,984	5,362	6,316	954
Warringah	$624,628	$675,637	$51,009	20,242	20,945	703
				34,174	**35,703**	**1,529**

	Minimum Rates				Ad Valorem Rates		
	Current	Proposed	Annual Change	% Change	Current	Proposed	% Change
Manly	$860.62	$1,022.94	$162	19%	0.122489	0.151404	24%
Pittwater	$931.92	$1,022.94	$91	10%	0.159125	0.151404	(5%)
Warringah	$1,022.94	$1,022.94	$0	0%	0.163768	0.151404	(8%)

	Rates Income			
	Current	Proposed	Annual Change	% Change
Manly	$24,726,790	$30,216,931	$5,490,141	22%
Pittwater	$39,520,070	$38,401,540	($1,118,530)	(3%)
Warringah	$78,979,984	$74,608,373	($4,371,611)	(6%)
	$143,226,844	**$143,226,844**	**$0**	

	Average Rates				Av. Rates Per $100k Land Value		
	Current	Proposed	Annual Change	% Change	Current	Proposed	% Change
Manly	$1,397	$1,707	$310	22%	$143	$175	22%
Pittwater	$1,677	$1,630	($47)	(3%)	$171	$166	(3%)
Warringah	$1,452	$1,372	($80)	(6%)	$193	$183	(6%)

Note: Information in the above tables is based on current rates information and does not include the IPART rate peg adjustment that will be applied for the 2021/22 year. Actual figures for the 2021/22 year will also be impacted by changes in other factors such as changes to land valuations by the NSW Valuer General during the 2020/21 year.

ORDINARY BUSINESS - USING CURRENT FORMER WARRINGAH MINIMUM

	Land Value For Minimum Rates			Numbers Paying Minimum		
	Current	Proposed	Change	Current	Proposed	Change
Manly	$377,968	$313,209	($64,759)	242	227	(15)
Pittwater	$348,737	$313,209	($35,528)	1,194	1,146	(48)
Warringah	$279,034	$313,209	$34,175	2,211	2,312	101
				3,647	**3,685**	**38**

	Minimum Rates				Ad Valorem Rates		
	Current	Proposed	Annual Change	% Change	Current	Proposed	% Change
Manly	$1,123.74	$1,313.33	$190	17%	0.297311	0.419314	41%
Pittwater	$1,189.82	$1,313.33	$124	10%	0.341180	0.419314	23%
Warringah	$1,313.33	$1,313.33	$0	0%	0.470670	0.419314	(11%)

	Rates Income			
	Current	Proposed	Annual Change	% Change
Manly	$1,732,080	$2,377,134	$645,055	37%
Pittwater	$4,681,080	$5,579,724	$898,644	19%
Warringah	$17,131,772	$15,588,073	($1,543,699)	(9%)
	$23,544,931	**$23,544,931**	**$0**	

	Average Rates				Av. Rates Per $100k Land Value		
	Current	Proposed	Annual Change	% Change	Current	Proposed	% Change
Manly	$3,370	$4,625	$1,255	37%	$325	$446	37%
Pittwater	$2,468	$2,941	$474	19%	$418	$498	19%
Warringah	$4,302	$3,915	($388)	(9%)	$521	$474	(9%)

Note: Information in the above tables is based on current rates information and does not include the IPART rate peg adjustment that will be applied for the 2021/22 year. Actual figures for the 2021/22 year will also be impacted by changes in other factors such as changes to land valuations by the NSW Valuer General during the 2020/21 year.

Scenario 4 Weighted Average Minimums used for harmonisation

This scenario (recommended) includes the following:

- Harmonisation redistributes rates and does not result in an increase in Council's rates yield (plus the IPART rate peg as determined for the 2021/22 financial year).
- The Ordinary Rates with the exception of the business sub-categories are harmonised across the former Manly, Pittwater and Warringah Local Government Areas.
- Setting the minimum rate for the residential rating category at an amount equivalent to the weighted average of the former Councils' minimum rate being $967.95 (plus the IPART rate peg as determined for the 2021/22 financial year).
- Setting the minimum rate for the business rating category at an amount equivalent to the weighted average of the former Councils' minimum being $1,260.31 (plus the IPART rate peg as determined for the 2021/22 financial year).
- The existing business sub-category Warringah Mall continues to be levied on the existing structure (plus the IPART rate peg as determined for the 2021/22 financial year).
- The existing business sub-category Warriewood Square be levied on the greater of their existing rate under the existing structure (plus the IPART rate peg as determined for the 2021/22 financial year) or 10% more than the ad valorem rate for the business rating category (plus the IPART rate peg as determined for the 2021/22 financial year).
- The existing business sub-category Manly CBD continues to be levied on the existing structure with a minimum equivalent to the business rating category above being $1,260.31 (plus the IPART rate peg as determined for the 2021/22 financial year).
- The existing business sub-category Strata Storage Units continues to be levied on the existing structure with the existing minimum (plus the IPART rate peg as determined for the 2021/22 financial year).
- The existing Manly Business Centre Improvement and Balgowlah Business Centre Improvement Special rates continue to be levied on the existing structure (plus the IPART rate peg as determined for the 2021/22 financial year).
- Setting the minimum rate for the farmland rating category at an amount equivalent to the proposed residential minimum rate above of $967.95 (plus the IPART rate peg as determined for the 2021/22 financial year).

RESIDENTIAL - USING CURRENT WEIGHTED AVERAGE MINIMUM

	Land Value For Minimum Rates			Numbers Paying Minimum		
	Current	Proposed	Change	Current	Proposed	Change
Manly	$702,610	$628,167	($74,443)	8,570	8,081	(489)
Pittwater	$585,653	$628,167	$42,514	5,362	5,697	335
Warringah	$624,628	$628,167	$3,539	20,242	20,287	45
				34,174	**34,065**	**(109)**

	Minimum Rates				Ad Valorem Rates		
	Current	Proposed	Annual Change	% Change	Current	Proposed	% Change
Manly	$860.62	$967.95	$107	12%	0.122489	0.154091	26%
Pittwater	$931.92	$967.95	$36	4%	0.159125	0.154091	(3%)
Warringah	$1,022.94	$967.95	($55)	(5%)	0.163768	0.154091	(6%)

	Rates Income			
	Current	Proposed	Annual Change	% Change
Manly	$24,726,790	$30,152,136	$5,425,346	22%
Pittwater	$39,520,070	$38,648,259	($871,811)	(2%)
Warringah	$78,979,984	$74,426,449	($4,553,535)	(6%)
	$143,226,844	**$143,226,844**	**$0**	

	Average Rates				Av. Rates Per $100k Land Value		
	Current	Proposed	Annual Change	% Change	Current	Proposed	% Change
Manly	$1,397	$1,703	$306	22%	$143	$174	22%
Pittwater	$1,677	$1,640	($37)	(2%)	$171	$167	(2%)
Warringah	$1,452	$1,368	($84)	(6%)	$193	$182	(6%)

Note: Information in the above tables is based on current rates information and does not include the IPART rate peg adjustment that will be applied for the 2021/22 year. Actual figures for the 2021/22 year will also be impacted by changes in other factors such as changes to land valuations by the NSW Valuer General during the 2020/21 year.

ORDINARY BUSINESS - USING CURRENT WEIGHTED AVERAGE MINIMUM

	Land Value For Minimum Rates			Numbers Paying Minimum		
	Current	Proposed	Change	Current	Proposed	Change
Manly	$377,968	$297,478	($80,490)	242	213	(29)
Pittwater	$348,737	$297,478	($51,259)	1,194	1,114	(80)
Warringah	$279,034	$297,478	$18,443	2,211	2,275	64
				3,647	**3,602**	**(45)**

	Minimum Rates				Ad Valorem Rates		
	Current	Proposed	Annual Change	% Change	Current	Proposed	% Change
Manly	$1,123.74	$1,260.31	$137	12%	0.297311	0.423666	42%
Pittwater	$1,189.82	$1,260.31	$70	6%	0.341180	0.423666	24%
Warringah	$1,313.33	$1,260.31	($53)	(4%)	0.470670	0.423666	(10%)

	Rates Income			
	Current	Proposed	Annual Change	% Change
Manly	$1,732,080	$2,385,674	$653,594	38%
Pittwater	$4,681,080	$5,562,345	$881,265	19%
Warringah	$17,131,772	$15,596,912	($1,534,859)	(9%)
	$23,544,931	**$23,544,931**	**$0**	

	Average Rates				Av. Rates Per $100k Land Value		
	Current	Proposed	Annual Change	% Change	Current	Proposed	% Change
Manly	$3,370	$4,641	$1,272	38%	$325	$448	38%
Pittwater	$2,468	$2,932	$465	19%	$418	$497	19%
Warringah	$4,302	$3,917	($385)	(9%)	$521	$475	(9%)

Note: Information in the above tables is based on current rates information and does not include the IPART rate peg adjustment that will be applied for the 2021/22 year. Actual figures for the 2021/22 year will also be impacted by changes in other factors such as changes to land valuations by the NSW Valuer General during the 2020/21 year.

Phased Harmonisation

The Local Government Act 1993 currently does not allow an amalgamated council to progressively harmonise their rates over more than one year. As such it does not recognise the significant dollar differential that may exist in property valuations and therefore the rates to be paid by ratepayers across former council areas as a result of harmonisation.

This can result in considerable and significant impacts on ratepayers, particularly on ad valorem ratepayers depending on the size of the difference between the ad valorem rate of the former local government area compared to the proposed harmonised rate.

Northern Beaches Council and other merged councils have consulted with the Minister for Local Government for the gradual introduction of harmonisation over a number of years and for a 10% cap of annual increase excluding the rate peg. However, if changes to legislation to facilitate the phasing in of harmonisation over a number of years does not get implemented by the NSW Government (or does not get implemented on a timely basis) then Northern Beaches Council and other merged councils will have to achieve full rates harmonisation by 1 July 2021. As mentioned earlier, this will have significant impacts on certain ratepayers.

The following table summarises the potential impacts on ad valorem ratepayers if harmonisation needed to be completed in full on 1 July 2021.

RESIDENTIAL					
Details		Scenario 1	Scenario 2	Scenario 3	Scenario 4
% change in ad valorem rate	Manly	30%	27%	24%	26%
	Pittwater	(0%)	(2%)	(5%)	(3%)
	Warringah	(3%)	(5%)	(8%)	(6%)

ORDINARY BUSINESS (Excluding Manly CBD, Warringah Mall, Warriewood Square and Strata Storage Units)					
Details		Scenario 1	Scenario 2	Scenario 3	Scenario 4
% change in ad valorem rate	Manly	46%	44%	41%	42%
	Pittwater	27%	26%	23%	24%
	Warringah	(8%)	(9%)	(11%)	(10%)

If the current legislation is amended prior to 1 July 2021 to allow Council to undertake the gradual harmonisation of the rating structure over a number of years, then Council will consider any alternative which becomes available with the intention that no one year's increase is more than 10% for ad valorem ratepayers excluding the rate cap and changes resulting from land revaluations, if this is possible.

Based on the scenarios developed a gradual harmonisation would result in harmonisation for residential ratepayers under each of the above scenarios of 3 to 4 years with annual increases of no more that 10% per annum excluding the rate peg and land valuation changes (subject to legislative amendments).

Likewise, the harmonisation for business ratepayers under each of the above scenarios could occur over 4 to 5 years with annual increases of no more that 10% per annum excluding the rate peg and land valuation changes (subject to legislative amendments).

Attachment 1- Scenario 1 Existing Manly Minimums used for harmonisation

Residential

Land Value	Manly					Pittwater					Warringah				
Range	No. of Ratepayers	Current Rates	Proposed Rates	Difference		No. of Ratepayers	Current Rates	Proposed Rates	Difference		No. of Ratepayers	Current Rates	Proposed Rates	Difference	
				$	%				$	%				$	%
< $100,000	353	$861	$861	$0	0%	688	$932	$861	-$71	-8%	814	$1,023	$861	-$162	-16%
$100,001 - $200,000	926	$861	$861	$0	0%	1,282	$932	$861	-$71	-8%	6,083	$1,023	$861	-$162	-16%
$200,001 - $300,000	1,765	$861	$861	$0	0%	1,466	$932	$861	-$71	-8%	7,514	$1,023	$861	-$162	-16%
$300,001 - $400,000	2,258	$861	$861	$0	0%	1,074	$932	$861	-$71	-8%	3,338	$1,023	$861	-$162	-16%
$400,001 - $500,000	1,505	$861	$861	$0	0%	532	$932	$861	-$71	-8%	1,462	$1,023	$861	-$162	-16%
$500,001 - $600,000	1,080	$861	$874	$14	2%	509	$932	$874	-$57	-6%	829	$1,023	$874	-$148	-15%
$600,001 - $700,000	705	$861	$1,033	$173	20%	1,331	$1,034	$1,033	-$1	0%	1,335	$1,064	$1,033	-$31	-3%
$700,001 - $800,000	548	$919	$1,192	$274	30%	2,462	$1,193	$1,192	-$1	0%	4,424	$1,228	$1,192	-$36	-3%
$800,001 - $900,000	306	$1,041	$1,351	$310	30%	3,222	$1,353	$1,351	-$1	0%	10,442	$1,392	$1,351	-$41	-3%
$900,001 - $1,000,000	424	$1,164	$1,510	$347	30%	3,495	$1,512	$1,510	-$1	0%	6,840	$1,556	$1,510	-$45	-3%
$1,000,001 - $1,250,000	1,583	$1,378	$1,789	$411	30%	3,318	$1,790	$1,789	-$1	0%	5,790	$1,842	$1,789	-$54	-3%
$1,250,001 - $1,500,000	2,583	$1,684	$2,186	$502	30%	1,260	$2,188	$2,186	-$2	0%	2,944	$2,252	$2,186	-$66	-3%
$1,500,001 - $1,750,000	1,496	$1,990	$2,584	$593	30%	660	$2,586	$2,584	-$2	0%	1,039	$2,661	$2,584	-$78	-3%
$1,750,001 - $2,000,000	796	$2,297	$2,981	$685	30%	577	$2,984	$2,981	-$2	0%	414	$3,071	$2,981	-$89	-3%
$2,000,001 - $2,250,000	448	$2,603	$3,379	$776	30%	417	$3,381	$3,379	-$3	0%	324	$3,480	$3,379	-$101	-3%
$2,250,001 - $2,500,000	348	$2,909	$3,776	$867	30%	312	$3,779	$3,776	-$3	0%	212	$3,889	$3,776	-$113	-3%
$2,500,001 - $3,000,000	273	$3,368	$4,372	$1,004	30%	372	$4,376	$4,372	-$4	0%	282	$4,504	$4,372	-$131	-3%
$3,000,001 - $3,500,000	98	$3,981	$5,167	$1,186	30%	222	$5,172	$5,167	-$4	0%	174	$5,322	$5,167	-$155	-3%
$3,500,001 - $4,000,000	78	$4,593	$5,962	$1,369	30%	96	$5,967	$5,962	-$5	0%	49	$6,141	$5,962	-$179	-3%
$4,000,001 - $4,500,000	55	$5,206	$6,757	$1,552	30%	49	$6,763	$6,757	-$5	0%	15	$6,960	$6,757	-$203	-3%
$4,500,001 - $5,000,000	33	$5,818	$7,552	$1,734	30%	38	$7,558	$7,552	-$6	0%	17	$7,779	$7,552	-$227	-3%
$5,000,001 - $5,500,000	3	$6,431	$8,347	$1,917	30%	27	$8,354	$8,347	-$7	0%	9	$8,598	$8,347	-$251	-3%
$5,500,001 - $6,000,000	13	$7,043	$9,142	$2,099	30%	23	$9,150	$9,142	-$7	0%	8	$9,417	$9,142	-$274	-3%
$6,000,001 - $6,500,000	13	$7,656	$9,937	$2,282	30%	20	$9,945	$9,937	-$8	0%	4	$10,235	$9,937	-$298	-3%
$6,500,001 - $7,000,000	2	$8,268	$10,732	$2,464	30%	16	$10,741	$10,732	-$9	0%	1	$11,054	$10,732	-$322	-3%
$7,000,001 - $7,500,000	2	$8,880	$11,527	$2,647	30%	42	$11,537	$11,527	-$9	0%	3	$11,873	$11,527	-$346	-3%
$7,500,001 - $10,000,000	5	$10,718	$13,912	$3,194	30%	27	$13,923	$13,912	-$11	0%	8	$14,330	$13,912	-$418	-3%
$10,000,001 - $12,500,000	1	$13,780	$17,887	$4,107	30%	6	$17,902	$17,887	-$15	0%	1	$18,424	$17,887	-$537	-3%
$12,500,001 - $15,000,000	1	$16,842	$21,862	$5,020	30%	1	$21,880	$21,862	-$18	0%	2	$22,518	$21,862	-$656	-3%
$15,000,001 - $17,500,000	1	$19,904	$25,837	$5,932	30%	1	$25,858	$25,837	-$21	0%	2	$26,612	$25,837	-$775	-3%
$17,500,001 - $20,000,000	0	$22,967	$29,812	$6,845	30%	0	$29,836	$29,812	-$24	0%	1	$30,706	$29,812	-$895	-3%
$20,000,001 - $22,500,000	1	$26,029	$33,787	$7,758	30%	0	$33,814	$33,787	-$27	0%	1	$34,801	$33,787	-$1,014	-3%
$22,500,001 - $25,000,000	0	$29,091	$37,762	$8,670	30%	0	$37,792	$37,762	-$31	0%	1	$38,895	$37,762	-$1,133	-3%
$25,000,001 - $27,500,000	0	$32,153	$41,736	$9,583	30%	0	$41,770	$41,736	-$34	0%	0	$42,989	$41,736	-$1,253	-3%
$27,500,001 - $30,000,000	0	$35,216	$45,711	$10,496	30%	0	$45,748	$45,711	-$37	0%	0	$47,083	$45,711	-$1,372	-3%
$30,000,001 - $32,500,000	0	$38,278	$49,686	$11,408	30%	0	$49,727	$49,686	-$40	0%	0	$51,177	$49,686	-$1,491	-3%
$32,500,001 - $35,000,000	0	$41,340	$53,661	$12,321	30%	0	$53,705	$53,661	-$44	0%	0	$55,272	$53,661	-$1,611	-3%
$35,000,001 - $37,500,000	0	$44,402	$57,636	$13,234	30%	1	$57,683	$57,636	-$47	0%	0	$59,366	$57,636	-$1,730	-3%
$37,500,001 - $40,000,000	0	$48,934	$63,519	$14,585	30%	0	$63,570	$63,519	-$52	0%	0	$65,425	$63,519	-$1,906	-3%

Business

Land Value	Manly					Pittwater					Warringah				
Range	No. of Ratepayers	Current Rates	Proposed Rates	Difference		No. of Ratepayers	Current Rates	Proposed Rates	Difference		No. of Ratepayers	Current Rates	Proposed Rates	Difference	
				$	%				$	%				$	%
< $100,000	68	$1,124	$1,124	$0	0%	602	$1,190	$1,124	-$66	-6%	1,009	$1,313	$1,124	-$190	-14%
$100,001 - $300,000	153	$1,124	$1,124	$0	0%	615	$1,190	$1,124	-$66	-6%	1,271	$1,313	$1,124	-$190	-14%
$300,001 - $500,000	47	$1,189	$1,738	$548	46%	186	$1,365	$1,738	$373	27%	295	$1,883	$1,738	-$145	-8%
$500,001 - $700,000	23	$1,784	$2,606	$823	46%	106	$2,047	$2,606	$559	27%	150	$2,824	$2,606	-$218	-8%
$700,001 - $900,000	47	$2,378	$3,475	$1,097	46%	55	$2,729	$3,475	$746	27%	198	$3,765	$3,475	-$290	-8%
$900,001 - $1,100,000	31	$2,973	$4,344	$1,371	46%	71	$3,412	$4,344	$932	27%	233	$4,707	$4,344	-$363	-8%
$1,100,001 - $1,300,000	37	$3,568	$5,213	$1,645	46%	60	$4,094	$5,213	$1,119	27%	178	$5,648	$5,213	-$435	-8%
$1,300,001 - $1,500,000	27	$4,162	$6,082	$1,919	46%	34	$4,777	$6,082	$1,305	27%	99	$6,589	$6,082	-$508	-8%
$1,500,001 - $1,700,000	16	$4,757	$6,950	$2,194	46%	25	$5,459	$6,950	$1,492	27%	120	$7,531	$6,950	-$580	-8%
$1,700,001 - $1,900,000	9	$5,352	$7,819	$2,468	46%	19	$6,141	$7,819	$1,678	27%	64	$8,472	$7,819	-$653	-8%
$1,900,001 - $2,100,000	4	$5,946	$8,688	$2,742	46%	19	$6,824	$8,688	$1,865	27%	46	$9,413	$8,688	-$725	-8%
$2,100,001 - $2,300,000	5	$6,541	$9,557	$3,016	46%	11	$7,506	$9,557	$2,051	27%	35	$10,355	$9,557	-$798	-8%
$2,300,001 - $2,500,000	5	$7,135	$10,426	$3,290	46%	15	$8,188	$10,426	$2,237	27%	23	$11,296	$10,426	-$870	-8%
$2,500,001 - $2,700,000	6	$7,730	$11,295	$3,564	46%	15	$8,871	$11,295	$2,424	27%	39	$12,237	$11,295	-$943	-8%
$2,700,001 - $2,900,000	2	$8,325	$12,163	$3,839	46%	2	$9,553	$12,163	$2,610	27%	17	$13,179	$12,163	-$1,015	-8%
$2,900,001 - $3,100,000	5	$8,919	$13,032	$4,113	46%	4	$10,235	$13,032	$2,797	27%	16	$14,120	$13,032	-$1,088	-8%
$3,100,001 - $3,300,000	3	$9,514	$13,901	$4,387	46%	4	$10,918	$13,901	$2,983	27%	20	$15,061	$13,901	-$1,160	-8%
$3,300,001 - $3,500,000	2	$10,109	$14,770	$4,661	46%	4	$11,600	$14,770	$3,170	27%	12	$16,003	$14,770	-$1,233	-8%
$3,500,001 - $3,700,000	0	$10,703	$15,639	$4,935	46%	4	$12,282	$15,639	$3,356	27%	10	$16,944	$15,639	-$1,306	-8%
$3,700,001 - $3,900,000	3	$11,298	$16,507	$5,210	46%	5	$12,965	$16,507	$3,543	27%	7	$17,885	$16,507	-$1,378	-8%
$3,900,001 - $4,100,000	1	$11,892	$17,376	$5,484	46%	2	$13,647	$17,376	$3,729	27%	11	$18,827	$17,376	-$1,451	-8%
$4,100,001 - $4,300,000	0	$12,487	$18,245	$5,758	46%	1	$14,330	$18,245	$3,915	27%	5	$19,768	$18,245	-$1,523	-8%
$4,300,001 - $4,500,000	1	$13,082	$19,114	$6,032	46%	5	$15,012	$19,114	$4,102	27%	5	$20,709	$19,114	-$1,596	-8%
$4,500,001 - $6,500,000	11	$16,352	$23,892	$7,540	46%	10	$18,765	$23,892	$5,127	27%	42	$25,887	$23,892	-$1,995	-8%
$6,500,001 - $6,900,000	0	$19,920	$29,105	$9,185	46%	4	$22,859	$29,105	$6,246	27%	8	$31,535	$29,105	-$2,430	-8%
$6,900,001 - $7,300,000	2	$21,109	$30,843	$9,734	46%	2	$24,224	$30,843	$6,619	27%	9	$33,418	$30,843	-$2,575	-8%
$7,300,001 - $7,700,000	0	$22,298	$32,580	$10,282	46%	0	$25,588	$32,580	$6,992	27%	3	$35,300	$32,580	-$2,720	-8%
$7,700,001 - $8,100,000	2	$23,488	$34,318	$10,830	46%	1	$26,953	$34,318	$7,365	27%	8	$37,183	$34,318	-$2,865	-8%
$8,100,001 - $8,500,000	0	$24,677	$36,056	$11,379	46%	1	$28,318	$36,056	$7,738	27%	3	$39,066	$36,056	-$3,010	-8%
$8,500,001 - $8,900,000	0	$25,866	$37,793	$11,927	46%	5	$29,683	$37,793	$8,111	27%	5	$40,948	$37,793	-$3,155	-8%
$8,900,001 - $9,300,000	0	$27,055	$39,531	$12,476	46%	1	$31,047	$39,531	$8,484	27%	2	$42,831	$39,531	-$3,300	-8%
$9,300,001 - $9,700,000	0	$28,245	$41,269	$13,024	46%	0	$32,412	$41,269	$8,856	27%	3	$44,714	$41,269	-$3,445	-8%
$9,700,001 - $10,100,000	0	$29,434	$43,006	$13,572	46%	1	$33,777	$43,006	$9,229	27%	5	$46,596	$43,006	-$3,590	-8%
$10,100,001 - $10,500,000	0	$30,623	$44,744	$14,121	46%	1	$35,142	$44,744	$9,602	27%	2	$48,479	$44,744	-$3,735	-8%
$10,500,001 - $10,900,000	0	$31,812	$46,481	$14,669	46%	0	$36,506	$46,481	$9,975	27%	5	$50,362	$46,481	-$3,880	-8%
$10,900,001 - $11,300,000	0	$33,002	$48,219	$15,218	46%	0	$37,871	$48,219	$10,348	27%	1	$52,244	$48,219	-$4,025	-8%
$11,300,001 - $11,700,000	0	$34,191	$49,957	$15,766	46%	2	$39,236	$49,957	$10,721	27%	1	$54,127	$49,957	-$4,170	-8%
$11,700,001 - $44,700,000	4	$83,842	$122,502	$38,661	46%	5	$96,213	$122,502	$26,290	27%	22	$132,729	$122,502	-$10,226	-8%
$44,700,001 - $74,700,000	0	$221,943	$324,284	$102,341	46%	0	$254,691	$324,284	$69,593	27%	0	$351,355	$324,284	-$27,071	-8%

Attachment 2- Scenario 2 Existing Pittwater Minimums used for harmonisation

Residential

Land Value	Manly					Pittwater					Warringah				
Range	No. of Ratepayers	Current Rates	Proposed Rates	Difference		No. of Ratepayers	Current Rates	Proposed Rates	Difference		No. of Ratepayers	Current Rates	Proposed Rates	Difference	
				$	%				$	%				$	%
< $100,000	353	$861	$932	$71	8%	688	$932	$932	$0	0%	814	$1,023	$932	-$91	-9%
$100,001 - $200,000	926	$861	$932	$71	8%	1,282	$932	$932	$0	0%	6,083	$1,023	$932	-$91	-9%
$200,001 - $300,000	1,765	$861	$932	$71	8%	1,466	$932	$932	$0	0%	7,514	$1,023	$932	-$91	-9%
$300,001 - $400,000	2,258	$861	$932	$71	8%	1,074	$932	$932	$0	0%	3,338	$1,023	$932	-$91	-9%
$400,001 - $500,000	1,505	$861	$932	$71	8%	532	$932	$932	$0	0%	1,462	$1,023	$932	-$91	-9%
$500,001 - $600,000	1,080	$861	$932	$71	8%	509	$932	$932	$0	0%	829	$1,023	$932	-$91	-9%
$600,001 - $700,000	705	$861	$1,013	$152	18%	1,331	$1,034	$1,013	-$22	-2%	1,335	$1,064	$1,013	-$52	-5%
$700,001 - $800,000	548	$919	$1,168	$250	27%	2,462	$1,193	$1,168	-$25	-2%	4,424	$1,228	$1,168	-$60	-5%
$800,001 - $900,000	306	$1,041	$1,324	$283	27%	3,222	$1,353	$1,324	-$28	-2%	10,442	$1,392	$1,324	-$68	-5%
$900,001 - $1,000,000	424	$1,164	$1,480	$316	27%	3,495	$1,512	$1,480	-$32	-2%	6,840	$1,556	$1,480	-$76	-5%
$1,000,001 - $1,250,000	1,583	$1,378	$1,753	$375	27%	3,318	$1,790	$1,753	-$38	-2%	5,790	$1,842	$1,753	-$90	-5%
$1,250,001 - $1,500,000	2,583	$1,684	$2,142	$458	27%	1,260	$2,188	$2,142	-$46	-2%	2,944	$2,252	$2,142	-$110	-5%
$1,500,001 - $1,750,000	1,496	$1,990	$2,531	$541	27%	660	$2,586	$2,531	-$54	-2%	1,039	$2,661	$2,531	-$130	-5%
$1,750,001 - $2,000,000	796	$2,297	$2,921	$624	27%	577	$2,984	$2,921	-$63	-2%	414	$3,071	$2,921	-$150	-5%
$2,000,001 - $2,250,000	448	$2,603	$3,310	$707	27%	417	$3,381	$3,310	-$71	-2%	324	$3,480	$3,310	-$170	-5%
$2,250,001 - $2,500,000	348	$2,909	$3,700	$791	27%	312	$3,779	$3,700	-$79	-2%	212	$3,889	$3,700	-$190	-5%
$2,500,001 - $3,000,000	273	$3,368	$4,284	$915	27%	372	$4,376	$4,284	-$92	-2%	282	$4,504	$4,284	-$220	-5%
$3,000,001 - $3,500,000	98	$3,981	$5,063	$1,082	27%	222	$5,172	$5,063	-$109	-2%	174	$5,322	$5,063	-$260	-5%
$3,500,001 - $4,000,000	78	$4,593	$5,842	$1,248	27%	96	$5,967	$5,842	-$125	-2%	49	$6,141	$5,842	-$300	-5%
$4,000,001 - $4,500,000	55	$5,206	$6,621	$1,415	27%	49	$6,763	$6,621	-$142	-2%	15	$6,960	$6,621	-$339	-5%
$4,500,001 - $5,000,000	33	$5,818	$7,400	$1,581	27%	38	$7,558	$7,400	-$159	-2%	17	$7,779	$7,400	-$379	-5%
$5,000,001 - $5,500,000	3	$6,431	$8,178	$1,748	27%	27	$8,354	$8,178	-$176	-2%	9	$8,598	$8,178	-$419	-5%
$5,500,001 - $6,000,000	13	$7,043	$8,957	$1,914	27%	23	$9,150	$8,957	-$192	-2%	8	$9,417	$8,957	-$459	-5%
$6,000,001 - $6,500,000	13	$7,656	$9,736	$2,081	27%	20	$9,945	$9,736	-$209	-2%	4	$10,235	$9,736	-$499	-5%
$6,500,001 - $7,000,000	2	$8,268	$10,515	$2,247	27%	16	$10,741	$10,515	-$226	-2%	1	$11,054	$10,515	-$539	-5%
$7,000,001 - $7,500,000	2	$8,880	$11,294	$2,414	27%	42	$11,537	$11,294	-$243	-2%	3	$11,873	$11,294	-$579	-5%
$7,500,001 - $10,000,000	5	$10,718	$13,631	$2,913	27%	27	$13,923	$13,631	-$293	-2%	8	$14,330	$13,631	-$699	-5%
$10,000,001 - $12,500,000	1	$13,780	$17,525	$3,745	27%	6	$17,902	$17,525	-$376	-2%	1	$18,424	$17,525	-$899	-5%
$12,500,001 - $15,000,000	1	$16,842	$21,420	$4,577	27%	1	$21,880	$21,420	-$460	-2%	2	$22,518	$21,420	-$1,098	-5%
$15,000,001 - $17,500,000	1	$19,904	$25,314	$5,410	27%	1	$25,858	$25,314	-$544	-2%	2	$26,612	$25,314	-$1,298	-5%
$17,500,001 - $20,000,000	0	$22,967	$29,209	$6,242	27%	0	$29,836	$29,209	-$627	-2%	1	$30,706	$29,209	-$1,498	-5%
$20,000,001 - $22,500,000	1	$26,029	$33,103	$7,074	27%	0	$33,814	$33,103	-$711	-2%	1	$34,801	$33,103	-$1,697	-5%
$22,500,001 - $25,000,000	0	$29,091	$36,998	$7,907	27%	0	$37,792	$36,998	-$794	-2%	1	$38,895	$36,998	-$1,897	-5%
$25,000,001 - $27,500,000	0	$32,153	$40,892	$8,739	27%	0	$41,770	$40,892	-$878	-2%	0	$42,989	$40,892	-$2,097	-5%
$27,500,001 - $30,000,000	0	$35,216	$44,787	$9,571	27%	0	$45,748	$44,787	-$962	-2%	0	$47,083	$44,787	-$2,297	-5%
$30,000,001 - $32,500,000	0	$38,278	$48,681	$10,403	27%	0	$49,727	$48,681	-$1,045	-2%	0	$51,177	$48,681	-$2,496	-5%
$32,500,001 - $35,000,000	0	$41,340	$52,576	$11,236	27%	0	$53,705	$52,576	-$1,129	-2%	0	$55,272	$52,576	-$2,696	-5%
$35,000,001 - $37,500,000	0	$44,402	$56,470	$12,068	27%	1	$57,683	$56,470	-$1,213	-2%	0	$59,366	$56,470	-$2,896	-5%
$37,500,001 - $40,000,000	0	$48,934	$62,234	$13,300	27%	0	$63,570	$62,234	-$1,336	-2%	0	$65,425	$62,234	-$3,191	-5%

Business

Land Value	Manly					Pittwater					Warringah				
Range	No. of Ratepayers	Current Rates	Proposed Rates	Difference		No. of Ratepayers	Current Rates	Proposed Rates	Difference		No. of Ratepayers	Current Rates	Proposed Rates	Difference	
				$	%				$	%				$	%
< $100,000	68	$1,124	$1,190	$66	6%	602	$1,190	$1,190	$0	0%	1,009	$1,313	$1,190	-$124	-9%
$100,001 - $300,000	153	$1,124	$1,190	$66	6%	615	$1,190	$1,190	$0	0%	1,271	$1,313	$1,190	-$124	-9%
$300,001 - $500,000	47	$1,189	$1,717	$528	44%	186	$1,365	$1,717	$352	26%	295	$1,883	$1,717	-$166	-9%
$500,001 - $700,000	23	$1,784	$2,576	$792	44%	106	$2,047	$2,576	$529	26%	150	$2,824	$2,576	-$248	-9%
$700,001 - $900,000	47	$2,378	$3,434	$1,056	44%	55	$2,729	$3,434	$705	26%	198	$3,765	$3,434	-$331	-9%
$900,001 - $1,100,000	31	$2,973	$4,293	$1,320	44%	71	$3,412	$4,293	$881	26%	233	$4,707	$4,293	-$414	-9%
$1,100,001 - $1,300,000	37	$3,568	$5,151	$1,584	44%	60	$4,094	$5,151	$1,057	26%	178	$5,648	$5,151	-$497	-9%
$1,300,001 - $1,500,000	27	$4,162	$6,010	$1,848	44%	34	$4,777	$6,010	$1,234	26%	99	$6,589	$6,010	-$579	-9%
$1,500,001 - $1,700,000	16	$4,757	$6,869	$2,112	44%	25	$5,459	$6,869	$1,410	26%	120	$7,531	$6,869	-$662	-9%
$1,700,001 - $1,900,000	9	$5,352	$7,727	$2,376	44%	19	$6,141	$7,727	$1,586	26%	64	$8,472	$7,727	-$745	-9%
$1,900,001 - $2,100,000	4	$5,946	$8,586	$2,640	44%	19	$6,824	$8,586	$1,762	26%	46	$9,413	$8,586	-$828	-9%
$2,100,001 - $2,300,000	5	$6,541	$9,444	$2,904	44%	11	$7,506	$9,444	$1,938	26%	35	$10,355	$9,444	-$910	-9%
$2,300,001 - $2,500,000	5	$7,135	$10,303	$3,167	44%	15	$8,188	$10,303	$2,115	26%	23	$11,296	$10,303	-$993	-9%
$2,500,001 - $2,700,000	6	$7,730	$11,161	$3,431	44%	15	$8,871	$11,161	$2,291	26%	39	$12,237	$11,161	-$1,076	-9%
$2,700,001 - $2,900,000	2	$8,325	$12,020	$3,695	44%	2	$9,553	$12,020	$2,467	26%	17	$13,179	$12,020	-$1,159	-9%
$2,900,001 - $3,100,000	5	$8,919	$12,879	$3,959	44%	4	$10,235	$12,879	$2,643	26%	16	$14,120	$12,879	-$1,241	-9%
$3,100,001 - $3,300,000	3	$9,514	$13,737	$4,223	44%	4	$10,918	$13,737	$2,819	26%	20	$15,061	$13,737	-$1,324	-9%
$3,300,001 - $3,500,000	2	$10,109	$14,596	$4,487	44%	4	$11,600	$14,596	$2,996	26%	12	$16,003	$14,596	-$1,407	-9%
$3,500,001 - $3,700,000	0	$10,703	$15,454	$4,751	44%	4	$12,282	$15,454	$3,172	26%	10	$16,944	$15,454	-$1,490	-9%
$3,700,001 - $3,900,000	3	$11,298	$16,313	$5,015	44%	5	$12,965	$16,313	$3,348	26%	7	$17,885	$16,313	-$1,572	-9%
$3,900,001 - $4,100,000	1	$11,892	$17,172	$5,279	44%	2	$13,647	$17,172	$3,524	26%	11	$18,827	$17,172	-$1,655	-9%
$4,100,001 - $4,300,000	0	$12,487	$18,030	$5,543	44%	1	$14,330	$18,030	$3,701	26%	5	$19,768	$18,030	-$1,738	-9%
$4,300,001 - $4,500,000	1	$13,082	$18,889	$5,807	44%	5	$15,012	$18,889	$3,877	26%	5	$20,709	$18,889	-$1,821	-9%
$4,500,001 - $6,500,000	11	$16,352	$23,611	$7,259	44%	10	$18,765	$23,611	$4,846	26%	42	$25,887	$23,611	-$2,276	-9%
$6,500,001 - $6,900,000	0	$19,920	$28,762	$8,842	44%	4	$22,859	$28,762	$5,903	26%	8	$31,535	$28,762	-$2,773	-9%
$6,900,001 - $7,300,000	2	$21,109	$30,479	$9,370	44%	2	$24,224	$30,479	$6,256	26%	9	$33,418	$30,479	-$2,938	-9%
$7,300,001 - $7,700,000	0	$22,298	$32,197	$9,898	44%	0	$25,588	$32,197	$6,608	26%	3	$35,300	$32,197	-$3,104	-9%
$7,700,001 - $8,100,000	2	$23,488	$33,914	$10,426	44%	1	$26,953	$33,914	$6,961	26%	8	$37,183	$33,914	-$3,269	-9%
$8,100,001 - $8,500,000	0	$24,677	$35,631	$10,954	44%	1	$28,318	$35,631	$7,313	26%	3	$39,066	$35,631	-$3,435	-9%
$8,500,001 - $8,900,000	0	$25,866	$37,348	$11,482	44%	5	$29,683	$37,348	$7,665	26%	5	$40,948	$37,348	-$3,600	-9%
$8,900,001 - $9,300,000	0	$27,055	$39,065	$12,010	44%	1	$31,047	$39,065	$8,018	26%	2	$42,831	$39,065	-$3,766	-9%
$9,300,001 - $9,700,000	0	$28,245	$40,782	$12,538	44%	0	$32,412	$40,782	$8,370	26%	3	$44,714	$40,782	-$3,931	-9%
$9,700,001 - $10,100,000	0	$29,434	$42,500	$13,066	44%	1	$33,777	$42,500	$8,723	26%	5	$46,596	$42,500	-$4,097	-9%
$10,100,001 - $10,500,000	0	$30,623	$44,217	$13,594	44%	1	$35,142	$44,217	$9,075	26%	2	$48,479	$44,217	-$4,262	-9%
$10,500,001 - $10,900,000	0	$31,812	$45,934	$14,122	44%	0	$36,506	$45,934	$9,428	26%	5	$50,362	$45,934	-$4,428	-9%
$10,900,001 - $11,300,000	0	$33,002	$47,651	$14,650	44%	0	$37,871	$47,651	$9,780	26%	1	$52,244	$47,651	-$4,593	-9%
$11,300,001 - $11,700,000	0	$34,191	$49,368	$15,177	44%	2	$39,236	$49,368	$10,132	26%	1	$54,127	$49,368	-$4,759	-9%
$11,700,001 - $44,700,000	4	$83,842	$121,059	$37,218	44%	5	$96,213	$121,059	$24,847	26%	22	$132,729	$121,059	-$11,670	-9%
$44,700,001 - $74,700,000	0	$221,943	$320,464	$98,521	44%	0	$254,691	$320,464	$65,773	26%	0	$351,355	$320,464	-$30,891	-9%

Attachment 3- Scenario 3 Existing Warringah Minimums used for harmonisation

Residential

Land Value	Manly					Pittwater					Warringah				
Range	No. of Ratepayers	Current Rates	Proposed Rates	Difference		No. of Ratepayers	Current Rates	Proposed Rates	Difference		No. of Ratepayers	Current Rates	Proposed Rates	Difference	
				$	%				$	%				$	%
< $100,000	353	$861	$1,023	$162	19%	688	$932	$1,023	$91	10%	814	$1,023	$1,023	$0	0%
$100,001 - $200,000	926	$861	$1,023	$162	19%	1,282	$932	$1,023	$91	10%	6,083	$1,023	$1,023	$0	0%
$200,001 - $300,000	1,765	$861	$1,023	$162	19%	1,466	$932	$1,023	$91	10%	7,514	$1,023	$1,023	$0	0%
$300,001 - $400,000	2,258	$861	$1,023	$162	19%	1,074	$932	$1,023	$91	10%	3,338	$1,023	$1,023	$0	0%
$400,001 - $500,000	1,505	$861	$1,023	$162	19%	532	$932	$1,023	$91	10%	1,462	$1,023	$1,023	$0	0%
$500,001 - $600,000	1,080	$861	$1,023	$162	19%	509	$932	$1,023	$91	10%	829	$1,023	$1,023	$0	0%
$600,001 - $700,000	705	$861	$1,023	$162	19%	1,331	$1,034	$1,023	-$11	-1%	1,335	$1,064	$1,023	-$42	-4%
$700,001 - $800,000	548	$919	$1,136	$217	24%	2,462	$1,193	$1,136	-$58	-5%	4,424	$1,228	$1,136	-$93	-8%
$800,001 - $900,000	306	$1,041	$1,287	$246	24%	3,222	$1,353	$1,287	-$66	-5%	10,442	$1,392	$1,287	-$105	-8%
$900,001 - $1,000,000	424	$1,164	$1,438	$275	24%	3,495	$1,512	$1,438	-$73	-5%	6,840	$1,556	$1,438	-$117	-8%
$1,000,001 - $1,250,000	1,583	$1,378	$1,703	$325	24%	3,318	$1,790	$1,703	-$87	-5%	5,790	$1,842	$1,703	-$139	-8%
$1,250,001 - $1,500,000	2,583	$1,684	$2,082	$398	24%	1,260	$2,188	$2,082	-$106	-5%	2,944	$2,252	$2,082	-$170	-8%
$1,500,001 - $1,750,000	1,496	$1,990	$2,460	$470	24%	660	$2,586	$2,460	-$125	-5%	1,039	$2,661	$2,460	-$201	-8%
$1,750,001 - $2,000,000	796	$2,297	$2,839	$542	24%	577	$2,984	$2,839	-$145	-5%	414	$3,071	$2,839	-$232	-8%
$2,000,001 - $2,250,000	448	$2,603	$3,217	$614	24%	417	$3,381	$3,217	-$164	-5%	324	$3,480	$3,217	-$263	-8%
$2,250,001 - $2,500,000	348	$2,909	$3,596	$687	24%	312	$3,779	$3,596	-$183	-5%	212	$3,889	$3,596	-$294	-8%
$2,500,001 - $3,000,000	273	$3,368	$4,164	$795	24%	372	$4,376	$4,164	-$212	-5%	282	$4,504	$4,164	-$340	-8%
$3,000,001 - $3,500,000	98	$3,981	$4,921	$940	24%	222	$5,172	$4,921	-$251	-5%	174	$5,322	$4,921	-$402	-8%
$3,500,001 - $4,000,000	78	$4,593	$5,678	$1,084	24%	96	$5,967	$5,678	-$290	-5%	49	$6,141	$5,678	-$464	-8%
$4,000,001 - $4,500,000	55	$5,206	$6,435	$1,229	24%	49	$6,763	$6,435	-$328	-5%	15	$6,960	$6,435	-$525	-8%
$4,500,001 - $5,000,000	33	$5,818	$7,192	$1,373	24%	38	$7,558	$7,192	-$367	-5%	17	$7,779	$7,192	-$587	-8%
$5,000,001 - $5,500,000	3	$6,431	$7,949	$1,518	24%	27	$8,354	$7,949	-$405	-5%	9	$8,598	$7,949	-$649	-8%
$5,500,001 - $6,000,000	13	$7,043	$8,706	$1,663	24%	23	$9,150	$8,706	-$444	-5%	8	$9,417	$8,706	-$711	-8%
$6,000,001 - $6,500,000	13	$7,656	$9,463	$1,807	24%	20	$9,945	$9,463	-$483	-5%	4	$10,235	$9,463	-$773	-8%
$6,500,001 - $7,000,000	2	$8,268	$10,220	$1,952	24%	16	$10,741	$10,220	-$521	-5%	1	$11,054	$10,220	-$835	-8%
$7,000,001 - $7,500,000	2	$8,880	$10,977	$2,096	24%	42	$11,537	$10,977	-$560	-5%	3	$11,873	$10,977	-$896	-8%
$7,500,001 - $10,000,000	5	$10,718	$13,248	$2,530	24%	27	$13,923	$13,248	-$676	-5%	8	$14,330	$13,248	-$1,082	-8%
$10,000,001 - $12,500,000	1	$13,780	$17,033	$3,253	24%	6	$17,902	$17,033	-$869	-5%	1	$18,424	$17,033	-$1,391	-8%
$12,500,001 - $15,000,000	1	$16,842	$20,818	$3,976	24%	1	$21,880	$20,818	-$1,062	-5%	2	$22,518	$20,818	-$1,700	-8%
$15,000,001 - $17,500,000	1	$19,904	$24,603	$4,699	24%	1	$25,858	$24,603	-$1,255	-5%	2	$26,612	$24,603	-$2,009	-8%
$17,500,001 - $20,000,000	0	$22,967	$28,388	$5,422	24%	0	$29,836	$28,388	-$1,448	-5%	1	$30,706	$28,388	-$2,318	-8%
$20,000,001 - $22,500,000	1	$26,029	$32,173	$6,144	24%	0	$33,814	$32,173	-$1,641	-5%	1	$34,801	$32,173	-$2,627	-8%
$22,500,001 - $25,000,000	0	$29,091	$35,958	$6,867	24%	0	$37,792	$35,958	-$1,834	-5%	1	$38,895	$35,958	-$2,936	-8%
$25,000,001 - $27,500,000	0	$32,153	$39,744	$7,590	24%	0	$41,770	$39,744	-$2,027	-5%	0	$42,989	$39,744	-$3,246	-8%
$27,500,001 - $30,000,000	0	$35,216	$43,529	$8,313	24%	0	$45,748	$43,529	-$2,220	-5%	0	$47,083	$43,529	-$3,555	-8%
$30,000,001 - $32,500,000	0	$38,278	$47,314	$9,036	24%	0	$49,727	$47,314	-$2,413	-5%	0	$51,177	$47,314	-$3,864	-8%
$32,500,001 - $35,000,000	0	$41,340	$51,099	$9,759	24%	0	$53,705	$51,099	-$2,606	-5%	0	$55,272	$51,099	-$4,173	-8%
$35,000,001 - $37,500,000	0	$44,402	$54,884	$10,482	24%	1	$57,683	$54,884	-$2,799	-5%	0	$59,366	$54,884	-$4,482	-8%
$37,500,001 - $40,000,000	0	$48,934	$60,486	$11,551	24%	0	$63,570	$60,486	-$3,085	-5%	0	$65,425	$60,486	-$4,939	-8%

Business

Land Value	Manly					Pittwater					Warringah				
Range	No. of Ratepayers	Current Rates	Proposed Rates	Difference		No. of Ratepayers	Current Rates	Proposed Rates	Difference		No. of Ratepayers	Current Rates	Proposed Rates	Difference	
				$	%				$	%				$	%
< $100,000	68	$1,124	$1,313	$190	17%	602	$1,190	$1,313	$124	10%	1,009	$1,313	$1,313	$0	0%
$100,001 - $300,000	153	$1,124	$1,313	$190	17%	615	$1,190	$1,313	$124	10%	1,271	$1,313	$1,313	$0	0%
$300,001 - $500,000	47	$1,189	$1,677	$488	41%	186	$1,365	$1,677	$313	23%	295	$1,883	$1,677	-$205	-11%
$500,001 - $700,000	23	$1,784	$2,516	$732	41%	106	$2,047	$2,516	$469	23%	150	$2,824	$2,516	-$308	-11%
$700,001 - $900,000	47	$2,378	$3,355	$976	41%	55	$2,729	$3,355	$625	23%	198	$3,765	$3,355	-$411	-11%
$900,001 - $1,100,000	31	$2,973	$4,193	$1,220	41%	71	$3,412	$4,193	$781	23%	233	$4,707	$4,193	-$514	-11%
$1,100,001 - $1,300,000	37	$3,568	$5,032	$1,464	41%	60	$4,094	$5,032	$938	23%	178	$5,648	$5,032	-$616	-11%
$1,300,001 - $1,500,000	27	$4,162	$5,870	$1,708	41%	34	$4,777	$5,870	$1,094	23%	99	$6,589	$5,870	-$719	-11%
$1,500,001 - $1,700,000	16	$4,757	$6,709	$1,952	41%	25	$5,459	$6,709	$1,250	23%	120	$7,531	$6,709	-$822	-11%
$1,700,001 - $1,900,000	9	$5,352	$7,548	$2,196	41%	19	$6,141	$7,548	$1,406	23%	64	$8,472	$7,548	-$924	-11%
$1,900,001 - $2,100,000	4	$5,946	$8,386	$2,440	41%	19	$6,824	$8,386	$1,563	23%	46	$9,413	$8,386	-$1,027	-11%
$2,100,001 - $2,300,000	5	$6,541	$9,225	$2,684	41%	11	$7,506	$9,225	$1,719	23%	35	$10,355	$9,225	-$1,130	-11%
$2,300,001 - $2,500,000	5	$7,135	$10,064	$2,928	41%	15	$8,188	$10,064	$1,875	23%	23	$11,296	$10,064	-$1,233	-11%
$2,500,001 - $2,700,000	6	$7,730	$10,902	$3,172	41%	15	$8,871	$10,902	$2,031	23%	39	$12,237	$10,902	-$1,335	-11%
$2,700,001 - $2,900,000	2	$8,325	$11,741	$3,416	41%	2	$9,553	$11,741	$2,188	23%	17	$13,179	$11,741	-$1,438	-11%
$2,900,001 - $3,100,000	5	$8,919	$12,579	$3,660	41%	4	$10,235	$12,579	$2,344	23%	16	$14,120	$12,579	-$1,541	-11%
$3,100,001 - $3,300,000	3	$9,514	$13,418	$3,904	41%	4	$10,918	$13,418	$2,500	23%	20	$15,061	$13,418	-$1,643	-11%
$3,300,001 - $3,500,000	2	$10,109	$14,257	$4,148	41%	4	$11,600	$14,257	$2,657	23%	12	$16,003	$14,257	-$1,746	-11%
$3,500,001 - $3,700,000	0	$10,703	$15,095	$4,392	41%	4	$12,282	$15,095	$2,813	23%	10	$16,944	$15,095	-$1,849	-11%
$3,700,001 - $3,900,000	3	$11,298	$15,934	$4,636	41%	5	$12,965	$15,934	$2,969	23%	7	$17,885	$15,934	-$1,952	-11%
$3,900,001 - $4,100,000	1	$11,892	$16,773	$4,880	41%	2	$13,647	$16,773	$3,125	23%	11	$18,827	$16,773	-$2,054	-11%
$4,100,001 - $4,300,000	0	$12,487	$17,611	$5,124	41%	1	$14,330	$17,611	$3,282	23%	5	$19,768	$17,611	-$2,157	-11%
$4,300,001 - $4,500,000	1	$13,082	$18,450	$5,368	41%	5	$15,012	$18,450	$3,438	23%	5	$20,709	$18,450	-$2,260	-11%
$4,500,001 - $6,500,000	11	$16,352	$23,062	$6,710	41%	10	$18,765	$23,062	$4,297	23%	42	$25,887	$23,062	-$2,825	-11%
$6,500,001 - $6,900,000	0	$19,920	$28,094	$8,174	41%	4	$22,859	$28,094	$5,235	23%	8	$31,535	$28,094	-$3,441	-11%
$6,900,001 - $7,300,000	2	$21,109	$29,771	$8,662	41%	2	$24,224	$29,771	$5,548	23%	9	$33,418	$29,771	-$3,646	-11%
$7,300,001 - $7,700,000	0	$22,298	$31,449	$9,150	41%	0	$25,588	$31,449	$5,860	23%	3	$35,300	$31,449	-$3,852	-11%
$7,700,001 - $8,100,000	2	$23,488	$33,126	$9,638	41%	1	$26,953	$33,126	$6,173	23%	8	$37,183	$33,126	-$4,057	-11%
$8,100,001 - $8,500,000	0	$24,677	$34,803	$10,126	41%	1	$28,318	$34,803	$6,485	23%	3	$39,066	$34,803	-$4,263	-11%
$8,500,001 - $8,900,000	0	$25,866	$36,480	$10,614	41%	5	$29,683	$36,480	$6,798	23%	5	$40,948	$36,480	-$4,468	-11%
$8,900,001 - $9,300,000	0	$27,055	$38,158	$11,102	41%	1	$31,047	$38,158	$7,110	23%	2	$42,831	$38,158	-$4,673	-11%
$9,300,001 - $9,700,000	0	$28,245	$39,835	$11,590	41%	0	$32,412	$39,835	$7,423	23%	3	$44,714	$39,835	-$4,879	-11%
$9,700,001 - $10,100,000	0	$29,434	$41,512	$12,078	41%	1	$33,777	$41,512	$7,735	23%	5	$46,596	$41,512	-$5,084	-11%
$10,100,001 - $10,500,000	0	$30,623	$43,189	$12,566	41%	1	$35,142	$43,189	$8,048	23%	2	$48,479	$43,189	-$5,290	-11%
$10,500,001 - $10,900,000	0	$31,812	$44,867	$13,054	41%	0	$36,506	$44,867	$8,360	23%	5	$50,362	$44,867	-$5,495	-11%
$10,900,001 - $11,300,000	0	$33,002	$46,544	$13,542	41%	0	$37,871	$46,544	$8,673	23%	1	$52,244	$46,544	-$5,700	-11%
$11,300,001 - $11,700,000	0	$34,191	$48,221	$14,030	41%	2	$39,236	$48,221	$8,985	23%	1	$54,127	$48,221	-$5,906	-11%
$11,700,001 - $44,700,000	4	$83,842	$118,247	$34,405	41%	5	$96,213	$118,247	$22,034	23%	22	$132,729	$118,247	-$14,482	-11%
$44,700,001 - $74,700,000	0	$221,943	$313,018	$91,075	41%	0	$254,691	$313,018	$58,327	23%	0	$351,355	$313,018	-$38,337	-11%

Attachment 4- Scenario 4 Weighted Average Minimums used for harmonisation

Residential

Land Value	Manly					Pittwater					Warringah				
Range	No. of Ratepayers	Current Rates	Proposed Rates	Difference		No. of Ratepayers	Current Rates	Proposed Rates	Difference		No. of Ratepayers	Current Rates	Proposed Rates	Difference	
				$	%				$	%				$	%
< $100,000	353	$861	$968	$107	12%	688	$932	$968	$36	4%	814	$1,023	$968	-$55	-5%
$100,001 - $200,000	926	$861	$968	$107	12%	1,282	$932	$968	$36	4%	6,083	$1,023	$968	-$55	-5%
$200,001 - $300,000	1,765	$861	$968	$107	12%	1,466	$932	$968	$36	4%	7,514	$1,023	$968	-$55	-5%
$300,001 - $400,000	2,258	$861	$968	$107	12%	1,074	$932	$968	$36	4%	3,338	$1,023	$968	-$55	-5%
$400,001 - $500,000	1,505	$861	$968	$107	12%	532	$932	$968	$36	4%	1,462	$1,023	$968	-$55	-5%
$500,001 - $600,000	1,080	$861	$968	$107	12%	509	$932	$968	$36	4%	829	$1,023	$968	-$55	-5%
$600,001 - $700,000	705	$861	$1,002	$141	16%	1,331	$1,034	$1,002	-$33	-3%	1,335	$1,064	$1,002	-$63	-6%
$700,001 - $800,000	548	$919	$1,156	$237	26%	2,462	$1,193	$1,156	-$38	-3%	4,424	$1,228	$1,156	-$73	-6%
$800,001 - $900,000	306	$1,041	$1,310	$269	26%	3,222	$1,353	$1,310	-$43	-3%	10,442	$1,392	$1,310	-$82	-6%
$900,001 - $1,000,000	424	$1,164	$1,464	$300	26%	3,495	$1,512	$1,464	-$48	-3%	6,840	$1,556	$1,464	-$92	-6%
$1,000,001 - $1,250,000	1,583	$1,378	$1,734	$356	26%	3,318	$1,790	$1,734	-$57	-3%	5,790	$1,842	$1,734	-$109	-6%
$1,250,001 - $1,500,000	2,583	$1,684	$2,119	$435	26%	1,260	$2,188	$2,119	-$69	-3%	2,944	$2,252	$2,119	-$133	-6%
$1,500,001 - $1,750,000	1,496	$1,990	$2,504	$514	26%	660	$2,586	$2,504	-$82	-3%	1,039	$2,661	$2,504	-$157	-6%
$1,750,001 - $2,000,000	796	$2,297	$2,889	$593	26%	577	$2,984	$2,889	-$94	-3%	414	$3,071	$2,889	-$181	-6%
$2,000,001 - $2,250,000	448	$2,603	$3,274	$672	26%	417	$3,381	$3,274	-$107	-3%	324	$3,480	$3,274	-$206	-6%
$2,250,001 - $2,500,000	348	$2,909	$3,660	$751	26%	312	$3,779	$3,660	-$120	-3%	212	$3,889	$3,660	-$230	-6%
$2,500,001 - $3,000,000	273	$3,368	$4,238	$869	26%	372	$4,376	$4,238	-$138	-3%	282	$4,504	$4,238	-$266	-6%
$3,000,001 - $3,500,000	98	$3,981	$5,008	$1,027	26%	222	$5,172	$5,008	-$164	-3%	174	$5,322	$5,008	-$314	-6%
$3,500,001 - $4,000,000	78	$4,593	$5,778	$1,185	26%	96	$5,967	$5,778	-$189	-3%	49	$6,141	$5,778	-$363	-6%
$4,000,001 - $4,500,000	55	$5,206	$6,549	$1,343	26%	49	$6,763	$6,549	-$214	-3%	15	$6,960	$6,549	-$411	-6%
$4,500,001 - $5,000,000	33	$5,818	$7,319	$1,501	26%	38	$7,558	$7,319	-$239	-3%	17	$7,779	$7,319	-$460	-6%
$5,000,001 - $5,500,000	3	$6,431	$8,090	$1,659	26%	27	$8,354	$8,090	-$264	-3%	9	$8,598	$8,090	-$508	-6%
$5,500,001 - $6,000,000	13	$7,043	$8,860	$1,817	26%	23	$9,150	$8,860	-$289	-3%	8	$9,417	$8,860	-$556	-6%
$6,000,001 - $6,500,000	13	$7,656	$9,631	$1,975	26%	20	$9,945	$9,631	-$315	-3%	4	$10,235	$9,631	-$605	-6%
$6,500,001 - $7,000,000	2	$8,268	$10,401	$2,133	26%	16	$10,741	$10,401	-$340	-3%	1	$11,054	$10,401	-$653	-6%
$7,000,001 - $7,500,000	2	$8,880	$11,172	$2,291	26%	42	$11,537	$11,172	-$365	-3%	3	$11,873	$11,172	-$702	-6%
$7,500,001 - $10,000,000	5	$10,718	$13,483	$2,765	26%	27	$13,923	$13,483	-$440	-3%	8	$14,330	$13,483	-$847	-6%
$10,000,001 - $12,500,000	1	$13,780	$17,335	$3,555	26%	6	$17,902	$17,335	-$566	-3%	1	$18,424	$17,335	-$1,089	-6%
$12,500,001 - $15,000,000	1	$16,842	$21,188	$4,345	26%	1	$21,880	$21,188	-$692	-3%	2	$22,518	$21,188	-$1,331	-6%
$15,000,001 - $17,500,000	1	$19,904	$25,040	$5,135	26%	1	$25,858	$25,040	-$818	-3%	2	$26,612	$25,040	-$1,572	-6%
$17,500,001 - $20,000,000	0	$22,967	$28,892	$5,925	26%	0	$29,836	$28,892	-$944	-3%	1	$30,706	$28,892	-$1,814	-6%
$20,000,001 - $22,500,000	1	$26,029	$32,744	$6,715	26%	0	$33,814	$32,744	-$1,070	-3%	1	$34,801	$32,744	-$2,056	-6%
$22,500,001 - $25,000,000	0	$29,091	$36,597	$7,506	26%	0	$37,792	$36,597	-$1,196	-3%	1	$38,895	$36,597	-$2,298	-6%
$25,000,001 - $27,500,000	0	$32,153	$40,449	$8,296	26%	0	$41,770	$40,449	-$1,321	-3%	0	$42,989	$40,449	-$2,540	-6%
$27,500,001 - $30,000,000	0	$35,216	$44,301	$9,086	26%	0	$45,748	$44,301	-$1,447	-3%	0	$47,083	$44,301	-$2,782	-6%
$30,000,001 - $32,500,000	0	$38,278	$48,154	$9,876	26%	0	$49,727	$48,154	-$1,573	-3%	0	$51,177	$48,154	-$3,024	-6%
$32,500,001 - $35,000,000	0	$41,340	$52,006	$10,666	26%	0	$53,705	$52,006	-$1,699	-3%	0	$55,272	$52,006	-$3,266	-6%
$35,000,001 - $37,500,000	0	$44,402	$55,858	$11,456	26%	1	$57,683	$55,858	-$1,825	-3%	0	$59,366	$55,858	-$3,508	-6%
$37,500,001 - $40,000,000	0	$48,934	$61,559	$12,625	26%	0	$63,570	$61,559	-$2,011	-3%	0	$65,425	$61,559	-$3,866	-6%

Business

Land Value	Manly					Pittwater					Warringah				
Range	No. of Ratepayers	Current Rates	Proposed Rates	Difference		No. of Ratepayers	Current Rates	Proposed Rates	Difference		No. of Ratepayers	Current Rates	Proposed Rates	Difference	
				$	%				$	%				$	%
< $100,000	68	$1,124	$1,260	$137	12%	602	$1,190	$1,260	$70	6%	1,009	$1,313	$1,260	-$53	-4%
$100,001 - $300,000	153	$1,124	$1,260	$137	12%	615	$1,190	$1,260	$70	6%	1,271	$1,313	$1,260	-$53	-4%
$300,001 - $500,000	47	$1,189	$1,695	$505	42%	186	$1,365	$1,695	$330	24%	295	$1,883	$1,695	-$188	-10%
$500,001 - $700,000	23	$1,784	$2,542	$758	42%	106	$2,047	$2,542	$495	24%	150	$2,824	$2,542	-$282	-10%
$700,001 - $900,000	47	$2,378	$3,389	$1,011	42%	55	$2,729	$3,389	$660	24%	198	$3,765	$3,389	-$376	-10%
$900,001 - $1,100,000	31	$2,973	$4,237	$1,264	42%	71	$3,412	$4,237	$825	24%	233	$4,707	$4,237	-$470	-10%
$1,100,001 - $1,300,000	37	$3,568	$5,084	$1,516	42%	60	$4,094	$5,084	$990	24%	178	$5,648	$5,084	-$564	-10%
$1,300,001 - $1,500,000	27	$4,162	$5,931	$1,769	42%	34	$4,777	$5,931	$1,155	24%	99	$6,589	$5,931	-$658	-10%
$1,500,001 - $1,700,000	16	$4,757	$6,779	$2,022	42%	25	$5,459	$6,779	$1,320	24%	120	$7,531	$6,779	-$752	-10%
$1,700,001 - $1,900,000	9	$5,352	$7,626	$2,274	42%	19	$6,141	$7,626	$1,485	24%	64	$8,472	$7,626	-$846	-10%
$1,900,001 - $2,100,000	4	$5,946	$8,473	$2,527	42%	19	$6,824	$8,473	$1,650	24%	46	$9,413	$8,473	-$940	-10%
$2,100,001 - $2,300,000	5	$6,541	$9,321	$2,780	42%	11	$7,506	$9,321	$1,815	24%	35	$10,355	$9,321	-$1,034	-10%
$2,300,001 - $2,500,000	5	$7,135	$10,168	$3,033	42%	15	$8,188	$10,168	$1,980	24%	23	$11,296	$10,168	-$1,128	-10%
$2,500,001 - $2,700,000	6	$7,730	$11,015	$3,285	42%	15	$8,871	$11,015	$2,145	24%	39	$12,237	$11,015	-$1,222	-10%
$2,700,001 - $2,900,000	2	$8,325	$11,863	$3,538	42%	2	$9,553	$11,863	$2,310	24%	17	$13,179	$11,863	-$1,316	-10%
$2,900,001 - $3,100,000	5	$8,919	$12,710	$3,791	42%	4	$10,235	$12,710	$2,475	24%	16	$14,120	$12,710	-$1,410	-10%
$3,100,001 - $3,300,000	3	$9,514	$13,557	$4,043	42%	4	$10,918	$13,557	$2,640	24%	20	$15,061	$13,557	-$1,504	-10%
$3,300,001 - $3,500,000	2	$10,109	$14,405	$4,296	42%	4	$11,600	$14,405	$2,805	24%	12	$16,003	$14,405	-$1,598	-10%
$3,500,001 - $3,700,000	0	$10,703	$15,252	$4,549	42%	4	$12,282	$15,252	$2,969	24%	10	$16,944	$15,252	-$1,692	-10%
$3,700,001 - $3,900,000	3	$11,298	$16,099	$4,801	42%	5	$12,965	$16,099	$3,134	24%	7	$17,885	$16,099	-$1,786	-10%
$3,900,001 - $4,100,000	1	$11,892	$16,947	$5,054	42%	2	$13,647	$16,947	$3,299	24%	11	$18,827	$16,947	-$1,880	-10%
$4,100,001 - $4,300,000	0	$12,487	$17,794	$5,307	42%	1	$14,330	$17,794	$3,464	24%	5	$19,768	$17,794	-$1,974	-10%
$4,300,001 - $4,500,000	1	$13,082	$18,641	$5,560	42%	5	$15,012	$18,641	$3,629	24%	5	$20,709	$18,641	-$2,068	-10%
$4,500,001 - $6,500,000	11	$16,352	$23,302	$6,950	42%	10	$18,765	$23,302	$4,537	24%	42	$25,887	$23,302	-$2,585	-10%
$6,500,001 - $6,900,000	0	$19,920	$28,386	$8,466	42%	4	$22,859	$28,386	$5,527	24%	8	$31,535	$28,386	-$3,149	-10%
$6,900,001 - $7,300,000	2	$21,109	$30,080	$8,971	42%	2	$24,224	$30,080	$5,856	24%	9	$33,418	$30,080	-$3,337	-10%
$7,300,001 - $7,700,000	0	$22,298	$31,775	$9,477	42%	0	$25,588	$31,775	$6,186	24%	3	$35,300	$31,775	-$3,525	-10%
$7,700,001 - $8,100,000	2	$23,488	$33,470	$9,982	42%	1	$26,953	$33,470	$6,516	24%	8	$37,183	$33,470	-$3,713	-10%
$8,100,001 - $8,500,000	0	$24,677	$35,164	$10,487	42%	1	$28,318	$35,164	$6,846	24%	3	$39,066	$35,164	-$3,901	-10%
$8,500,001 - $8,900,000	0	$25,866	$36,859	$10,993	42%	5	$29,683	$36,859	$7,176	24%	5	$40,948	$36,859	-$4,089	-10%
$8,900,001 - $9,300,000	0	$27,055	$38,554	$11,498	42%	1	$31,047	$38,554	$7,506	24%	2	$42,831	$38,554	-$4,277	-10%
$9,300,001 - $9,700,000	0	$28,245	$40,248	$12,004	42%	0	$32,412	$40,248	$7,836	24%	3	$44,714	$40,248	-$4,465	-10%
$9,700,001 - $10,100,000	0	$29,434	$41,943	$12,509	42%	1	$33,777	$41,943	$8,166	24%	5	$46,596	$41,943	-$4,653	-10%
$10,100,001 - $10,500,000	0	$30,623	$43,638	$13,015	42%	1	$35,142	$43,638	$8,496	24%	2	$48,479	$43,638	-$4,841	-10%
$10,500,001 - $10,900,000	0	$31,812	$45,332	$13,520	42%	0	$36,506	$45,332	$8,826	24%	5	$50,362	$45,332	-$5,029	-10%
$10,900,001 - $11,300,000	0	$33,002	$47,027	$14,025	42%	0	$37,871	$47,027	$9,156	24%	1	$52,244	$47,027	-$5,217	-10%
$11,300,001 - $11,700,000	0	$34,191	$48,722	$14,531	42%	2	$39,236	$48,722	$9,486	24%	1	$54,127	$48,722	-$5,406	-10%
$11,700,001 - $44,700,000	4	$83,842	$119,474	$35,632	42%	5	$96,213	$119,474	$23,261	24%	22	$132,729	$119,474	-$13,255	-10%
$44,700,001 - $74,700,000	0	$221,943	$316,266	$94,324	42%	0	$254,691	$316,266	$61,575	24%	0	$351,355	$316,266	-$35,089	-10%

Attachment 5 – Residential Impacts Summary by Scenario

RESIDENTIAL

Current		Scenario 1	Scenario 2	Scenario 3	Scenario 4
Category	Income	Category	Category	Category	Category
Ordinary-Manly	$24,726,790	Ordinary	Ordinary	Ordinary	Ordinary
Ordinary-Pittwater	$39,520,070				
Ordinary-Warringah	$78,979,984				
Total Category	$143,226,844	$143,226,844	$143,226,844	$143,226,844	$143,226,844
Minimum Rates					
Ordinary-Manly	$860.62	$860.62	$931.92	$1,022.94	$967.95
Ordinary-Pittwater	$931.92				
Ordinary-Warringah	$1,022.94				
Average Annual Rates					
Ordinary-Manly	$1,397	$1,697	$1,701	$1,707	$1,703
Ordinary-Pittwater	$1,677	$1,661	$1,647	$1,630	$1,640
Ordinary-Warringah	$1,452	$1,361	$1,366	$1,372	$1,368
Total Category	$1,497	$1,497	$1,497	$1,497	$1,497
Average Change in Annual Rates					
Ordinary-Manly		$301	$304	$310	$306
Ordinary-Pittwater		($16)	($30)	($47)	($37)
Ordinary-Warringah		($91)	($86)	($80)	($84)
Average % Change in Rates					
Ordinary-Manly		21.5%	21.8%	22.2%	21.9%
Ordinary-Pittwater		(1.0%)	(1.8%)	(2.8%)	(2.2%)
Ordinary-Warringah		(6.2%)	(5.9%)	(5.5%)	(5.8%)
Average Annual Rates Per $100,000 Land Value					
Ordinary-Manly	$143	$174	$174	$175	$174
Ordinary-Pittwater	$171	$169	$168	$166	$167
Ordinary-Warringah	$193	$181	$182	$183	$182
Total Category	$176	$176	$176	$176	$176

Note: Information in the above tables is based on current rates information and does not include the IPART rate peg adjustment that will be applied for the 2021/22 year. Actual figures for the 2021/22 year will also be impacted by changes in other factors such as changes to land valuations by the NSW Valuer General during the 2020/21 year.

RESIDENTIAL

Details		Scenario 1	Scenario 2	Scenario 3	Scenario 4
Annual change in minimum rate	Manly	$0	$71	$162	$107
	Pittwater	($71)	$0	$91	$36
	Warringah	($162)	($91)	$0	($55)
% change in ad valorem rate	Manly	30%	27%	24%	26%
	Pittwater	(0%)	(2%)	(5%)	(3%)
	Warringah	(3%)	(5%)	(8%)	(6%)
Change in numbers paying minimum	Manly	(1,274)	(704)	(128)	(489)
	Pittwater	(201)	117	954	335
	Warringah	(672)	(231)	703	45
	Overall	(2,147)	(818)	1,529	(109)
Number with annual increase >$400	Manly	7,278	6,657	4,989	6,196
	Pittwater	0	0	0	0
	Warringah	0	0	0	0
	Overall	7,278	6,657	4,989	6,196
Number with annual increase >$500	Manly	5,209	3,668	2,289	3,011
	Pittwater	0	0	0	0
	Warringah	0	0	0	0
	Overall	5,209	3,668	2,289	3,011
Overall % changes in rates	Increase	11%	19%	25%	24%
	Decrease	81%	76%	54%	76%
	No change	8%	5%	21%	0%
Annual change in average rates	Manly	$301	$304	$310	$306
	Pittwater	($16)	($30)	($47)	($37)
	Warringah	($91)	($86)	($80)	($84)

Scenarios 1 and 2 result in the greatest reduction in the number of ratepayers paying the minimum rate. These impacted ratepayers will move onto the ad valorem rate. For the most impacted ratepayers (former Manly LGA) they will then pay the ad valorem rate and these two scenarios produce the greatest increase in the ad valorem rate for former Manly LGA ratepayers (being a 30% increase under Scenario 1 and a 27% increase under Scenario 2). These scenarios also result in the greatest number of ratepayers that experience an increase in rates (under Scenario 1 7,278 ratepayers experience an increase in rates greater than $400 and under Scenario 2 6,657 experience an increase greater than $400). As such these scenarios do not produce the most fair and equitable outcome and are not recommended.

Scenario 3 has the greatest increase in ratepayers paying the minimum rate with the majority of those impacted ratepayers also paying a higher minimum rate than currently paid. As such, this represents in a shift of the rate burden to the minimum ratepayers. In addition, 128 former Manly LGA ratepayers will move off the minimum and will pay a 24% higher ad valorem rate than previously applied to former Manly LGA ad valorem ratepayers. This scenario also results in the highest increase in average rates for the most impacted ratepayers in the former Manly LGA (being a $310 average annual increase in rates).

Scenario 4 is based on a weighted average which is considered to be an appropriate approach for determining a harmonised minimum rate. Compared to Scenario 3, this scenario results in a lower increase in average rates for the most impacted ratepayers in the former Manly LGA. Compared to Scenario 3, this scenario results in a lower percentage of ratepayers receiving an increase in rates (24% for Scenario 4 vs 25% for Scenario 3). Scenario 4 results in the lowest change in the number of ratepayers paying the minimum rate (being an overall change of 109 ratepayers). For former Manly Local Government Area ratepayers, Scenario 4 produces a lower average percentage change in rates compared to Scenario 3 (being 21.9% under Scenario 4 compared to 22.2% under Scenario 3) and a lower average rate compared to Scenario 3 (being $1,703 under Scenario 4 and $1,707 under Scenario 3).

Scenario 4 is recommended as the residential rating approach, based on a weighted average minimum rate. This scenario results in 76% of ratepayers experiencing a rate reduction (compared to 54% under Scenario 3). As such, Scenario 4 produces a slightly more favourable outcome and is preferred over Scenario 3 as it is based on the sound principle of a weighted average, it produces a lower increase in average rates, it results in a lower percentage number of ratepayers receiving an increase in rates.

Scenario 4 has the least change in numbers paying the minimum rate and as such minimises the redistribution of the overall rate burden to minimum ratepayers who may also have the least capacity to pay a higher share of the rate burden. Compared to Scenario 3, Scenario 3 results in a lower number of ratepayers experiencing an increase in rates (24% under Scenario 4 compared to 25% under Scenario 3) and for the most impacted ratepayers in the former Manly Local Government Area it results in a lower increase in average rates (being $306 under Scenario 4 and $310 under Scenario 3).

Under Scenario 3 there is a lower percentage change in the ad valorem rate compared to Scenario 4 (24% versus 26%). However, under Scenario 3 there would be no reduction in the minimum rate for former Warringah minimum ratepayers. Former Warringah minimum represent 21% of our ratepayers and they have not had a reduction in their waste charge since amalgamation and have also been subject to the former Warringah special variation increases. Former Manly minimum ratepayers would be subject to a $162 increase under Scenario 3 rather than a $107 increase under Scenario 4 and likewise former Pittwater minimum ratepayers would be subject to a $91 increase rather than a $36 increase.

Scenario 4 is also preferred because it is based on a weighted average minimum rate. We believe that a weighted average more accurately achieves a fair and equitable outcome to the process of determining a harmonised minimum rate and is therefore in line with the principles of the Henry Report. It also mitigates larger potential increases to the minimum rate and ad valorem rate, retains a similar number of ratepayers on the minimum rate and is influenced by the rating structures of all three former Councils. In relation to determining an appropriate minimum rate to apply in a harmonised model, a weighted average of current minimum rates for the three former Local Government Areas will take into account the number of ratepayers (weightings/frequency) within each former Local Government Area that are currently paying the minimum rate.

Attachment 6 – Ordinary Business Impacts Summary by Scenario

ORDINARY BUSINESS (Excluding Manly CBD, Warringah Mall, Warriewood Square and Strata Storage Units)

Current		Scenario 1	Scenario 2	Scenario 3	Scenario 4
Category	Income	Category	Category	Category	Category
Ordinary-Manly-Other	$1,732,080	Ordinary	Ordinary	Ordinary	Ordinary
Ordinary-Pittwater	$4,681,080				
Ordinary-Warringah	$17,131,772				
Total Category	$23,544,931	$23,544,931	$23,544,931	$23,544,931	$23,544,931
Minimum Rates					
Ordinary-Manly	$1,123.74	$1,123.74	$1,189.82	$1,313.33	$1,260.31
Ordinary-Pittwater	$1,189.82				
Ordinary-Warringah	$1,313.33				
Average Annual Rates					
Ordinary-Manly	$3,370	$4,680	$4,662	$4,625	$4,641
Ordinary-Pittwater	$2,468	$2,910	$2,920	$2,941	$2,932
Ordinary-Warringah	$4,302	$3,923	$3,920	$3,915	$3,917
Total Category	$3,683	$3,683	$3,683	$3,683	$3,683
Average Change in Annual Rates					
Ordinary-Manly		$1,310	$1,292	$1,255	$1,272
Ordinary-Pittwater		$442	$453	$474	$465
Ordinary-Warringah		($380)	($382)	($388)	($385)
Average % Change in Rates					
Ordinary-Manly-Other		38.9%	38.3%	37.2%	37.7%
Ordinary-Pittwater		17.9%	18.3%	19.2%	18.8%
Ordinary-Warringah		(8.8%)	(8.9%)	(9.0%)	(9.0%)
Average Annual Rates Per $100,000 Land Value					
Ordinary-Manly	$325	$452	$450	$446	$448
Ordinary-Pittwater	$418	$493	$495	$498	$497
Ordinary-Warringah	$521	$475	$475	$474	$475
Total Category	$477	$477	$477	$477	$477

Note: Information in the above tables is based on current rates information and does not include the IPART rate peg adjustment that will be applied for the 2021/22 year. Actual figures for the 2021/22 year will also be impacted by changes in other factors such as changes to land valuations by the NSW Valuer General during the 2020/21 year.

ORDINARY BUSINESS (Excluding Manly CBD, Warringah Mall, Warriewood Square and Strata Storage Units)

Details		Scenario 1	Scenario 2	Scenario 3	Scenario 4
Annual change in minimum rate	Manly	$0	$66	$190	$137
	Pittwater	($66)	$0	$124	$70
	Warringah	($190)	($124)	$0	($53)
% change in ad valorem rate	Manly	46%	44%	41%	42%
	Pittwater	27%	26%	23%	24%
	Warringah	(8%)	(9%)	(11%)	(10%)
Change in numbers paying minimum	Manly	(62)	(55)	(15)	(29)
	Pittwater	(136)	(99)	(48)	(80)
	Warringah	(72)	(2)	101	64
	Overall	(270)	(156)	38	(45)
Number with annual increase >$400	Manly	272	272	271	272
	Pittwater	529	516	489	502
	Warringah	0	0	0	0
	Overall	801	788	760	774
Number with annual increase >$500	Manly	271	270	262	264
	Pittwater	468	457	417	430
	Warringah	0	0	0	0
	Overall	739	727	679	694
Overall % changes in rates	Increase	17%	21%	38%	38%
	Decrease	79%	62%	28%	62%
	No change	4%	17%	34%	0%
Annual change in average rates	Manly	$1,310	$1,292	$1,255	$1,272
	Pittwater	$442	$453	$474	$465
	Warringah	($380)	($382)	($388)	($385)

Scenarios 1 and 2 result in the greatest reduction in the number of ratepayers paying the minimum rate (Scenario 1 shows a reduction of 270 ratepayers paying the minimum and Scenario 1 shows a reduction of 156). These impacted ratepayers will move onto the ad valorem rate. For the most impacted ratepayers (being the former Manly and former Pittwater Local Government Areas) they will then pay the ad valorem rate and these two scenarios produce the greatest increase in the ad valorem rate for former Manly and former Pittwater ratepayers (Scenario 1 results in a 46% increase in the ad valorem rate for former Manly ratepayers and a 27% increase for former Pittwater ratepayers. Scenario 2 results in a 44% increase for former Manly ratepayers and a 26% increase for former Pittwater ratepayers). This represents a shifting of the rates burden to these former minimum ratepayers.

Scenarios 1 and 2 also result in the greatest number of ratepayers that experience an increase in annual rates greater than $400 (being 801 ratepayers for Scenario 1 and 788 ratepayers for Scenario 2). These scenarios also result in the greatest increase in average rates for former Manly Local Government Area ratepayers (being an increase of $1,310 under Scenario 1 and an increase of $1,292 under Scenario 2). As such these scenarios do not produce the most fair and equitable outcome and are not recommended.

Scenario 3 has the greatest overall increase in ratepayers paying the minimum rate (an increase of 38 with an increase of 101 ratepayers in the former Warringah Local Government Area paying the minimum, however this is offset by reductions of 15 in former Manly and 48 in former Pittwater). In addition, as stated above there is a reduction in the number of ratepayers paying the minimum rate in former Manly and former Pittwater and these impacted ratepayers will be paying higher ad valorem rates than previously applied in their Local Government Areas.

Under Scenario 3 there is a lower percentage change in the ad valorem rate compared to Scenario 4 (41% versus 42%). However, under Scenario 3 there would be no reduction in the minimum rate for former Warringah minimum ratepayers. Former Warringah minimum represent 62% of our ordinary business ratepayers and they have been subject to the former Warringah special variation increases. Former Manly minimum ratepayers would be subject to a $195 increase under Scenario 3 rather than a $137 increase under Scenario 4 and likewise former Pittwater minimum ratepayers would be subject to a $124 increase rather than a $70 increase.

Scenario 4 is based on a weighted average which considered to be an appropriate approach for determining a harmonised minimum rate. Compared to Scenario 3, this scenario results in a higher percentage of ratepayers receiving a reduction in rates (62% vs 28%). Compared to Scenario 3, this scenario results in a lower annual change in the average rate for the 1,897 former Pittwater Local Government Area ratepayers ($465 vs $474) and a higher increase in the annual change in average rates for the 514 former Manly LGA ratepayers ($1,272 vs $1,255). For the 1,897 former Pittwater Local Government Area ratepayers, Scenario 4 produces a lower average percentage change in rates compared to Scenario 3 (being 18.8% under Scenario 4 compared to 19.2% under Scenario 3e) and a lower average rate compared to Scenario 3 (being $2,932 under Scenario 4 and $2,941 under Scenario 3).

As such, whilst both Scenario 3 and Scenario 4 have their merits, Scenario 4 produces a slightly more favourable outcome for the majority of ratepayers and is preferred over Scenario 3 as it is based on the sound principle of a weighted average. In relation to determining an appropriate minimum rate to apply in a harmonised model, a weighted average of current minimum rates for the three former Local Government Areas will take into account the number of ratepayers (weightings/frequency) within each former Local Government Area that are currently paying the minimum rate. We believe that a weighted average more accurately achieves a fair and equitable outcome to the process of determining a harmonised minimum rate and is therefore in line with the principles of the Henry Report.

Attachment 7 – Rating Structure by Scenario

RATING STRUCTURE - CATEGORIES				
Current	Scenario 1	Scenario 2	Scenario 3	Scenario 4
RESIDENTIAL				
Ordinary-Manly Ordinary-Pittwater Ordinary-Warringah	Ordinary	Ordinary	Ordinary	Ordinary
BUSINESS				
Ordinary-Business - Manly - Other Ordinary-Business - Pittwater Ordinary-Business - Warringah	Ordinary	Ordinary	Ordinary	Ordinary
Sub-categories				
Ordinary Business - Manly CBD	As Below[1]	As Below[1]	As Below[1]	As Below[1]
Ordinary Business - Warriewood Square	As Below[2]	As Below[2]	As Below[2]	As Below[2]
Ordinary Business - Warringah Mall	No Change	No Change	No Change	No Change
Ordinary Business - Strata Storage Units	No Change	No Change	No Change	No Change
Special Rates				
Special - Manly Business Centre Improvement	No Change	No Change	No Change	No Change
Special - Balgowlah Business Centre Improvement	No Change	No Change	No Change	No Change
FARMLAND				
Farmland	As Below[3]	As Below[3]	As Below[3]	As Below[3]

[1]There is no change to the Rates collected from this sub-category. The minimum will be set in line with the proposed ordinary business category, consistent with current practice.

[2]The existing business sub-category Warriewood Square be levied on the greater of their existing rate under the existing structure (plus the IPART rate peg as determined for the 2021/22 financial year) or 10% more than the ad valorem rate for the business rating category (plus the IPART rate peg as determined for the 2021/22 financial year).

[3]There is no change to the Rates collected from this sub-category. The minimum will be set in line with the proposed ordinary residential category, consistent with current practice.

Attachment 8 - Northern Beaches socio-economic analysis and rates affordability

When preparing the Long Term Financial Plan, many factors are taken into consideration and a vast array of research and statistics are analysed to forecast the likely revenue that will be available to meet the community's long term objectives. The community's capacity and willingness to pay rates is an important consideration when determining a rating structure, with the majority of Council's income raised through rates and annual charges.

The following analysis assists in undertaking this assessment of the community's capacity and willingness to pay rates.

Residential properties

In the 2020/21 financial year, there are 95,662 properties across Northern Beaches Council rated as 'Residential'. These properties include single dwellings, social housing, and multi-unit dwellings.

Housing tenure

In Northern Beaches, 67% of households were purchasing or fully owned their home, 22.9% were renting privately, and 1.7% were in social housing in 2016 (ABS). Home ownership is notably higher on the Northern Beaches compared to Greater Sydney where 59% of households are purchasing or fully owned their home.

The median weekly mortgage repayment across the Northern Beaches was $646 and the median weekly rent was $565[1].

Household income

According to the 2016 Census the median weekly income of households across the Northern Beaches was $2,178 which was $428 more than the Greater Sydney area.

Employment Status

In June 2020 Northern Beaches had an unemployment rate of 4.3% (6,456 people), lower than the Greater Sydney rate of 5.0%[2].

These rates have been impacted by the COVID-19 pandemic. By comparison, the unemployment rate 12 months prior in June 2019 was 2.7% (4,199 people), compared to 4.2% in Greater Sydney.

Index of Relative Socio-Economic Disadvantage (IRSED)

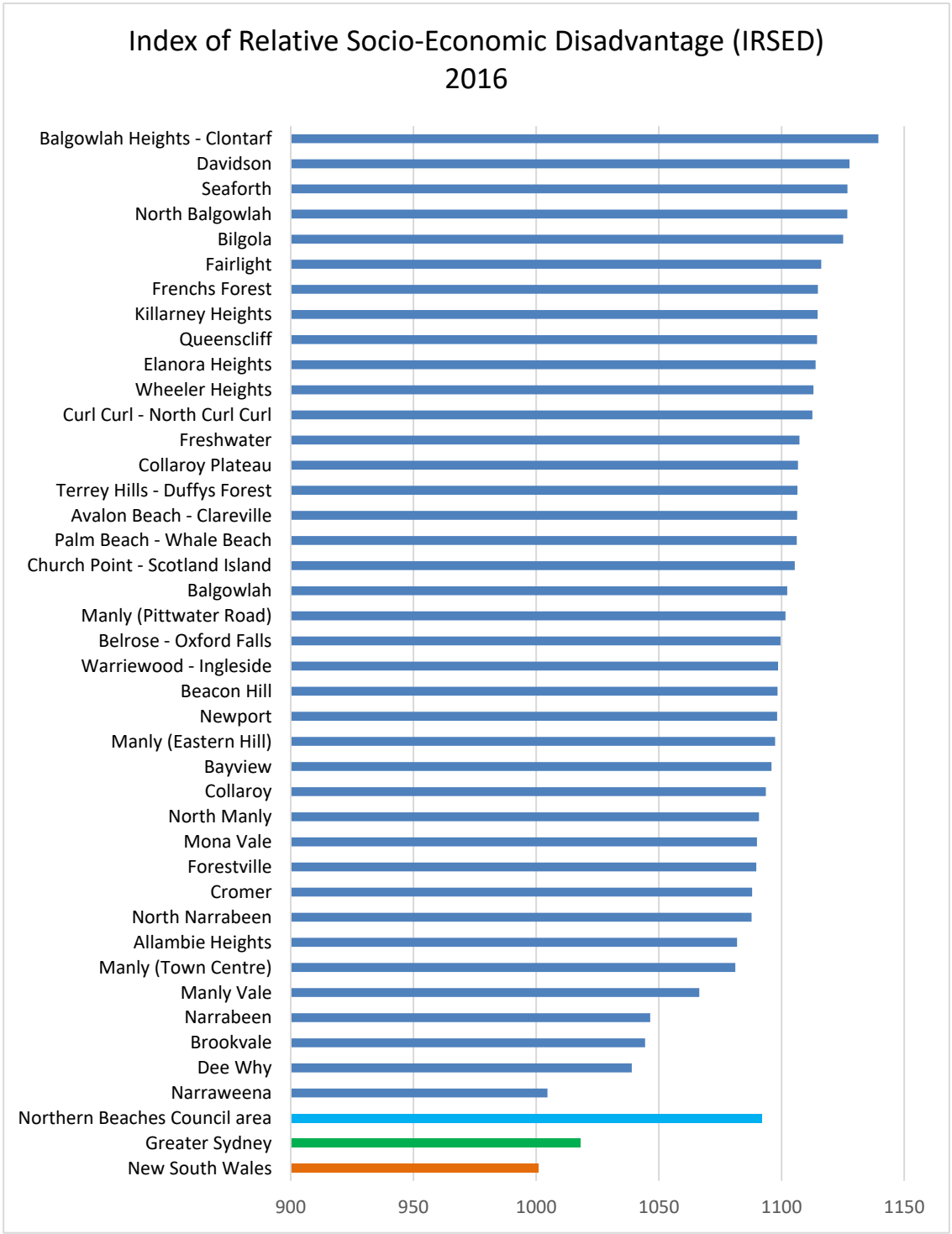
The Index of Relative Socio-Economic Disadvantage (IRSED) is based on the 2016 Census and is useful in identifying geographic areas that are relatively disadvantaged. The index is derived from attributes that reflect disadvantage such as low income, low educational attainment, high unemployment, and jobs in relatively unskilled occupations, and is useful in identifying geographic areas that are relatively disadvantaged.

[1] Source: Australian Bureau of Statistics, Census of Population and Housing 2016
https://quickstats.censusdata.abs.gov.au/census_services/getproduct/census/2016/quickstat/LGA15990?opendocument
[2] Source: National Skills Commission, Small Area Labour Markets, June quarter 2020
https://lmip.gov.au/default.aspx?LMIP/Downloads/SmallAreaLabourMarketsSALM/Estimates

An area with an IRSED of 1,000 is considered average while a lower score indicates that the area is experiencing more disadvantage.

The IRSED for the Northern Beaches is higher than the average at 1,092. This indicates relatively lower levels of socio-economic disadvantage as compared to other Local Government Areas.

The IRSED index by suburb is outlined below. Whilst there is some variation across the LGA, no areas fall below 1000.



* Source: Australian Bureau of Statistics, Census of Population and Housing 2016. Compiled and presented in profile.id https://home.id.com.au

Outstanding rates and annual charges
On 30 June 2020, 4.12 per cent of rates and annual charges levied remained outstanding. While the collection rate was somewhat impacted by the COVID-19 pandemic, this remains well under the industry benchmark of 5 per cent. This is an important consideration in setting options for funding within this plan and is one of the indicators of our ratepayers' capacity and willingness to pay for the services of the Council.

Financial hardship and concessions

Council understands that individual ratepayers may experience financial hardship and has options available to provide support through the Rates and Annual Charges Hardship Policy.

Concessions are also available to eligible pensioners.

ATTACHMENT BOOKLET 2

ORDINARY COUNCIL MEETING

TUESDAY 23 MARCH 2021

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Community and Stakeholder Engagement Report

Community Centres Strategy (Stage 2 of 2)

Impact level: One

Report date: 01 February 2020

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1. Summary[1]

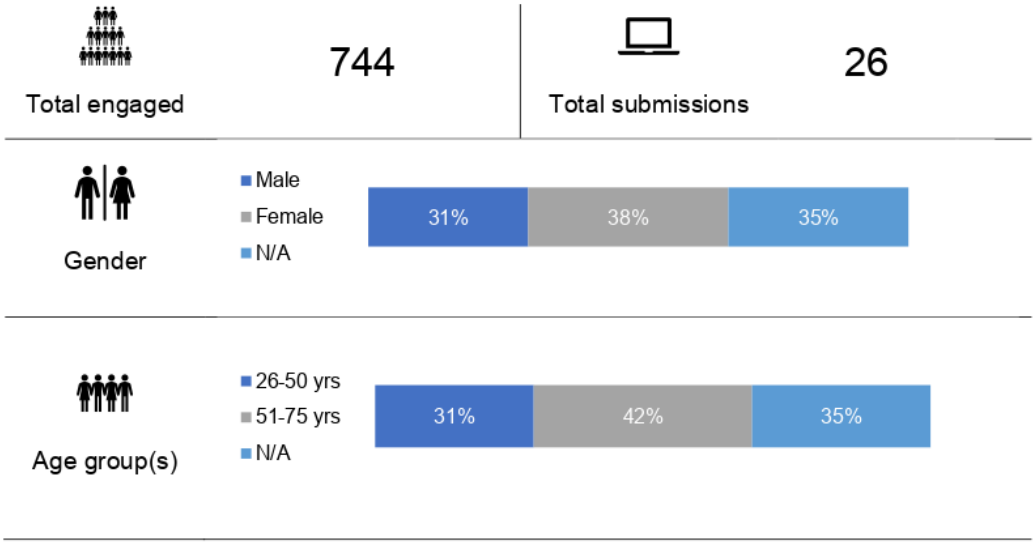
Community Centre Strategy	
Impact Level	1
Stage(s)	2 of 2 stages
Report Period	25 October 2019 until 8 December 2019
Version	1.0
Status	Draft
Related Projects	Local Strategic Planning Statement – Towards 2040

This report outlines the community and stakeholder engagement conducted as part of the Community Centres Policy and Strategy project. The consultation period documented is from 25 October until 8 December 2019[2]

The reports content reflects the insights of 26 participating community members and stakeholders, including community groups and resident groups.

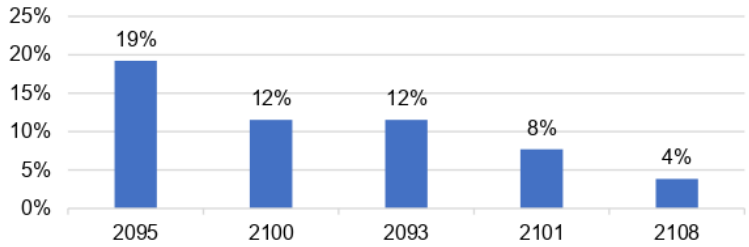
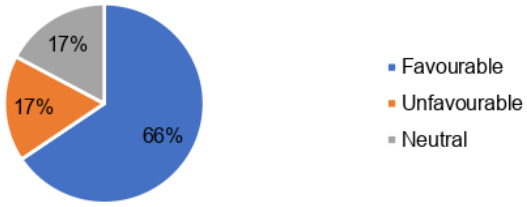
All direct quotes in this report are from excerpts of engagement records and the individuals provided permission.

1.1. Who we engaged[3]



[1] Community and stakeholder views contained in this report do not necessarily reflect the views of the Northern Beaches Council or indicate a commitment to a particular course of action.

[2] Exhibition period extended until 8 December 2019.
[3] No demographic data was captured for respondents who contributed feedback through online engagement

Postcode(s)[4]	
Sentiment[5]	
Feedback themes	Locations Accessibility Strategic Directions Population forecasts Ageing Facilities Guiding Principles Marketing Space needed in Dee Why, Brookvale, Balgowlah, Manly and Mona Vale Cultural Facilities History/heritage Indigenous Heritage Indoor Sport

1.2. How we engaged

Have Your Say	Visitors: 744	Visits: 905	Av. time onsite: 1m32s
Interactive document	Contributors: 26		Contributions: 26
Social media	Post: 2 (1 Facebook /1 Linked in)		Reach: 17,593 / 1319 Clicks: 237/ 44

[4] Top five results identified from 12 postcodes 31% of respondents did not provide a postcode.
[5] In relation to agreement with the Guiding principles set out in the Draft Strategy

Print media and collateral	Manly Daily: 5 ads, 1 editorial	Distribution: 236,000
	Pittwater Life: 1 editorial	Distribution: 32,000
	Peninsula Living (south ed.): 1 advert	Distribution: 57,000
	Collateral availability: Customer Service and Community Centres	Number: 4
		Number: 4
EDM(s)[6]	Community Engagement newsletter: 3	Distribution: 20,000
	Council eNews: 1	Distribution: 70,000
	Stakeholder email: 2	Distribution: 41

2. Background

This report outlines the community and stakeholder engagement conducted as part of stage two.

The Community Centres Policy and Strategy (Draft) project commenced in July 2018 and reported to Council on 22nd October 2019. Council voted to have the Policy and Strategy go on public exhibition to gain community feedback on the findings and recommendations.

The documents and attachments were available for the community to view and give feedback on from 25 October 2019 through to 8 December 2019.

3. Engagement approach

Community Centres Policy and Strategy community engagement was planned, implemented and reported in accordance with Council's Community Engagement Matrix (2017). A documented engagement methodology is outlined in the Community Centres Strategy Community and Stakeholder Engagement Plan (October 2019).

The engagement approach gave consistent and accessible information and asked a uniform set of questions of participants in all activities. Results provide responses across a spectrum of demographics, expertise, experience and understanding of our local government area.

3.1. Engagement objective(s)

- Provide accessible information so community and stakeholders can participate in a meaningful way (inform)
- Build community and stakeholder awareness of participation activities (inform)
- Seek out and facilitate the involvement of those affected by or interested in a project (involve)

3.2. Engagement methodology

The community and stakeholder engagement for the Community Centres Policy and Strategy was conducted over a six-week period, from 25 October 2019 until 8 December

[6] Electronic direct mail

2019. It consisted of a series of activities that provided opportunities and platforms for community members and stakeholders to contribute.

This report represents what Council has heard as accurately, comprehensively and transparently as possible by using consistent quantitative and qualitative analysis techniques.

The project's impact level one (1) Community and Stakeholder Engagement Plan was devised on a two (2) stage approach:

- Stage 1:
  - A needs analysis identified challenges and opportunities for existing community centres in the Northern Beaches LGA. The analysis included a literature review, demographic analysis, existing community centres condition assessment, community engagement and a benchmark analysis.
- Stage 2:
  - Raise awareness of the Strategy (draft), Action Plan and Policy
  - Inform via Council Agenda notification to engaged participants. 25-29 October 2019
  - Provide key stakeholders, users / hirers and community with print and online access to the Strategy (draft), Action Plan and Policy
  - Exhibit the documents 28 Days + (25 Oct - 1 Dec 2019)
  - Provide online opportunities for stakeholders and community to comment on the Strategy (draft) Action Plan and Policy
  - Seek feedback on the 8 Strategic Directions within the Strategy (draft) - seek understanding Agree - Disagree
  - Seek feedback on the Action Plan (Actions x18 aligned to each Strategy x8) by Area
  - Seek feedback to understand if the Strategy (draft) and Action Plan have addressed the issues and needs identified.

3.3. Engaging with hard to reach communities

Lack of access to information or activities is a key barrier in engaging our 'hard to reach' communities. This projects' approach took engagement to community, rather than expecting community to come to Council.

Working with liaisons for these groups i.e. young people, multicultural and Indigenous communities, provided the opportunity to engage key community members and utilise their networks to share information, and increase project exposure and awareness.

3.4. Acknowledgements

Thank you to the 26 Northern Beaches community members and stakeholders who shared their time, expertise, views and anecdotes.

We recognise this is one of many engagements that Northern Beaches community members and stakeholders have participated in. We also acknowledge the support of staff throughout the engagement period.

3.5. Engagement activities

Engagement activity	Overview
Have Your Say (online)	Your Say Northern Beaches was used to conduct online engagement. It provided a portal for users to visit, find information to support their engagement and offer feedback. 744 visitors viewed the project page 905 times. Average time onsite was 1.32sec.
Form(s)	The forms design provided participants with an opportunity to communicate their thoughts on the proposed strategic directions, action plans and locations for district and regional community centres. 26 forms received validated the findings of the strategy. A copy of the feedback form is available in the report appendices
Social media	Two posts published on Facebook and one on Linked In 19 November. Key analytics include a total reach of 18,912, with an average of 1.5% click through rate. 246 reactions.
Print media	Use of five ads and one media release (resulting in editorial) to the Manly Daily, Pittwater Life and Peninsula Living provided large distribution scope to raise project awareness and community interest.
Electronic direct mail (EDMs)	Project was included in three Northern Beaches Community Engagement Newsletters. With a distribution list of over 20,000, this activity increased awareness and drove traffic to the project landing-page, essential documentation and engagement tools. Council also sent two direct emails to approximately 41 insert number community members.

4. Findings[7]

Theme	Commentary
Locations/Accessibility	Feedback supports findings on lack of space in key, central locations such as Dee Why, Brookvale and Balgowlah; Mona Vale Memorial Hall needs additional space. Access to online bookings/payments and searching availability needed.
Population Estimates	Population estimates were queried for both Mona Vale and Frenchs Forest Planning Catchment Areas. The figures for the Mona Vale area included the original forecasts for Ingleside Planning Precinct proposal, and the Frenchs Forest figures did

[7] Note: This analysis does not include any 'late' feedback received after the advertised closing date for consultation.

Theme	Commentary
	not include the Frenchs Forest Hospital Precinct population forecasts. *In 2020 the population figures for the proposed Ingleside precinct have been revised and Frenchs Forest Health Precinct data now included. In late 2020 all population forecasts for the Strategy were updated with data from **id demographics.**
Strategic Directions	Feedback confirms the findings of the study, including upgrading of ageing buildings, ensuring affordability, history and memorabilia.
Indoor Sport	Unmet need for indoor sport does impact on community centres that have sports halls, but is out of scope for this study. This matter will be addressed by a project led by Parks and Recreation in 2021/22.
Cultural Facilities	More art spaces, galleries, music and performance venues. These matters are addressed in the Arts and Culture Strategy.
Keeping smaller centres	The Strategy does recognise the value of the variety and need for local smaller centres across the Northern Beaches.
Upgrades	Strategy recognises that the user requirements of heating and cooling needs addressing across the portfolio of ageing community centres.

5. Questions and responses

Question	Response
'The former Manly Council Chamber is not mentioned in this document. Why not?'	Manly Town Hall remains as a Council administrative building and Customer Service Centre. The study specifically addresses the multi-use community centres listed. Since the Strategy was developed, the Meeting Rooms at Manly Town Hall have become available for hire after hours to meet some needs, but with additional Conditions of Hire. The strategy has clearly identified a lack of space for the community to hire in central Manly.
'Why is Child Safety not part of the Guiding Principles?'	Child safety requirements are 'out of scope' for this project'. This is covered in the operational Terms and Conditions of Hire for all community centres, with specific requirements for those groups this is applicable too.

6. Conclusion(s)

Feedback collected through the engagement process identified several recurring themes. The results of the engagement process indicated that the findings are supported by the community groups and wider public's view and needs.

7. Full summary of community and stakeholder responses

(The information in the 'Key Themes/Comments' is exact extract as inputted by the community participants)

Key Themes/ Comments	Responses
Locations Community centre space in Brookvale	The current rooms at Brookvale Community Centre are not meeting the community's needs now and for the future. The Strategy has already identified the need for a district facility in central Brookvale to replace the existing community centre
The plans for Dee Why and Brookvale seem reasonable Dee Why Public School – request to explore possible joint use of new facilities	The Local Strategic Planning Statement identifies Brookvale as an employment and innovation centre...."A new town centre activity-point outside the mall could include civic and cultural functions and a multi-use community facility, incorporating co-working or economic development spaces. Dee Why has been identified as the location for a regional facility on the Northern Beaches. The Dee Why/Brookvale Planning area has adequate gross floor space but the spaces are in the wrong location, needing major upgrades, and too small and fragmented. Noted, this is in line with Strategy 8.1
Please make sure you keep small centres such as North Balgowlah community centre. The kids can go here straight after school ....to engage in after school activities. If small centres are closed it makes it harder for working parents. Also the play groups in these community centres are vital for mental health of many parents who rely on just walking to local centres. We do not need fancy facilities in local areas just clean basic rooms to meet with small modern kitchens and modern toilet facilities. Yes it's great to see larger centres planned also.	The Strategy identifies that the current portfolio of a number of smaller centres and a few larger complexes provide adequate gross floor space as per the population. The feedback from the consultation confirms the value of the centres by the community. More floor space is needed, the centres need to be modern and accessible, in central locations to meet future needs of the Northern Beaches population. North Balgowlah Community Centre is a well utilised community centre but does have constraints on its use and impact on the community, and therefore it's use is limited. The building is closely surrounded by residential properties, has limited on street parking, and is an ageing and inaccessible building requiring significant upgrades. The Action Plan does identify that a better outcome for the community would be to upgrade the nearby Seaforth Community Centre to meet the future needs in this area for multi-use community space. There are no plans for this project and this is concept only.
Do not fill any more green spaces with buildings	Noted. There are no plans to build on green spaces.

Key Themes/ Comments	Responses
Mona Vale district community centre should be integrated into the plans for the arts space and gallery in the former civic centre. this could be achieved with improvements to the existing memorial hall.	The integration of the Mona Vale Memorial hall with the new art space is already being considered. There are also plans for the upgrading of the hall to modernise and increase internal space available for the community.
… concerned with the low level priority given to Elanora Heights Community Centre. This centre operates as a preschool, along with a few other uses. … no mention of any future planning around supporting preschool as the major hirer. The preschool has been there for over 50 years. It is suffering from ongoing time constraints as a full pack away centre and lack of storage for preschool equipment. … the building is in desperate need of external painting, paint is flaking off the doors and hand railings. Concrete paving/footpaths are uneven and lifting in sections… I would love to see the facility be dedicated to a full-time preschool.	Comments on each community centre are in the Action Plan. There are no plans to change the way Elanora Heights Community Centre is used. Council supports the ongoing use of this centre by the Elanora Preschool, in conjunction with other user groups in the community. Elanora Heights Community Centre will remain as a multi-use facility for all groups in the community, including the Pre School. There is no alternate community centre in Elanora, and therefore no plans for this centre to become a stand-alone Preschool facility. It is in the Action Plan to investigate improved storage options for the Pre School and other groups at this site, as well as ongoing maintenance and upgrades for the centre. There are a number of community based kindergartens operating and packing away each day, from Council's multi use community centres.
Accessibility Accessibility issue at the Tramshed Arts and Community Centre… there is no place to stop close to entry of the building to drop off or pick up people using walkers or wheelchairs.	Feedback noted and staff will investigate solutions.
Included in the Guiding Principles should be a principle relating to ease of booking the facilities online. This goes to accessibility.	This is covered by 'accessible' in Strategy 7, on Page 37. In the 2020 and 2021 Council is implementing a new online bookings and payments system. This will greatly improve the customer experience and ease of booking a community centre.
Cultural facilities Support for music and performance groups by providing a new performance space with good acoustics for rehearsal, teaching and performance. An inclusive, diverse, vibrant, local writers' centre. Need for more public galleries for artists to exhibit their works Use of Government owned property for creative use and/or exhibition spaces More arts centres - similar to the one at Tramshed, Narrabeen.	Cultural facilities have been addressed in the Arts & Creativity Strategy, adopted by Council on 22 October 2019. Council currently offers a range of spaces for a variety of creative activities in community centres and in dedicated arts facilities. There will be two new arts spaces developed in coming years in Avalon and Mona Vale. Council will continue to provide affordable spaces and assess the needs of the community to identify opportunities for new spaces.

Key Themes/ Comments	Responses
Indigenous Heritage Permanent space for Aboriginal culture Would also like to see permanent Indigenous artifact displays in community centres ie. Manly Arts Centre etc	Noted and amendments made to Strategy.
Population Figures 'Not quite sure re the future planning view for Mona Vale. The document shows a large expected population increase there ….' 'One of the best planning documents I've seen from council- well done - with only area of concern the expected population growth of Mona Vale not seeming to be realistic and the growth figures for Dee Why/Brookvale undercooked.' .. .'the highest population growth will be in the Mona Vale area - a 27.4 % increase in population there. This does not match the Council's data on its website'.	In the Draft Strategy the population figures for Mona Vale area included the Planned Ingleside Precinct Area. In the Draft Strategy the population growth from 2016 to 2036 was from 63,304 to 71,662. These figures have been reviewed and the Mona Vale population forecast has been amended to 5741 additional people by 2036, or 9.07% increase over 20 years. The Strategy now reflects the amended figures (id.demographics 2020). The growth in Brookvale/Dee Why planning catchment area is forecast as 'low given that much of the residential development has already taken place and growth will be largely due to intensification of density around major precincts'. (Page 39 of the Strategy)
"….the Frenchs Forest catchment projected population in the Strategy do not match the data on Council's website".	The Frenchs Forest Catchment Area projected population figures have been revised to include the Frenchs Forest Health Precinct expected growth. The figures in the Draft Strategy were 45,409, this has now been revised to 55,012, an increase of 38.65% from 2016 to 2036, with the revised population figures (id.demographics 2020).
Future Proposals/Strategic Directions Strategy 7: make each community centre unique and celebrate the history. Hang Gig posters and photographs at Manly Youth Centre, Historic Photos at the Tramshed… Strategy 7-… to display memorabilia and historical information related to each centre to create uniqueness or create uniqueness through decoration and renovation to reflect the area each centre is in.	Page 13 of the draft Strategy does address the historic importance of the centres, and gives some examples. Historic photos have already been placed at the Tramshed, Forest Community Arts Centres, and Manly Youth Centre has framed gig posters from its heyday as a well-known Australian rock venue. This will be looked at for all centres, as they all have an interesting story, relevant to historical public interest.
The former Manly Council Chambers is not mentioned in this document. Why Not?	The Strategy's focus is on Council managed community centres. This building is not a community centre, it continues as a Council administrative site and Customer Service Centre.

Key Themes/ Comments	Responses
Please consider Manly Town Hall. It's central, accessible by public transport and the first floor is very under used at the moment. I'm writing on behalf of community group Good For Manly. We represent residents in Manly Ward and further afield, through active social media and blogs.	Since the Draft Strategy was developed the Manly Town Hall Meeting Rooms (former Chambers) are now available to the community to hire after hours (not during Covid -19 pandemic). The Strategy has identified the need for more community space in central Manly. The hire of these Meeting Rooms is a short-term measure only. The long-term use will be the subject of a separate, future study, with extensive community consultation. The revised Strategy mentions Manly Town Hall as a short-term option.

I agree that Balgowlah is a major shopping/living precinct and does not currently have any council run centres. The Balgowlah Bowling Club is currently trying to establish itself as a community venue.	The Strategy has identified that Balgowlah town centre has no community facilities available to the public for hire. Council would welcome discussions with Balgowlah Bowling Club to address community centre floor space.
"Strategy 8 is of particular interest to us, given than many of the aims of your proposed Strategic Directions overlap with the aims of us as a local church (Frenchs Forest Baptist Church)".. As a church, we have commenced an evaluation of the potential uses for our existing property …. we are keen to explore the possibility of sale and relocation to the Forestville site, in a local community centre partnership at the Forestville Memorial Hall and associated buildings.	This proposal does fit with Strategy 3 – Implement 'community hubs' with the co-location and integration of existing and future community centres in areas that are accessed by the community, and Strategy 8 – Investigate management models for non-Council managed and/or owned facilities to maximise floor space available to the community. Proposals for co-location of community facilities will be considered on a case–by–case basis.
Upgrades/affordability The centres need updating with cheaper options on venue hire. They do need to be affordable. Also to provide a variety of spaces - not just large halls but smaller areas with coffee tea brekkie facilities, nice outlook and outdoor area for smaller networking meetings.	Council is constantly updating the centres, the strategy has confirmed the need for this with condition reports and feedback from the community. Council conducted a major fee review in 2018/2019, with many not-for-profit and concession rates reduced. Fees are reviewed each year, with another major review proposed for 2022.
Possibly equipped with projectors etc.	Noted, to be considered in design of future upgrades and new centres. Council has installed projectors in a number of centres, with plans to have more installed in suitable spaces during the next few years.
'Short term refurbishments don't seem to solve the major problems in these spaces like proper and effective heating which will increase	It has been identified that heating and cooling improvements are required across a number of the centres, and are part of the issues around the ageing infrastructure.

the use multifold in these spaces especially during the winter months when occupancy is low…'	Upgrades are addressed in both the Strategy and the Action Plan.
"…the Mona Vale Memorial hall does not have satisfactory floor space.… removal of the temporary stage and reinstating the hall's original stage facility".	The community engagement has confirmed the current and known need for more community space in Mona Vale central, and that the existing Mona Vale Memorial Hall is not meeting community needs and needs an upgrade. This hall has already been identified as requiring a medium upgrade to create additional, more modern space, and is in short to medium term plans.
Indoor Sport 'Curl Curl Youth & Community Centre is a basketball court next to a large no. of netball courts. The building should … have a minimum of two indoor netball courts as well as community facilities for during the week days…'	Council is aware of the need for more indoor sports centres on the Northern Beaches. In 2016 Council opened the PCYC in Dee Why, (owned by NBC but leased and managed by the PCYC). It has two state of the art indoor sport courts and additional community rooms available for hire.
Marketing/utilisation 'Good that looking at improving existing under-utilized spaces like manly senior citizens centre.' 'Marketing and bookings in this digital world could be a quick win for improving utilisation. ' 'Marketing of centres as performance venues.'	Council's evidence is that Manly Seniors Centre is already a very well utilised space seven days and evenings per week. It has a very active Seniors Club, Computer Pals group and many other hirers on a regular and casual basis. Strategy 4 in 'Our Strategic Directions' is to 'develop a marketing strategy..' for all the centres. Council is currently implementing a new online bookings and payments system that will have improved and new capability for the community to search and book available space.
Child Protection 'The reference to safety in the Guiding Principles has been dropped altogether (refer to Strategy 7). This suggests that NBC seeks to be simply the venue lessor that takes no interest and no responsibility for the activities that go on under its roof. Child safety must be built in to the Guiding Principles and the Strategic Directions.'	Community Centre hirers are required to abide by the terms and conditions of hire, which includes reference to the legal requirements for working with children.

S20. Senior Citizens Centre

Title: **Senior Citizens Centre Policy**

Policy No: **S20**

Keywords: **Seniors, Centre, Usage**

Responsible Officer: **Divisional Manager – Human Services and Facilities**

1. PURPOSE AND AUTHORITY

This policy sets out Manly Council's considered and adopted policy position with respect to the usage of Manly Senior Citizens Centre by seniors. More specifically, the policy position of Council is as follows:

1. That Council grant free usage of the Manly Senior Citizens Centre to all Senior Citizen groups of the Manly Council area.
2. That Senior Citizen groups from outside the Manly Council area continue to pay the current Senior Citizens rate as set by Council at the 1987 meeting of fees and charges.

(O.M. 19.1.88)
(Confirmed 20.10.97)

2. PRINCIPLES

The governing principles of this policy are, firstly, the need for equity and fairness as well as due recognition insofar as seniors are concerned, and, secondly, the recognition by Council that a certain priority ought to be given by Council, as respects the subject-matter of this policy, to seniors living in the Manly local government area as opposed to seniors from the wider public.

3. SCOPE

This policy applies to all Council officials (including Councillors and Council staff and consultants engaged by Council) who are involved, directly or indirectly, in decision-making (including preparatory and recommendatory decision-making) with respect to the subject-matter of this policy.

4. DEFINITIONS

See the Dictionary at the end of the Local Government Act 1993 for definitions of various terms and expressions used in this policy.

5. IMPLEMENTATION

This policy will be implemented without delay once adopted by Council. Upon adoption this policy will be entered into Council's policy register, made available online and provided to all staff and any other people directly affected by this policy.

Council and/or the General Manager may, during a civil emergency only, set aside any policy terms to ensure public safety.

6. MONITORING AND BREACHES

Regular monitoring of compliance with this policy, relevant legislation and Manly policies and procedures will be undertaken and documented by the responsible officer for this policy.

Breaches of this policy are considered to be breaches of Manly Council's Code of Conduct and therefore invoke the relevant sanctions outlined in that Code. Persons in breach of any legislation may be subject to relevant criminal action.

7. REPORTING

No specific reporting is required by this policy.

8. POLICY REVIEW

This policy is subject to regular review at a maximum interval of two (2) years.

For the purposes of carrying out and giving effect to this policy, the General Manager may from time to time prepare, adopt or vary, and otherwise issue to Council staff, guidelines and directions relating to any aspect of this policy.

Any recognised change to relevant legislation; or directives or guidelines issued by agencies including the NSW Ombudsman and the Division of Local Government; or to Manly Council's related guidelines and procedures will activate an immediate review of this policy to ensure it remains current and aligned to best practice policies.

9. RELEVANT REFERENCES AND LEGISLATION

Local Government Act 1993
Local Government (General) Regulation 2005.

10. RELEVANT COUNCIL POLICIES

Nil.

11. REVISION SCHEDULE

Minute No	Date of Issue	Action	Author	Checked by
PS53/11	2 May 2011	Periodic Review	Secretariat, Corporate Services	Manager, Administration
	June 2013	Comprehensive Review		General Counsel
PS16/14	3 March 2014	Periodic Review	OM CSS	Manager Governance

PITTWATER COUNCIL

Council Policy – No 46	**Adopted:**	**OM: 02.03.98**
	Reviewed:	**OM: 05.08.2013**
	Amended	**OM: 17.10.2011**
	Revoked	

TITLE:	**COMMUNITY CENTRES**
STRATEGY:	**BUILDING COMMUNITIES AND RECREATION MANAGEMENT**
BUSINESS UNIT:	**COMMUNITY, LIBRARY AND ECONOMIC DEVELOPMENT**
RELEVANT LEGISLATION:	**NONE**
RELATED POLICIES:	**NONE**

Objectives

To provide all residents with opportunities for social and cultural interaction (through the availability of local community space).

To ensure equitable access for all residents to community centres.

To offer diverse programs which are culturally rich and foster local identity.

To ensure that community centres are accountable to the community in the most cost effective and efficient manner.

Policy Statement

Pittwater Council, through its community centres network, is committed to offering diverse and accessible venues for meetings, cultural activities and events for the whole community.

Community centres enhance the quality of community life by encouraging participation and networking within the local community and by facilitating the development of a diverse range of activities and services, which recognise the distinct lifestyles and interests of residents.

Council will promote and market the community centres to attract maximum interest.

Council will ensure the ongoing development and implementation of fair and equitable pricing policies that facilitate access to facilities for all residents.

Council will ensure that existing facilities are attractive and appropriate for community use through ongoing maintenance and upgrading of facilities.

Community Centres Policy

Policy Statement

Northern Beaches Council Community Centres are safe, welcoming, inclusive, accessible and affordable public spaces for the whole community. They are vibrant modern facilities that support and enable programs that provide diverse opportunities for a rich social and cultural life, encouraging good health, social interaction, creativity and learning.

Council will manage and maintain community facilities that are responsive to community priorities and support community organisations through the provision of facilities at a subsidised rate, if and when available.

As public trustee and guardian of public and community assets Council will provide access for all members of the community. Council will actively pursue innovative ways to maximise the use of public and community assets. *(Community Development & Services Policy, adopted 25 May 2019)*

Council will provide an equitable and transparent framework for the management of Council's network of community centres. The operational management model will be flexible and adaptable to the changing needs of the community.

Principles

Northern Beaches Council provides community centres that are:

- Multi-purpose, flexible in form, function and management the centres are available for a range of social, recreation, community and cultural services, activities and programs
- Centrally located within strategic centres in visually prominent and accessible locations that are close to public transport
- Co-located and integrated with other community uses and facilities
- Designed to be welcoming and safe environments that are vibrant, inspiring, sustainable and flexible in nature
- Accessible and inclusive places that have universal access and cater for multiple users and people of all ages, cultures and abilities
- Managed and planned through collaboration and shared use arrangements between Council, government agencies, community groups and other stakeholders
- Supported by good governance and centre management practices that are financially sustainable and at quality and cost standards that are acceptable to the community
- Marketed to improve community awareness and access to information about community centres – locations, availability and programs
- Designed in collaboration with the community and consider the needs of all the community in the development of new facilities or upgrades
- Planned for the future in response to changing demographics and future demand
- Fulfil the requirements of the State Government and Council policies in relation to the provision of facilities and assets on community land and Crown Land, and in compliance with legislation.

Scope and application:

Northern Beaches Community Centres are multi-purpose venues for hire. They range from local small halls to larger district centres with multiple rooms and facilities. The centres are to be used for a variety of purposes and are not necessarily purpose built for specific activities.

Council provides community centres to enable organisations and individuals to offer opportunities for the public to experience a wide variety of activities. This includes community support meetings, social and recreational activities, health and well-being classes and indoor sport (where suitable), education, arts and cultural activities for all ages.

The Community Centre Policy provides a clear framework for Council and the local community to maximise the quality and effectiveness of the provision of multi-purpose community centres, contributing to the vision of the Community Strategic Plan (Shape 2028):

> *'A safe, inclusive and connected community that lives in balance with our extraordinary coastal and bushland environment.'*

The implementation of this Policy will be in accordance with the following:

- Council's community centres provide spaces for Northern Beaches residents to hire for a variety of activities and purposes that enhance community life. Centres will be vibrant, accessible and equitably support active and passive recreation.
- All community centres will be accessible - financially, socially, and physically accessible to the whole community, irrespective of age, gender and identity, to participate in social, recreation, cultural, civic, and educational community activities.
- The centres are affordable venues for hire, with a range of fees that support the most vulnerable in the community.
- Priority of allocation is for community groups and activities, not-for-profit groups and organisations.

Community Centres Management Model

The centres will be managed to maximise their current and future usage by a broad range of members of the Northern Beaches community.

Council will review regular hire arrangements on a yearly basis, to allow new and existing hirers to have equitable access to Community Centres. The annual hire process will be managed in accordance with the following:

- Previous and existing hire agreements are not guaranteed to be approved in future years, although historical use will be taken into consideration.
- When multiple requests for a centre and/or timeslot are made, the following factors will be considered and given priority when Council assesses all applications:

- Long term historical use balanced with new requests due to demographic and other impacts
- Priority is given to not-for-profit group or activity
- Capacity to pay for alternative venues
- Wide community benefit of the activity
- Alternate space available that may be more suitable for the requested use
- Nature/suitability of the activity for the space that is being requested

- Fees and charges are reviewed annually as part of the annual budget process. They will be affordable, equitable and consistent across the community centre portfolio.
- All hire fees are determined by the definition of the group/activity set out in the Terms and Conditions. Hire fees contribute to maintenance, cleaning, utilities, furniture and all operational costs involved.
- Concession and discount rates for not-for-profit organisations are available to groups and organisations, where applicable. Financial documentation will be requested to support applications for discounted rates of hire.
- Exclusive use of space within community centres is not generally supported. Due to historical use and nature of the activity there are currently some exceptions.
- Hirers are responsible for set up/pack down and delivery of their programs.

References and related documents

Refer to LEPs, planning documents, zoning regulations per centre

Northern Beaches Community Centres Terms & Conditions of Hire

Northern Beaches Community Strategic Plan – Shape 2028

Northern Beaches Community Development and Services Policy, 25 June 2019.

Northern Beaches Arts & Creativity Strategy 2019

Northern Beaches Council Delivery Program 2019 -2023, Operational Plan and Budget 2020/21

Northern Beaches Council Local Strategic Planning Statement, Towards 2040

Northern Beaches Council Social Infrastructure Study (under development)

Definitions

community centres are Council owned and managed indoor spaces hired to the community for regular or one-off events and activities. These spaces are multi-use, multi-purpose and accessible to the public. They provide spaces for social, creative, educational and recreational activities and health and/or support services for the community.

Responsible Officer

Executive Manager Community Arts & Culture

Review Date

2023 (every 4 years or as required)

Revision History

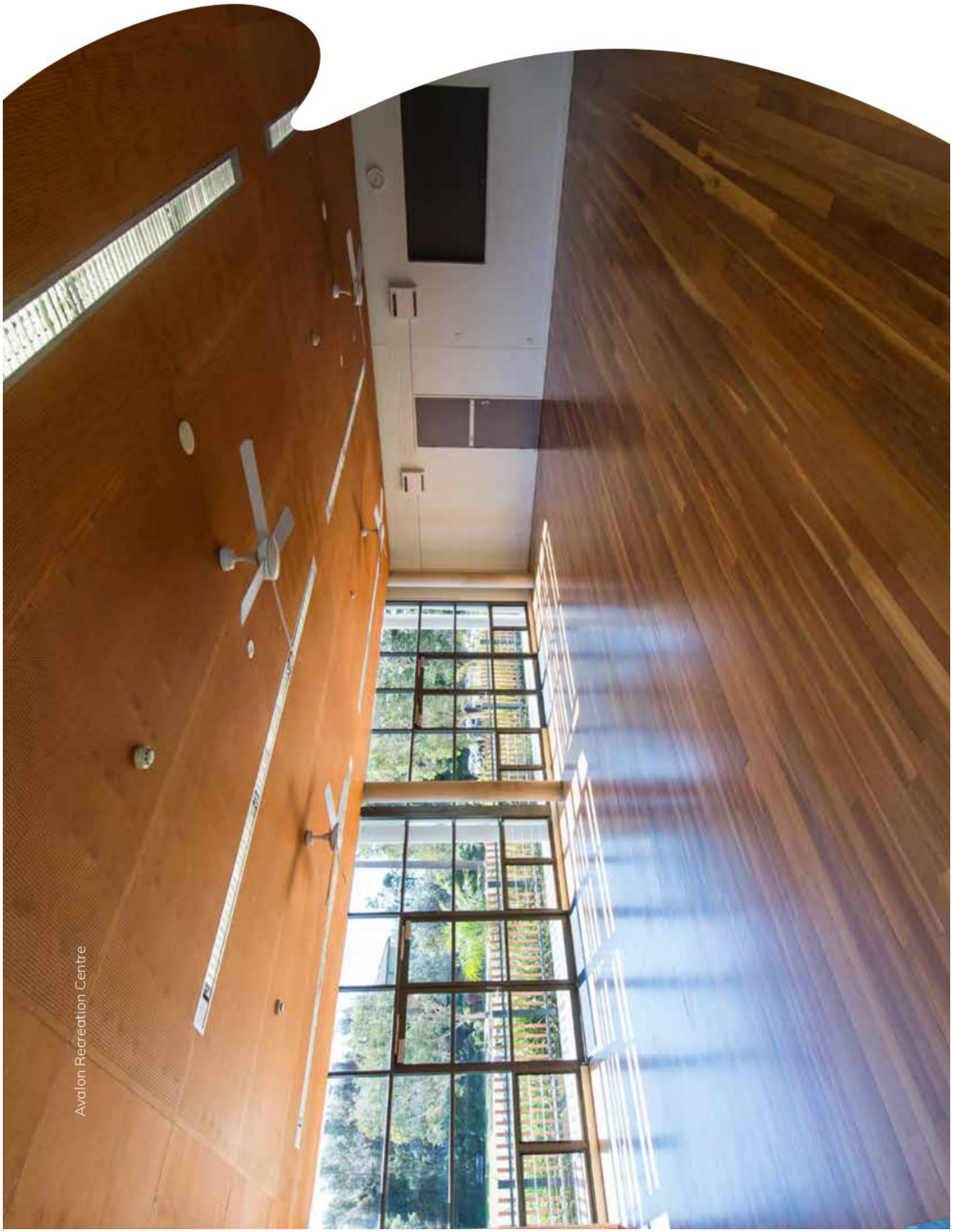
Revision	Date	Status	TRIM Ref
1	27/08/2019	First draft Community Centre Policy	2018/176443



Northern Beaches
Community Centres Strategy

March 2021

northern beaches council



Avalon Recreation Centre

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Document prepared in consultation with TAP CONSULTING. PO BOX 1714, Capalaba, QLD 4157

We acknowledge the traditional owners of this land and elders past and present. We recognise Aboriginal people as the original custodians of the Northern Beaches.



Message from the Mayor

Our community centres bring people together, creating connections and helping to build a stronger Northern Beaches community.



We are proud to provide 39 community centres across our local area and our vision for all our centres is for safe, welcoming, inclusive, accessible and affordable public spaces for the whole community.

With so many activities and programs available at our centres, including art classes, exercise classes, youth and senior programs as well as a space for community support meetings, early education for special needs children and private functions, there is always a high demand.

The community centres also provide meeting places that address social isolation for some members of our community and encourage opportunities for healthy and creative activities.

I want to thank our local community who helped shape the 20-year Community Centre Strategy.
We have listened to what you believed was working and where there were gaps. We have also heard what you want to see in the future and this Strategy captures your valuable feedback. It will now serve as Council's management framework for our community centres across the Northern Beaches.

I look forward to seeing you in one of our centres soon.

Michael Regan, Mayor

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1. Summary

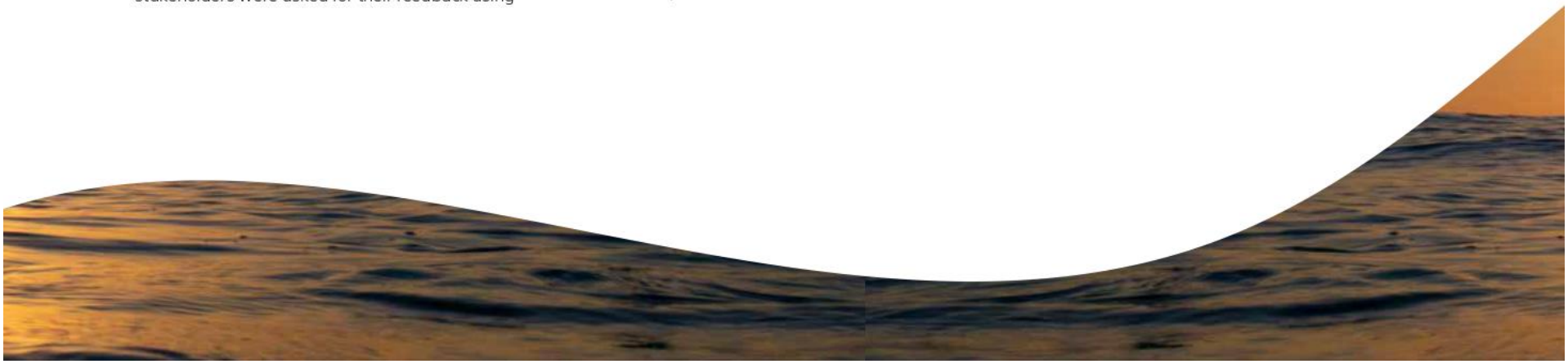
The Northern Beaches Community Centres Strategy (the Strategy) outlines our vision for a network of multipurpose centres that are attractive spaces for our community. At the core of this is accessibility, with good connections to public transport and affordable rates for hire. Council is committed to delivering inclusive community centres that embrace diversity and are available and inviting to all ages, cultures and abilities.

The Strategy brings together information from various sources to investigate the current state, identify opportunities and challenges, and outline future directions for the community centres on the Northern Beaches. A comprehensive literature review, demographic analysis, and a full assessment of all existing community centres was undertaken. A benchmark analysis also identified the current and future gaps in the provision of community centre floor space on the Northern Beaches. To ensure that the directions meet community needs and expectations, stakeholders were asked for their feedback using surveys, interviews and focus groups to investigate their perception of current and future needs and priorities. The draft Strategy was placed on public exhibition, with submissions encouraged and amendments made to the Strategy.

The Strategy has identified gaps in the availability of community centre space now and in the future throughout the Local Government Area (LGA).

The Strategy highlights a need for the provision of multipurpose community centres, particularly at a district level, with a focus on the co-location and integration of services and facilities, for improved accessibility and social participation. Strategic Directions include major refurbishments and the provision of new multipurpose community centres as part of a holistic network of centres that work together to meet a range of community needs across the Northern Beaches.

The Strategy also identifies opportunities, such as working closely with organisations that lease Council owned buildings, to close the gap in provision of multipurpose space across the area.



2. Vision Statement

Northern Beaches Council Community Centres are safe, welcoming, inclusive, accessible and affordable public spaces for the whole community. They are vibrant modern facilities that support and enable programs that provide diverse opportunities for a rich social and cultural life, encouraging good health, social interaction, creativity and learning. Community Centres are flexible in adapting to changing demographic, social and cultural needs, inspiring best practice. They are environmentally, socially and economically sustainable, and build the capacity and resilience of the community.



2.1. What is a Community Centre?

For this Strategy, community centres are indoor spaces hired by the community for regular or one-off events and activities. These spaces are multi-use, multi-purpose and accessible to the public. They provide spaces for social, creative, educational and recreational activities and health and/or support services for the community.

Council manages other facilities that are available for hire but are not multipurpose in nature and not included in this Strategy. This includes the Creative Spaces, meeting rooms in libraries and sports club buildings.

2.2. Why do we need a Strategy?

The Community Centres Strategy for the Northern Beaches is a strategic document intended to inform and assist the planning and provision of community centres. The Strategy will:

- clearly articulate the value that community centres bring to community cohesion, connections and wellbeing
- provide an evidence-based framework and guide for the future planning, provision and investment in Council owned community centres over the next 20 years
- enable Council to set priorities and recommendations for future community centre development based on strong evidence and analysis that can support business cases
- provide a strong basis from which to advocate/lobby state and federal governments for funding and grants
- position Council to pursue collaborative partnerships with other levels of government, the private sector and community groups
- enable Council to maximise the benefits from its existing investments in community infrastructure assets
- provide a consistent organisation wide approach, which will result in closer integration of service planning, capital works programming and asset management
- inform Council's planning policies (e.g. Local Strategic Planning Statement and Local Environmental Plans) for future development and better service delivery within the LGA.

2.3. Strategic Context

State Context

- The New South Wales government introduced the Greater Sydney Region Plan: A Metropolis of Three Cities in 2018 to set a 40-year vision for Greater Sydney. The plan aligns land use, transport and infrastructure planning to reshape Greater Sydney as three connected cities.
- District Plans, including a North District Plan, will manage and guide implementation of this vision over the next 20 years.

Northern Beaches Local Context

- The North District Plan sets out planning priorities, objectives and actions in the assessment of planning proposals, community strategic plans and policies. The Northern Beaches Local Strategic Planning Statement, 'Towards 2040', aligns with the North District Plan and Greater Sydney Region Plan, and acts as the bridge between strategic land use planning at the district level and local statutory planning.
- The Local Strategic Planning Statement Towards 2040 (LSPS) will guide

land use planning for the Northern Beaches over the next 20 years. The LSPS supports the '30 minute city' planning concept.* It will inform development of Council's new Local Environment Plan (LEP) and Development Control Plan (DCP), broader Council policies and strategies, and the assessment of planning proposals for changes to Council's planning controls. Key directions and priorities that align with this strategy:

- Priority 9 - Infrastructure delivered with employment and housing growth
- Priority 11 - Community facilities and services that meet changing community needs
- Priority 12 - An inclusive, healthy, safe and socially connected community
- Priority 14 - A community enriched through the arts and connected through creativity
- Priority 17 - Centres and neighbourhoods designed to reflect local character and lifestyle

***30-minute city**

A '30-minute city' is a planning concept that supports planning for a city in which people can easily access the places they need to visit each day within 30 minutes by public transport, walking or cycling from where they live.

Ethos Urban, Frenchs Forest Social Infrastructure Study, Northern Beaches Council, 2019:

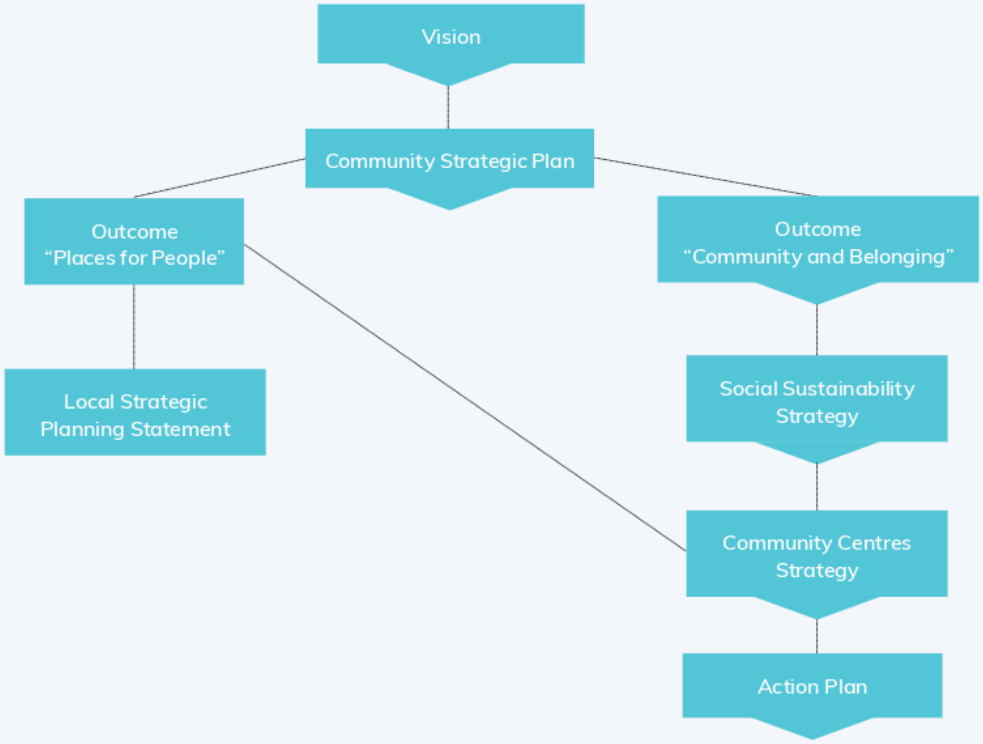
> "Northern Beaches Council plays a key role in providing social infrastructure to support and sustain liveability, community health, wellbeing and participation. Community facilities....provide places and spaces for people to meet, connect, create and learn. They also provide an important touchpoint for Council to connect with the community through the delivery of services and amenities."

2.4 Northern Beaches Council - Plan Structure

The community centre vision is aligned with the CSP strategic community outcomes:

Places for People – We aspire to create welcoming, accessible and affordable private and public places that foster good health and social interaction

Community and Belonging - We aspire to care for everyone in the community, making sure that people feel safe, supported, included and have diverse opportunities for a rich cultural and social life.



ATTACHMENT 5
Community Centres Strategy, amended
ITEM NO. 10.1 - 23 MARCH 2021

northern beaches council

3. Background

Cities worldwide, including large local government areas (LGA) such as the Northern Beaches, are in a process of transformation as they adapt to increasing globalisation and changing economic conditions.

The Northern Beaches community is changing with new development earmarked for the peninsula (Dee Why, Brookvale and Frenchs Forest) driven by growth and demographic change. As a community, we are still coming to terms with what these global trends mean for the local community, and how to plan most effectively for emerging community needs in a diverse and changing environment. The level of growth and change will have a direct impact on the community's needs and expectations for services and facilities now and into the future.

Council owns a large number of buildings (including the 39 community centres) across the Northern Beaches, which it has acquired and built at various times over the past century.

The former Councils built the majority of the centres prior to amalgamation (Warringah, Manly and Pittwater) in response to the needs of and in conjunction with community groups. There are significant variances in the condition of centres. Some of these buildings are no longer able to respond to contemporary needs, activities, and population changes due to the increasing level of maintenance required.



3.1. The Value of Community Centres

Community Centres on the Northern Beaches contribute to the wellbeing and resilience of the community.

Community centres support social sustainability through the provision of space for activities that enhance social connectedness, reduce loneliness and increase physical activity. These activities result in improved general health, mental health, personal and social well-being for all in the community. The variety of opportunities include group activities, social support, public meetings, health and wellbeing classes, private family functions, education, sport, art and many other activities. The community centres are increasingly of value to all in the community as the demographic profiles change; we become an increasingly older population and as more housing becomes medium to high density.

On the Northern Beaches people from all cultures and socio-economic levels value community space in their local and wider community. An example of this is senior's participating in social, health and learning activities, as possibly the largest demographic age group who attend community centre activities.

The outcomes of seniors' involvement in community centre activities include improved mental and physical wellbeing, reducing social isolation, and providing opportunities for friendship and support following retirement.

Cultural groups have a need for community space to hold celebrations specific to their family and cultural needs. A common request from some of the Northern Beaches cultural groups is for large and affordable venues in central locations to hold their unique events. These events are crucial to maintaining the social and cultural fabric of their community.

As people are increasingly living in medium to high-density accommodation, there is an increased need for space to hold family celebrations, especially children's parties as an affordable indoor/outdoor option.



Ukelele group at Forestville Seniors Centre

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Community centres reflect history, heritage and cultural stories of the Northern Beaches

On the Northern Beaches, each individual community centre has its own unique origin and history, reflecting the cultural heritage arising from community needs and societal changes of the area.

These stories and history are highly valued by the community, particularly long-term users of the Centres. The community centres are not just buildings, they are places that they feel connected to.

Highly valued stories that relate to the centres include:

- The Harbord Literary Institute is a heritage building, opening in 1918. Its origins are as a 'Literary Institute', and as a place for returned soldiers and locals to meet and socialise. Today it continues to operate as a well-loved community centre with a community library and a community kindergarten.
- Oxford Falls Peace Park was up until 1984 a 'one teacher school house' later becoming a consecrated 'Peace Park' in commemoration of the Hiroshima/Nagasaki atom bombs. It is very popular for weddings and other special celebrations.
- The Tramshed Arts & Community Centre was so named after the tram line. Narrabeen was the 'terminus' from 1913 to 1939 where the trams finished and turned around.



Berry Reserve Narrabeen - Opening of the Tram line to Narrabeen, 1913

- Manly Seniors Centre houses the Manly Seniors Club, who celebrated their 60th anniversary in 2018. Today it is a multi-use community centre, with the Senior's still a large and active Club.
- The Avalon Annexe was a dilapidated guide hall which was no longer in use. It was converted into a community hall.
- Seaforth Village Community Centre is part of the original Seaforth TAFE building and was renovated for community use as part of a bigger project for aged care, opening in 2017.
- In the 1980's the Ted Blackwood Centre was purchased for $1 from the Narrabeen RSL. It was cut into three pieces to be transported by road to its current location.
- Collaroy Swim Club Community Centre was the original room used by the Collaroy Men's and Women's Swimming Clubs, established in 1945. The Collaroy Swimming Club is still an active club and part of this multi-use space.
- Elanora Heights Community Centre celebrated its 50th anniversary in 2016. Both the Elanora Preschool and the Elanora Players (community theatre group) have operated from this centre for over 50 years.
- Manly Youth & Community Centre opened in 1966 as part of the Manly RSL Club. In 1976 it was taken over by Manly Council. From the late 70's onward the centre was a powerhouse of the under 18's live music scene in Sydney.
- The Bilarong Community Hall situated beside Narrabeen Lagoon has been the home of the 1st Elanora Scout group for over 20 years. The community are able to hire the hall for a variety of purposes outside the Scouts use.



4. How was the Community Centres Strategy Developed?

The Strategy investigates the current state and plans for the future of community centres. The Community Centres Strategy brings together critical information from the following primary sources of data developed for this project:

- Benchmarking analysis, in terms of floor space (Gross Floor Area) available for multi-purpose community centres and current and future gaps.
- Consultation Summary Report, incorporating results of the survey of regular hirers, public survey and telephone survey, internal Council interviews and community focus groups.

The consultation engaged both internal (Council) and external stakeholders, and their feedback formed the vision, principles and desired outcomes for community centres. The engagement helped identify current capacity, demand, and subsequent gaps in community centre provision, by examining stakeholder perceptions of future needs and priorities. The engagement took place between August and October 2018, and involved 649 stakeholders.

The Community Centres Strategy was developed to align with:

- The Greater Sydney Region Plan and North District Plan
- The Local Strategic Planning Statement, Towards 2040 - Relevant Directions, Priorities, Principles and Actions
- Northern Beaches Council Community Strategic Plan

The draft Strategy was publicly exhibited from 26 October 2019 to 8 December 2019 to ensure that the Strategy aligns with community needs and expectations.

Community Survey:

- Telephone survey capturing wider community input (407)
- Regular hirers survey (110)
- Wider community survey, through YourSay Northern Beaches Council (85)

External consultation included workshops and interviews with key demographic groups:

- Family and children
- Seniors and people with disability
- Multicultural
- Indigenous
- Youth Advisory Group
- Community and Belonging Strategic Reference Group

Verification workshops were held with the Community and Belonging Strategic Reference Group and internal business units from Council.

Five community information stalls were held at key areas, to engage with as many in the wider community as possible.

Help our Community Centres to create connections and build stronger communities
Have your say
northernbeaches.nsw.gov.au

5. Our Current State

5.1. Who are we?

The estimated resident population of the Northern Beaches Council area is projected to grow from around 261,794 people in 2016, to about 300,353, an increase of 38,559 (14.73%) by 2036 (.id population/demographics 2020).

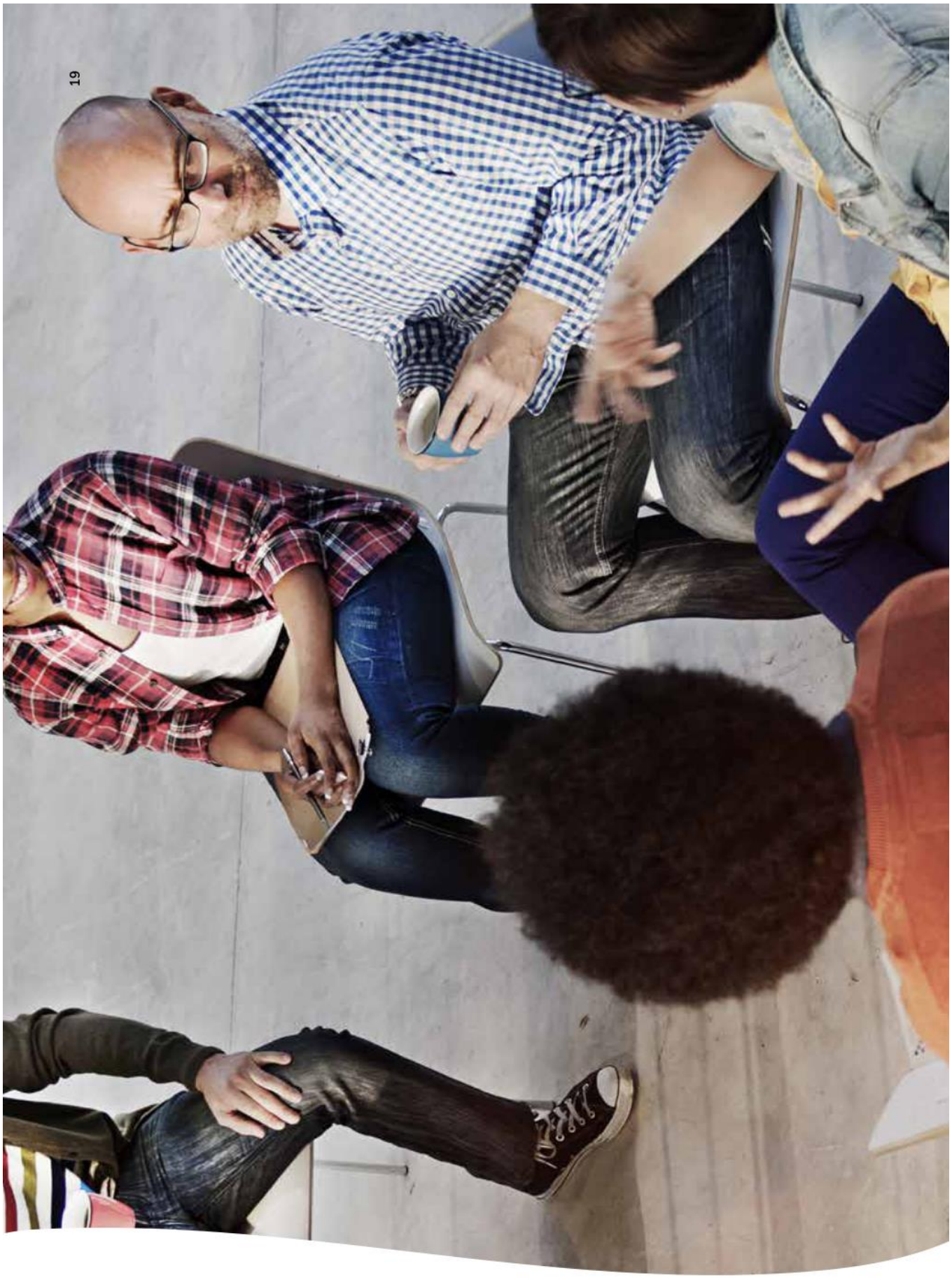
Community infrastructure needs to adapt as the community grows and demographic profiles and social trends change. Population change will have implications on the type, location and delivery of future community centres across the region.
In addition to filling any existing gaps in community centre provision, future models of delivery such as co-location, expansion and/or consolidation of existing community centres will need to respond to the changing demographic needs. The growth in population will put pressure on existing centres to provide sufficient spaces for the existing population, and points to the need to expand the community centre network in the future, to respond to existing and changing demographic characteristics.

Currently the distribution of population density on the Northern Beaches is focused along the coast, predominantly Dee Why to Manly.

The Frenchs Forest Planned Precinct will result in a planned increase in population, in proximity to that strategic centre.

One third of the population lives in attached dwellings or apartments, and this trend is expected to increase. Smaller living spaces means it is likely to lead to an increase in the need for third spaces where people can spend time and connect with others, and to accommodate larger social and family gatherings.

Snapshot of our community and key social trends	Implications for community centres
A growing population	There will be increased demand for multipurpose community facilities that are accessible and connected in terms of building access, centralised locations and by technology.
An increasingly ageing population	Community facilities need to be accessible to all, balancing the needs of older residents with the broader community.
A family orientated community, with a high proportion of families with children now and into the future	Spaces and places to gather, hold family functions, birthday parties and activities are becoming more important, especially for families with young children. Housing types of attached dwellings or apartments is expected to increase. Smaller living spaces are likely to increase the need for 'third spaces' where people can spend time and connect with others and also to accommodate larger social/family gatherings.
Becoming more diverse, but less multi-cultural than Greater Sydney	As the community becomes more diverse, it is important that the centres are accommodating to differing cultural groups, who often require such venues for larger cultural events.
A socially advantaged area, with small pockets of disadvantage	Regardless of socio economic status, community centres are vital for reducing social isolation and enhancing social connectedness and interaction for all in the community.
Relatively self-contained economy with 54% of people employed locally and a large number of home based businesses, entrepreneurs and start-ups	High self containment means that residents are more likely to utilise social infrastructure within the LGA.
Major infrastructure delivery for a more connected place, with the B Line and proposed East West bus route.	The location of community centres needs to be within close proximity to regular transport routes, with an increasing number of people using public transport, supporting the 30 minute city concept outline in Towards 2040.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5.2. Existing Community Centres

5.2.1. Council Managed Centres

There are 39 Council owned and managed multi-use community centres on the Northern Beaches (refer to Appendix B for a list of facilities).

The spaces are multi-use, multi-purpose and accessible to the public, and provide spaces for social, creative, educational and recreational activities and health and/or support services for the community.

The centre's vary in age, condition and size, with the majority built in the 1960's and 1970's. They are located along the coast from Manly to Avalon, and reaching westwards from Allambie to Forestville and Terrey Hills. The majority have just one hall, with a few having a number of spaces in the one complex, such as Cromer Community Centre, Tramshed Arts & Community Centre and Avalon Recreation Centre.

Some spaces are more suitable for indoor sport, dance and exercise activities or for art classes. Others have an attached, enclosed play area and are in demand for playgroups and children's parties.



Figure 1. Existing Council managed community centres

5.2.2. Non-Council Managed Buildings

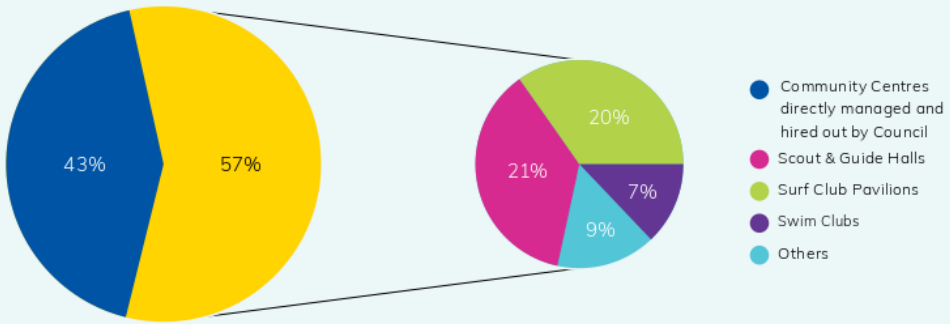
Northern Beaches Council owns several community facilities managed and directly hired out by other providers; including surf clubs, scout and guide halls, swim clubs, golf, tennis and bowling clubs (refer to Appendix C on page 58 for a list of those facilities).

Anecdotal evidence suggests that there are often difficulties for the broader community to access these facilities due to lease arrangements and high use by the key user groups. However, this does provide great opportunity for increased community centre space and further investigation is required to review this portfolio of facilities, including developing leasing and management frameworks to maximise floor space available for the community.

There are many other community spaces on the Northern Beaches that are not Council owned. These include school halls, churches and other private venues. It is important to note that these facilities have a role to play in servicing the community. Again, there are some challenges to accessing these non-Council facilities, including cost and willingness of providers to allow access during peak times. New school halls built under the Federal Government's Nation Building Economic Stimulus have a policy requirement to make school facilities available for use by the community outside school hours. A report by NSW Audit Office (2017) found that sharing facilities is not consistent. Department of Education is currently implementing strategies to improve access to these facilities.

There is an opportunity to identify and initiate shared use arrangements/partnerships for non-council managed spaces and private community spaces when developing detailed place based plans and place making activation plans for strategic centres and other identified 'community hubs'.

Figure 2. Existing Council owned community facilities, showing approximately 57% of the facilities (in yellow) are not directly hired out by Council.



6. Needs Analysis

A needs analysis identifies the gaps and challenges of the existing community centres in the Northern Beaches Local Government Area (LGA)

6.1. What you told us

Community centres need to be:

- well located
- near or on public transport and near a central hub such as shopping centres and library
- welcoming and modern
- accessible and available to all, and cater to all needs in the community
- affordable, clean and well maintained, quality facilities
- flexible spaces that can be used for a variety of purposes to suit different needs
- well designed facilities that have equitable use.

6.2. Benchmark Assessment of Community Centre Space

This Strategy utilises floor space as the method for determining benchmark assessment. There are no consistent accepted benchmarks for community centres in Australia. Due to this inconsistency, we have applied two benchmarking methodologies to the current and future provision of community space. It should also be noted that in each of these a 'weighting' of available Gross Floor Area (GFA) has been calculated at our current centres, as groups such as pre-schools exclusively use some centres for a certain amount of time.

Recent studies have established guidelines for community centre provision, based on research comparisons from other LGAs. Recent work undertaken for the Frenchs Forest Precinct found that approximately 80sqm per 1,000 people is considered a suitable benchmark. This benchmark has also been used by eight similar LGAs - Playford, Penrith, Blacktown, Hills Shire, Liverpool, Maitland, Ku-ring-gai, Camden - and included council facilities only.

Using this benchmark:

- The total GFA of community centre space (Council managed) available for multi-use in the Northern Beaches LGA is 15,604 sqm which equates to 59.6 square metres per 1,000 people (based on a 2016 population of 261,794).
- Based on existing and anticipated population growth, there are community centre shortfall/gaps for each local planning area (refer to Appendix D for full detail):
- existing shortfall/gap in community centre space that is Council managed is 5,340sqm.
- by 2036, the shortfall/ gap in community centre space that is Council managed will be 8,424sqm.

ATTACHMENT 5
Community Centres Strategy, amended
ITEM NO. 10.1 - 23 MARCH 2021

Another method of benchmarking that is often used is the identification of the number of facilities that are required by population size:

Category	Target provision	Guide for floorspace	Target Northern Beaches provision 2036	Current Northern Beaches provision
Integrated multi-purpose facility	Minimum 1 per approx. 20,000-30,000 residents	Minimum floorspace 2,000 sq metres, increasing with the size of catchment population	10	0
Local community facilities	3 to 4 per approx. 20,000 to 30,000 residents	250 – 500 sq metres per facility	30 - 40	33

Based on the benchmark tool used above, the main gap is in the provision of integrated multipurpose facilities with floor space of 2,000 or more square metres. Whilst this gap is large when using this tool, it must be recognised that the Northern Beaches has six facilities that are between 800 and 1200 sq metres in floor space that may address some of the gap in provision. These have been categorised as District facilities in the Network approach, section 7.2.

The two different benchmark methodologies have identified similar gaps in floor space provision across the Northern Beaches. Both identify a lack of large integrated multipurpose community facilities.

When developing strategies and action plans to address this gap, it is important to recognise that benchmarks are not a one size fits all tool. They are a guiding tool and should be only one aspect of the decision making process.

Other relevant considerations in determining community needs are:

- the Northern Beaches geographically large area, with uneven population distribution across catchments
- population density and geographical barriers such as major roads and large bushland areas
- the quality and utilisation of community centres, with the condition and fit for purpose of each facility a major determinant of demand and ability to meet future needs

> "... Community Centres need to be near public transport drop off and pick up points so people can access them easily."

> "(We need) a place which is available to all people and provide a range of functions, for the wider community"

> "(Community centres need to be) located near a central hub and easily accessible"

> "In general when I go to community centres, facilities need updating, (and to be) more modern."

> "... most people don't know how to book (a community centre) or don't realise they can book until they hear word of mouth or actually attend an event."

> "(We need) something that is there for anyone to use rather than a specific purpose. (It) needs to be welcoming to everyone, be accessible, have the right equipment and be able to cater to everyone's needs."

6.3. Local Planning Catchment Areas

There are five strategic centres identified in the Local Strategic Planning Statement, Towards 2040. Those are Brookvale, Dee Why, Manly, Mona Vale, and Frenchs Forest, which is also a health and education precinct.

For the purposes of data analysis, five broader Planning Catchment Areas have also been identified considering geographic boundaries and ABS population data.

These **five Local Planning Catchment Areas** (Broader Catchment) are:

- Brookvale-Dee Why
- Frenchs Forest
- Manly
- Mona Vale
- Terrey Hills

The Northern Beaches LGA also includes nine local centres: Avalon, Newport, Warriewood, Narrabeen, Belrose, Forestville, Manly Vale, Balgowlah and Freshwater, and 52 smaller neighbourhood centres, such as Seaforth, Narraweena, Collaroy, Allambie Heights and Palm Beach. This hierarchy of local planning areas is reflected in the strategic direction for community centres.

Each of these planning catchment areas have been assessed against current and future socio-demographic trends, benchmarking, current service provision and future demand.

These catchment areas have been used to aid analysis of community centre supply and demand across particular geographic areas and population sizes.

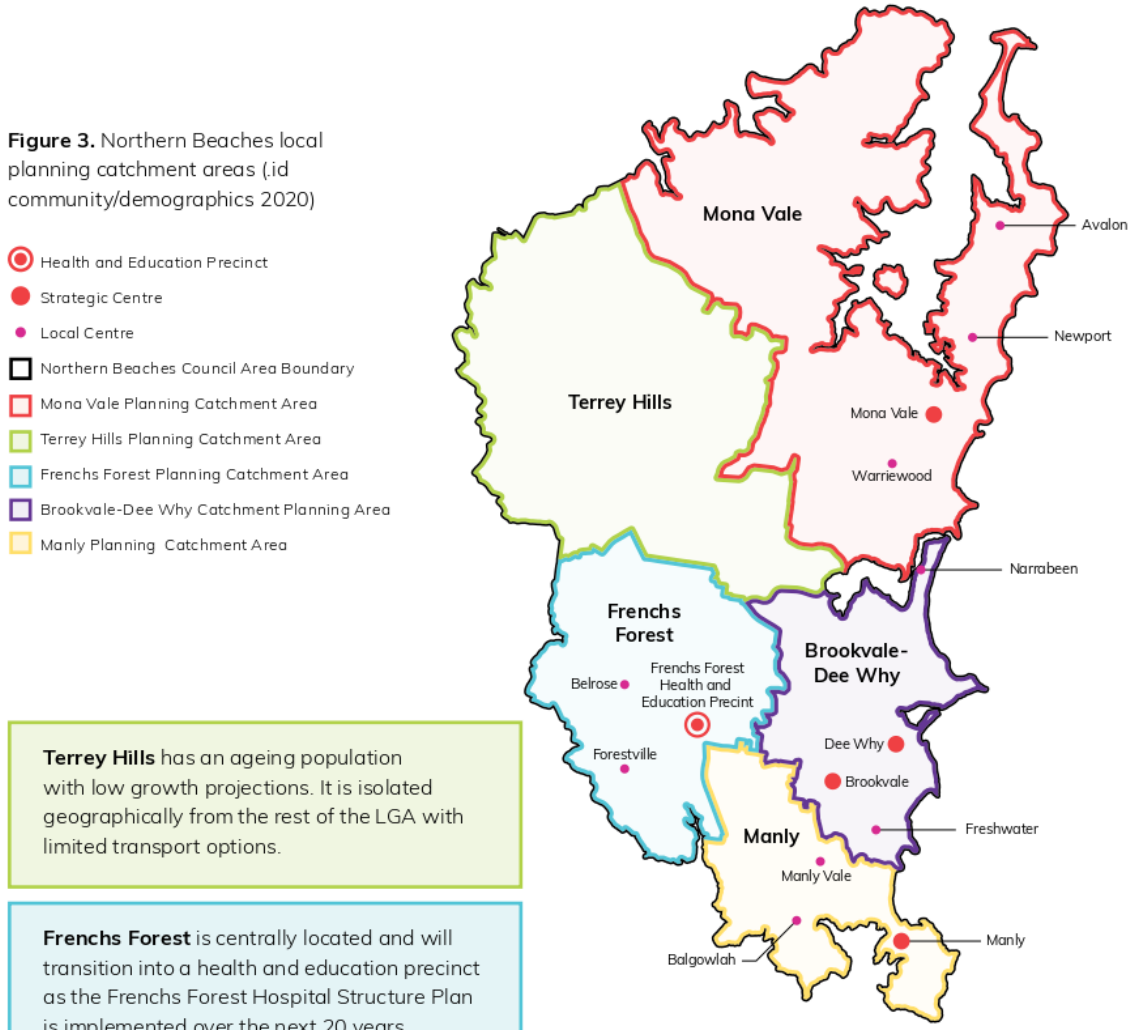
Strategic centres

- Mona Vale
- Dee Why
- Frenchs Forest
- Brookvale
- Manly

Local Centres

- Avalon
- Newport
- Warriewood
- Narrabeen
- Belrose
- Forestville
- Manly Vale
- Balgowlah
- Freshwater

Figure 3. Northern Beaches local planning catchment areas (.id community/demographics 2020)



Mona Vale serves people living in the northern end of the peninsula, with lower population density. It is well connected via the B-Line, which provides access to the south, towards the City, but access to and from other areas in the north and west is limited. Mona Vale area has a high number of people with alternative working arrangements, a higher proportion of older people, and particularly high car use.

Brookvale-Dee Why is the largest local planning area by population size. It is the largest employment area in the Northern Beaches, with good access to other strategic centres in the LGA and to the city. Brookvale and Dee Why are both major stops and parking for the B Line. Dee Why will be the end point for the east/west rapid bus link.

Manly is the most compact centre within the Northern Beaches, with good connections to Sydney CBD via ferry. It is a mixed centre comprising cultural, tourism, retail, entertainment, residential and employment uses. It has higher density housing and is the least car dependent. It has a younger population base.

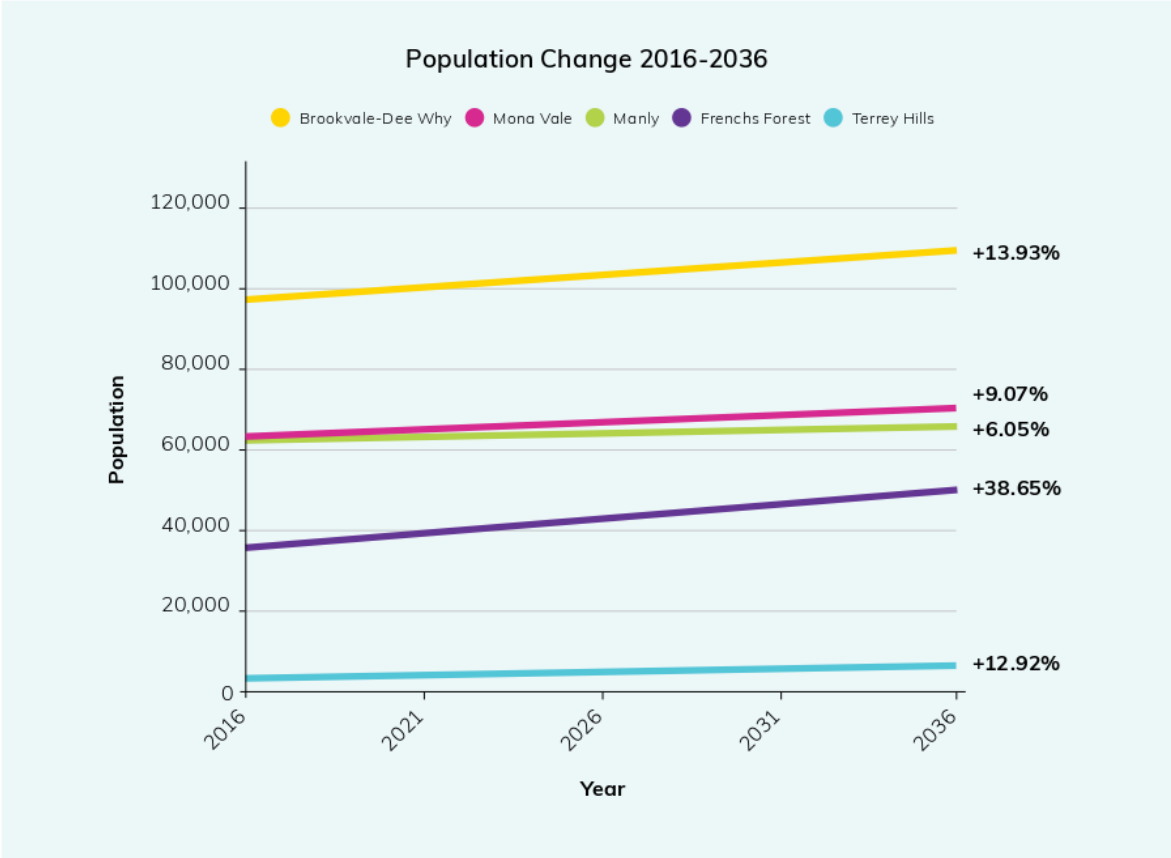
Terrey Hills has an ageing population with low growth projections. It is isolated geographically from the rest of the LGA with limited transport options.

Frenchs Forest is centrally located and will transition into a health and education precinct as the Frenchs Forest Hospital Structure Plan is implemented over the next 20 years.

Figure 4. Population change in the Northern Beaches local planning catchment areas from 2016 to 2036 (.id community/demographics 2020).

The planning areas of Brookvale-Dee Why (13.93%) and Frenchs Forest (38.65%) are expected to be the focal point for the majority of population growth over the next 20 years (.idcommunity/demographics 2020).

The existing community centres provided by Council in these areas are presented in the next section.

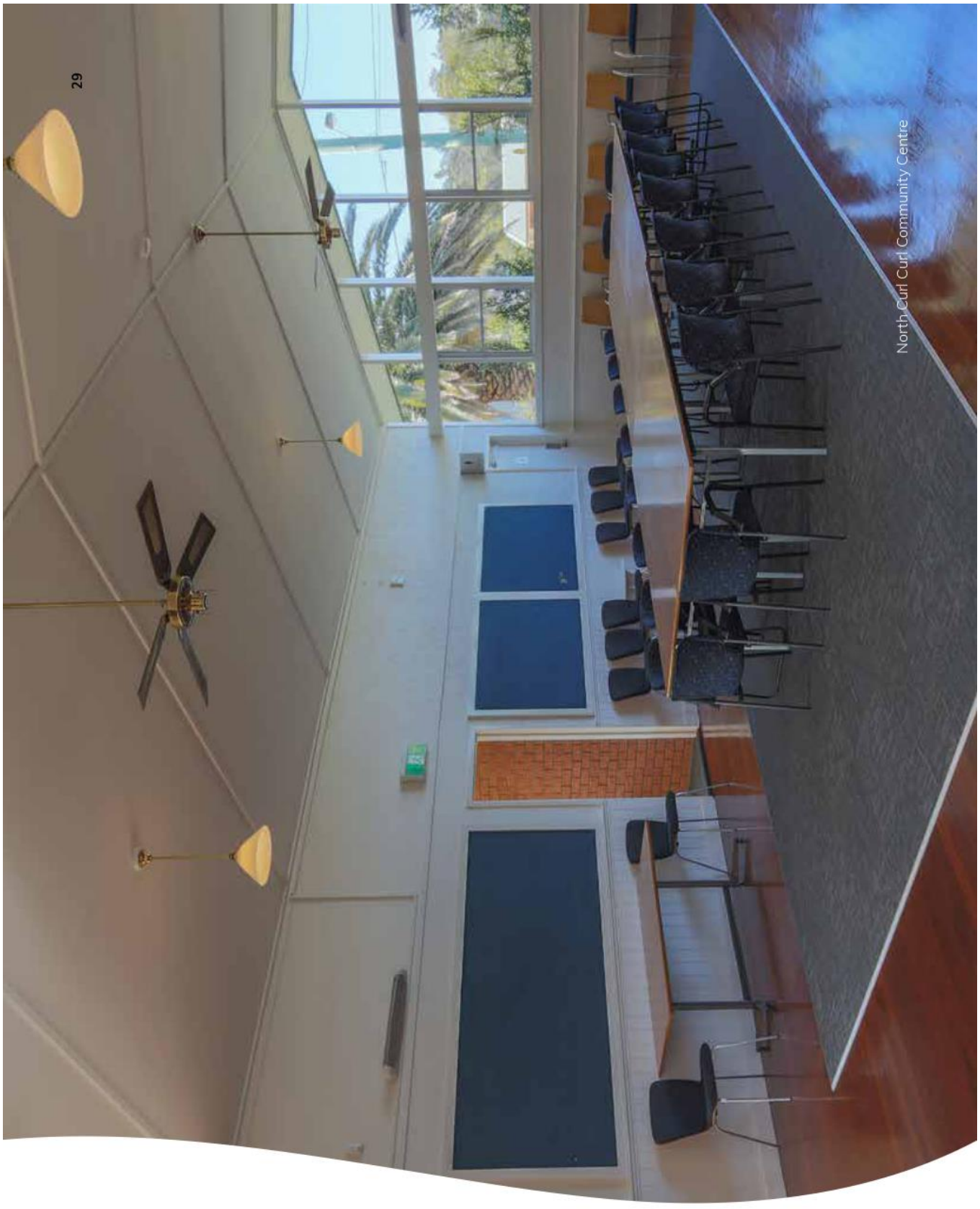


See Appendix A, Page 59

6.4 Opportunities

Northern Beaches Council is at the forefront of community centre planning and provision. In terms of the delivery of community centres and spaces, Council has a number of opportunities:

- as a **planning authority** Council can encourage the provision of community centres through policy development, needs assessment and strategic planning (such as this Strategy). Council can further set direction as a regulator through its Planning Scheme and seek financial and in-kind contributions from other levels of government, private sector and other stakeholders towards community centre development
- as **place plans** are developed Council could consider how the required community centre floor space could be incorporated in town centres
- as a **land and building owner**, Council has the potential to develop or use their holdings for community centres as well as designate land for community purposes
- to be a leader in **environmental sustainability,** ensuring new and retrofitted community centres are inspiring with innovative low-carbon developments that achieve high-efficiency in energy, water and waste
- as an **advocate** to other levels of government for the delivery of facilities required by the community
- as a **facilitator/active partner** to coordinate integrated delivery of community centres and spaces within the Northern Beaches LGA. This includes facilitating access to other non-council managed facilities to **collaborate** with other stakeholders such as private sector and state government to plan and/or deliver community centres in partnerships
- to support **active travel** (walking and cycling) to, from and between community centres via the Bike Plan and Walking Plan.


29
North Curl Curl Community Centre

6.5 Key Challenges

- **small and fragmented facilities** - The existing network comprises a large number of small and fragmented facilities. 33 out of the 39 are considered local centres with just one or two rooms/hall. These are used as 'halls for hire' with some dominated by one or two user groups. Some of these facilities are well utilised, although they reach capacity quickly and have limited availability for new or additional users. When considered collectively, building, operating and maintaining these smaller community facilities requires significant financial and human resources. As the community grows and becomes more diverse, it is no longer feasible to invest in single purpose community facilities that are unable to cater to a variety of community needs
- **lack of enough community floor space** - There are larger gaps in the availability of community centre space in the Brookvale-Dee Why and Manly Planning Areas
- **lack of regional and district/sub-regional level community centres** - The Northern Beaches Council community centre network lacks 'higher order' community centres to service a Northern Beaches-wide or major district catchment. There is no regional centre and only six out of the 39 are district centre size (refer Appendix B for a list of local and district centres). This places additional pressure on lower order community centres to fulfill some of this function (e.g. large space for big events/gatherings). Consultation also identified this gap
- **limited co-location and integration** - There is a lack of multipurpose community centres that operate as true 'community hubs', a place where a variety of activities can occur and where a wide range of community needs can be met in both formal and informal ways. Council has traditionally favoured a 'hall for hire' approach to providing community spaces, where co-location and/or integration is difficult to achieve. This presents missed opportunities for social interaction and relationship building, service integration, collaboration, and land use and building efficiencies
- **poor location** - Some of Council's community centres are poorly located (e.g. residential areas, isolated areas with limited public transport access), which has negatively affected the overall viability of the centre in terms of utilisation and activation
- **lack of community awareness about community centres and services available** - Many of the community centres and programs on the Northern Beaches are unknown by the broader community. There is a lack of community awareness about community centres/programs on offer
- **ageing assets** - Council has an ageing stock of community centres that require modernisation to meet contemporary needs and expectations. Common issues identified through the community consultation included: lack of modern technology, lack of disability access, poor signage and uninviting, dated facilities.

Quotes taken from the project's consultation process

> Some of the centres are ageing - toilets, kitchen facilities need upgrading.

> Often the heating or air con wasn't working, or the ceiling vent made a racket, which was an issue with a meditation group.

> Manly library or surf clubs could become a hub of activity rather than mostly vacant underutilised spaces in really prime locations.

> The meeting room is not a very enlightening space.

> They need to be affordable... to provide a variety of spaces - not just large halls but smaller areas ...with a nice outlook and outdoor area.

> ... access to information of what is available at each place. E.g. an e-community hub or something - it is hard to know what is on offer unless you walk past and see a sign up for yoga or something.

7. Our Strategic Framework

This section presents our strategic framework for the planning, provision and management of community centres. It outlines the guiding principles for improvements to the centres and a best practise model of service delivery for a successful integrated network of community centres in convenient locations on the Northern Beaches.



Seaforth Community Centre

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7.1. Guiding Principles

Northern Beaches Council provides community centres that are:

1. Multi-purpose, flexible in form, function and management, the centres are available for a range of social, recreation, community and cultural services, activities and programs
2. Designed and planned through active engagement and transparent collaboration with the community. Changing demographics and social trends in relation to current needs and future demands for new facilities and upgrades will be considered
3. Centrally located within strategic centres in visually prominent and accessible locations that are close to public transport, enhancing community identity and improving community cohesion and connection. Accessible locations to encourage the use of active and public transport
4. Co-located and integrated with other community uses and facilities. Ensure alignment with the principles of the District Plan, Community Strategic Plan, and the Local Strategic Planning Statement, Towards 2040
5. Designed to be welcoming and safe environments that reflect local character and are sustainable. New and upgraded community centres are low-carbon developments with high-efficiency in energy, water and waste
6. Innovative and inspiring places that support community wellbeing with the provision of high quality spaces for the community to connect, create, learn and socialise
7. Accessible and inclusive places that have universal access and cater for multiple users and people of all ages, cultures and abilities
8. Managed and planned through collaboration and shared use arrangements between Council, government agencies, community groups and other stakeholders
9. Supported by good governance and centre management practices that are financially sustainable and at quality and cost standards that are acceptable to the community
10. Marketed to improve community awareness and access to information about community centres – locations, availability and programs

> “Location is important and also the people that run it have to be good at what they do.”

> “(What makes a great community centre is) being accessible for all ages and abilities with a wide variety of activities and information on the area.”

> “(We need) something central and accessible to the greater community, meaning it is of low cost, well maintained and available when you need it.”

7.2. A Network Approach

A network approach considers community centres as part of a holistic network of centres that work together to meet a range of community needs across a LGA. Benefits of a network approach include:

- integrated, strategic approach that allows flexibility to adapt to changing needs over time
- allows facilities to provide a different range of offerings, with the option for each facility to include unique, specialist services or amenities
- duplication of services, programs, spaces and amenities can be avoided, therefore, representing a more economically sustainable approach

Adopting a network approach means that when Council is considering a new centre, or substantial changes to an existing centre, it will consider how the facility can be designed, located and managed to contribute to the full complement of community centres across the Northern Beaches to meet the demand for local, district and regional centres.

A network approach relies on community centres to be classified within a hierarchy, recognising that each centre offers a different scale, servicing varying sized catchments in terms of the area and number of people serviced.

For the hierarchy of community centres in Northern Beaches refer to Table 1. Each facility has been identified in this hierarchy in Appendix B, page 60.

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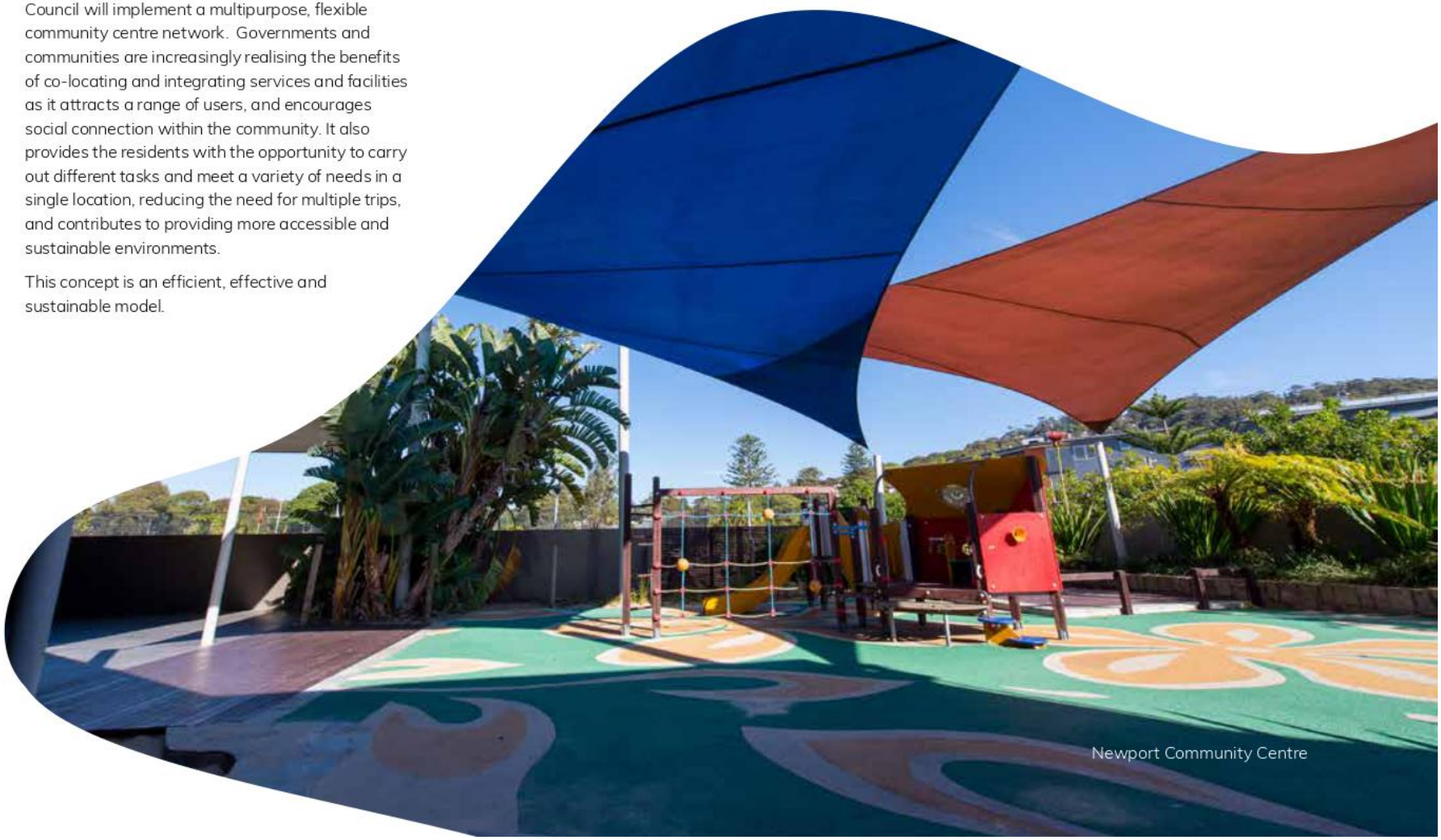
Table 1. Hierarchy of Community Centres

Hierarchy	Definition	Population Catchment (Minimum)	Typical GFA	Location Requirements
Regional	Large order infrastructure that services the whole LGA. They are often destination generators due to high quality amenity, which act as an attractor.	100,000	2,000sqm	• Located within Strategic Centres • Co-located with other facilities & services • Close proximity to public transport and other modes of transport • Accessible via active transport infrastructure (walking and cycling)
District	Services two or more planning areas and are multipurpose in nature offering a range of programs, services and activities to the broader community. These spaces may provide a central and accessible community meeting and activity space, catering for larger scale events and activities that cannot be accommodated in more localised centres.	20,000	1,000sqm	• Located in close proximity to strategic or local centre • Co-located with other facilities & services • Close proximity to public transport and other modes of transport
Local/ Neighbourhood	Services the immediate local community and provides meeting and gathering spaces for community groups on a casual basis e.g. dance class, birthday parties. Spaces are generally smaller in nature and standalone (such as a community hall).	1,000	150sqm	• Located in close proximity to local and strategic centres • Close proximity to public transport and other modes of transport

7.3. Delivery Model

Council will implement a multipurpose, flexible community centre network. Governments and communities are increasingly realising the benefits of co-locating and integrating services and facilities as it attracts a range of users, and encourages social connection within the community. It also provides the residents with the opportunity to carry out different tasks and meet a variety of needs in a single location, reducing the need for multiple trips, and contributes to providing more accessible and sustainable environments.

This concept is an efficient, effective and sustainable model.



Newport Community Centre

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8. Our Strategic Directions

In response to the identified gaps and challenges, informed by guiding principles and best practise models of delivery, the following strategies are proposed for a strong community centre service for the Northern Beaches:

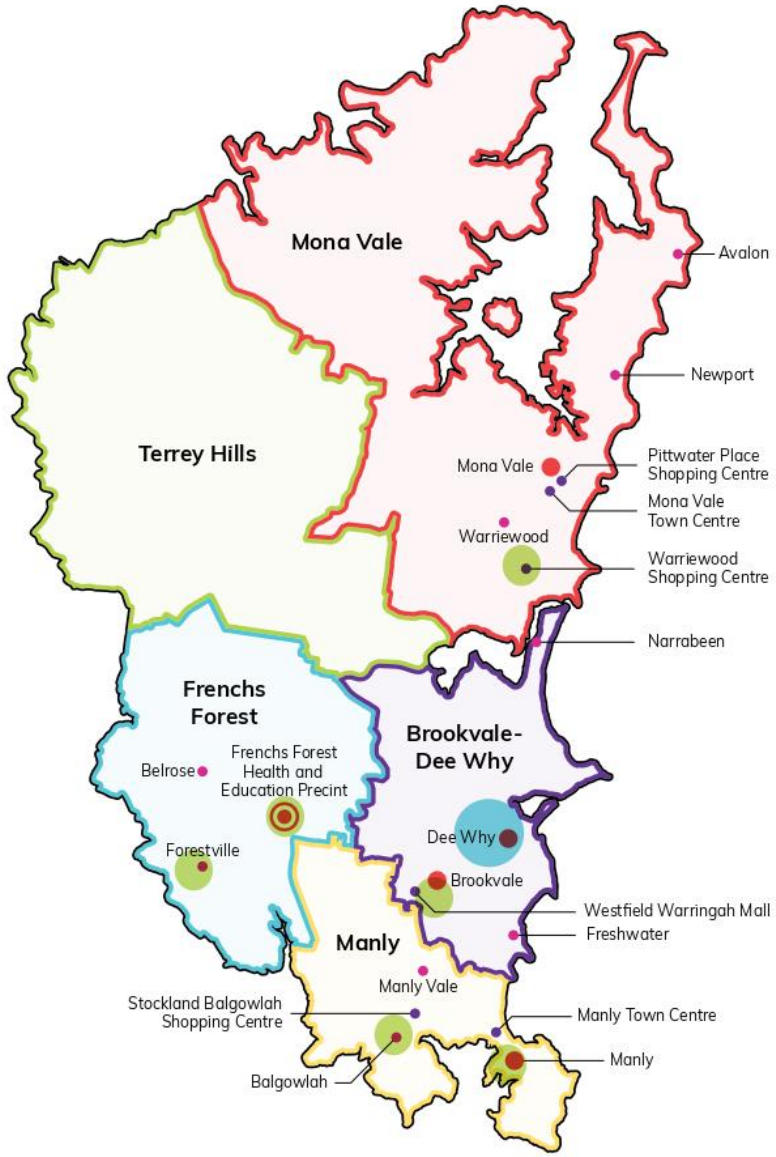
Strategy 1	Improve utilisation rates of existing centres
Strategy 2	Maximise fair and equitable access to existing centres
Strategy 3	Implement 'community hubs', with the co-location and integration of existing and future community centres in areas that are accessible via active and public transport, in support of the 30 minute city concept
Strategy 4	Investigate the potential for a Regional Community Centre within the Local Government Area
Strategy 5	Increase the number of District community centres through a detailed asset management plan
Strategy 6	Develop a community centre marketing strategy to promote the centres as welcoming and inclusive spaces for the whole community
Strategy 7	Create inviting, accessible and welcoming community centres
Strategy 8	Investigate management models for non-Council managed and/or owned facilities to maximise floor space available to the community
Strategy 9	Develop a funding plan to enable the implementation of this strategy, including divestment, renewal, grant programs and the capital works budget
Strategy 10	Investigate the Aboriginal history of the sites of current and future community centres, and ensure the history is recognised

Strategies 4 and 5 are shown on the map adjacent.

*Implementation of these are in the Strategic Directions in each Planning Area. Additionally the Action Plan has operational projects identified for each Council managed community centre.

Figure 5. Proposed new regional (in blue) and new or upgraded district (in green) community centres in the local planning catchment areas. The locations of proposed facilities are indicative only and are subject to further investigation.





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8.1. Brookvale-Dee Why Planning Catchment Area

The Brookvale-Dee Why Planning Catchment Area spans from Queenscliff to North Narrabeen and includes the suburbs of Freshwater, North Manly, Brookvale, Dee Why, Cromer, Narraweena, Beacon Hill, Collaroy, Collaroy Plateau, Curl Curl and Narrabeen.

Key socio-demographic trends:

- **large population concentration with modest growth expected into the future:** Brookvale-Dee Why is the largest planning area by population size and this will continue into the future. In 2016 the population was 96,666, and it is expected to reach 110,131 by 2036. This is a percentage increase of 13.93%, or 13,645 more people expected over that period. (id/population 2020)
- **small proportion of Older Adults:** With only 15% of the population aged 65 years and over (in 2016).
- **The suburb of Brookvale is the largest employment area** in the LGA and has been identified as a future innovation district by the Local Strategic Planning Statement Towards 2040.
- **Brookvale-Dee Why Catchment has a young population,** with 16,005 people or 17% of the population aged 5 to 20 years (Source: SGS Economics and Planning, 2019).
- **Brookvale-Dee Why is multi-cultural,** with 53% of residents have either one or both parents born overseas (Source: ABS Census 2016, TableBuilder).
- **the largest number of Group and Lone Person Households on the Northern Beaches:** Group and Lone Person Households account for 7% of households on the Northern Beaches and 25% of all households in the Brookvale-Dee Why Catchment (in 2016).
- **good accessibility:** Brookvale-Dee Why is the only local planning catchment area that connects to all strategic centres (Manly, Mona Vale and Frenchs Forest) within 30 minutes, providing an ideal opportunity for the location of regional services in this area. It also has good connectivity to local centres within the Northern Beaches and to the city.

Table 2. Council Managed Facilities in Brookvale-Dee Why Planning Catchment Area

Hierarchy/Size	Capacity (People)	Multi-use area (sqm) weighted against GFA
Regional		
Nil	0	0
District		
Beacon Hill War Memorial Hall	250	914
Cromer Community Centre	600	939
Curl Curl Youth & Community Centre	250	652
Total District		**2,505**
Local		
Brookvale Community Centre	90	186
Collaroy Plateau Youth & Community Centre	200	306
Collaroy Swim Club Community Centre	50	126
Curl Curl Sports Centre	125	266
Griffith Park Sports Facility	25	71
Harbord Literary Institute	100	149
Narraweena Community Centre	180	533
Tramshed Arts & Community Centre	365	671
North Curl Curl Community Centre	150	342
PCYC*	700	360
Total Local		**3,010**
Grand Total		**5,515**

*Council owns the PCYC at Dee Why, which is leased and managed by the PCYC. The Centre includes a community room (360sqm) that can be divided up into 3 rooms, included in this analysis.

*Refer to Appendix B for full GFA vs available GFA (weighted)


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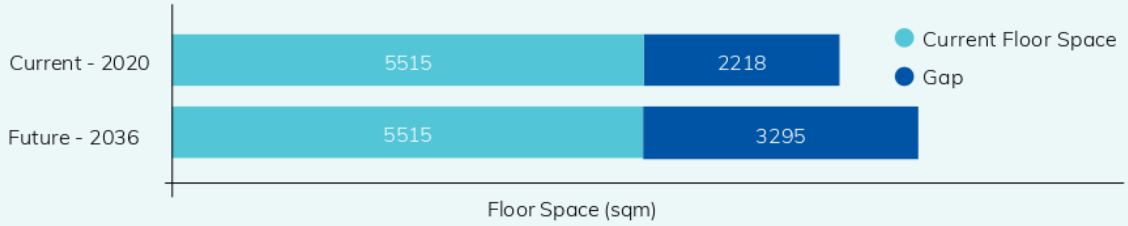
Brookvale Community Centre

8.1. Brookvale-Dee Why Planning Catchment Area (continued)

Benchmark Analysis

This Strategy utilises floor space as the method for determining benchmark assessment.



Findings

- The Brookvale-Dee Why Planning Catchment Area is well-provisioned with the number of community centres, yet lacking in floor space.
- There is a current and future gap, requiring a regional facility due to the high housing density and population
- The quality of centres is mixed, with the smaller centres requiring upgrades
- Many district and local centres are not in the right location or with limited suitable space available. One such centre is Brookvale Community Centre, which is small, disjointed and not co-located.
- Centres in ideal locations, such as the Tramshed Arts & Community Centre at Narrabeen, are very well utilised with limited space for growth.
- Despite a large floor print, the PCYC does not meet a number of needs for general community centre hire due to its focus on youth, and sporting activities.
- Community groups needs such as seniors, community support groups and cultural groups require space in the centre of Dee Why and Brookvale with accessible transport and flat walking distances from the heavily populated areas.
- As a major industrial area, Brookvale is currently lacking in community centre floor space in the right locations for the population, and increasingly under supplied with the forecast population and proposed developments in Brookvale and Dee Why.

Strategic Directions

- Investigate options (feasibility and business case) to provide for more community space in Dee Why to meet current and future gaps (approximately 3,295sqm).
- Investigation to be particularly focused on the potential plan for the provision of a Regional Level community facility in Dee Why CBD, given the shortfall of community space in the local planning area. It has high population density and good connectivity to other local planning areas through public transport infrastructure.
- Explore opportunities to lease space within Dee Why CBD to meet community needs as an interim option. Enhance connections between existing social infrastructure facilities in Dee Why to deliver an integrated community hub/regional facility.
- Investigate options for a district facility in Brookvale, to replace the existing Brookvale Community Centre and to meet the anticipated future needs growth of Brookvale. A new town centre activity-point outside Warringah Mall could include civic and cultural functions and a multi-use community facility, incorporating co-working or economic development spaces.
- Explore opportunities for shared arrangements with local school halls.

8.2. Frenchs Forest Planning Catchment Area

The Frenchs Forest Planning Catchment Area covers the most western part of the LGA, including Oxford Falls, Forestville, Killarney Heights, Frenchs Forest, Belrose and Davidson

Key socio-demographic trends:

- **Frenchs Forest Catchment will see high population growth in the near future:** In 2016, Frenchs Forest had a population of 39,677 people, which was an increase of 38.65% from 2011. By 2036, Frenchs Forest will have 55,012 people, increase due to the Frenchs Forest Health Precinct developments.
- **an ageing population:** With 19% of the population aged 65 years and over (in 2016), which is expected to grow in the future
- **a family orientated area, with the highest proportion of couples with children on the Northern Beaches:** accounting for 49% of all households in the planning area (in 2016)
- **smaller population densities compared to Brookvale-Dee Why and Manly local planning catchment areas:** With separate houses accounting for 87% of dwellings in 2016. This is expected to change with the development of the Frenchs Forest Health Precinct
- **good future accessibility;** with plans for the East West Rapid Transport link from Dee Why to Chatswood providing good access to Frenchs Forest and Forestville, and the proposed Beaches Link Tunnel.

Table 3. Council Managed Facilities in Frenchs Forest Planning Catchment Area

Hierarchy/Type	Capacity (people)	Multiuse Area (sqm) weighted' against GFA*
Regional		
Nil	0	0
District		
Forestville Memorial Hall	430	780
Local		
Belrose Community Centre	100	117
Forest Community Arts Centre	165	609
Forestville Senior's Centre	235	430
Forestville Community Hall	200	369
Lionel Watts Sports & Community Centre	100	130
Oxford Falls Peace Park	50	54
YOYO's - Forest Youth Centre	150	217
Grand Total		**2,706**

*Refer to Appendix B for full GFA vs available GFA (weighted)

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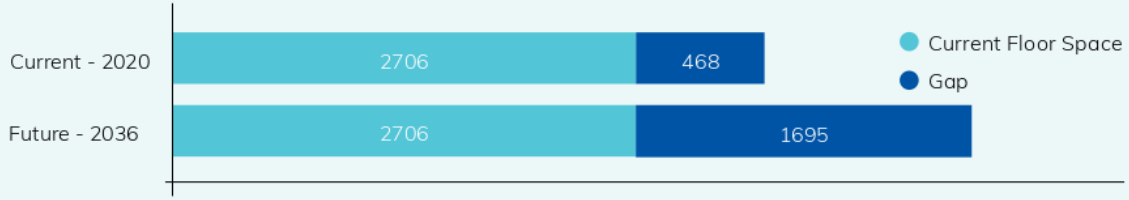
8.2. Frenchs Forest Planning Catchment Area (continued)

Benchmark Analysis

This Strategy utilises floor space as the method for determining benchmark assessment.

Gaps In Council Managed Community Centre Floor Space Provision



Findings

- The Frenchs Forest Planning Catchment Area currently is well provisioned with the number of community centres, yet lacking in floor space and adequate condition of the centres
- The current provision of centres is clustered in Forestville and Belrose, with limited space available in the largest populated suburb of Frenchs Forest
- There is a current and future gap in provision, requiring at least district size facilities due to the anticipated increase in housing, density and population in Frenchs Forest
- There are opportunities to integrate community centres in Forestville with other amenities, near transport and other community facilities, such as retail outlets and clubs to provide 'community hubs'.

Strategic Direction

- Identify opportunities to provide district community space at the Frenchs Forest Health Precinct to meet existing and future gaps in community space for this Planning Catchment Area.
- Look at partnership opportunities with other service providers who will be located in the Health Precinct to provide an integrated hub.
- Investigate the site of the Forestville Community Hall as a co-located community hub, considering the future use of the adjacent Guide and Scout Halls on this site.
- Work with Planning/State Government partners to plan for an integrated facility as part of the Frenchs Forest Town Centre masterplan.

8.3. Manly Planning Catchment Area

Key socio-demographic trends:

- **Manly will see modest population growth over the coming years:** In 2016, the population of Manly was 58,361 people and by 2036 it will grow to around 61,892 people, an increase of 6.05% or about 3,531 people.
- **smallest proportion of Older Adults on the Northern Beaches:** With only 14% of the population aged 65 years and over (in 2016)
- **large number of Group Households:** Along with Brookvale-Dee Why, it has the largest concentration of Group Households on the Northern Beaches, accounting for 7% (or 1,458) of all dwellings in Manly (in 2016).

Table 4. Council Managed Facilities in Manly Planning Catchment Area

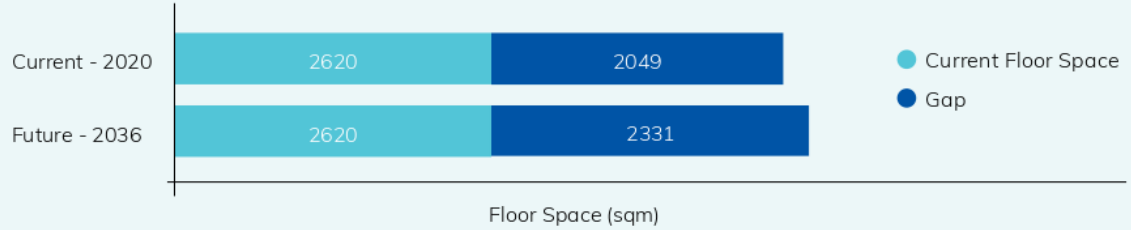
Hierarchy/Size	Capacity (People)	Multiuse Area (sqm) weighted' against GFA *
Regional		
Nil	0	0
District		
Nil	0	0
Local		
Allambie Heights Public Hall	50	146
Manly Library Ground Floor Meeting Room	40	63
Manly Seniors Centre	230	142
Manly Vale Community Centre	200	372
Manly Youth and Community Centre	225	458
North Balgowlah Community Centre	120	416
Seaforth Community & Sporting Pavilion	80	234
Seaforth Community Centre	200	456
Seaforth Village Community Centre	90	333
Grand Total		**2,620**

* Refer to Appendix B for full GFA vs available GFA (weighted)

8.3. Manly Planning Catchment Area (continued)

Benchmark Analysis

This Strategy utilises floor space as the method for determining benchmark assessment.



Findings

- The Manly Planning Catchment Area is lacking in the number of community centres and lacking in floor space, especially in the Manly CBD
- A number of the centres are small and inadequate to meet community demand for multipurpose community space
- There is a current and future gap, requiring district size facilities due to the high housing density and population, particularly in Manly and Balgowlah
- There are opportunities to further integrate with existing community facilities and other Council facilities in Manly
- There is a lack of community centre space in the highly dense shopping precinct of Balgowlah. This location has good access to transport, and close to other services and amenities. Currently there is no Council managed community space in Balgowlah available to hire
- Manly Town Hall Meeting Rooms are now available for some hire after hours as a short term solution to the need for community space to hire in central Manly. A long term plan for this site will be a future project and have extensive community consultation. Currently this site is a Council administrative and Customer Service Centre
- the western part of the Manly Planning Area, west of the Burnt Bridge Creek deviation, has sufficient floor space from a benchmark perspective, but is split into a number of facilities that don't meet community needs.

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Strategic Direction

- Investigate options (feasibility and business case) to provide for more community space in the planning area of Manly to meet current and future gaps through place planning. This includes the short term use of Manly Town Hall until other options become available, and the future of the facility is determined.
- Investigate opportunities for a new district sized facility in Manly CBD.
- Investigate ways to facilitate shared use of non-Council and private community space to assist in meeting floor space gaps.
- Investigate Council owned properties in the Balgowlah town centre as options for community space.
- Investigate the combination of the North Balgowlah and Seaforth Community Centres, providing one large, accessible multipurpose community centre.

8.4. Mona Vale Planning Catchment Area

The Mona Vale Planning Catchment Area consists of the suburbs of Warriewood, Elanora Heights, Mona Vale, Cottage Point, Bayview, Newport, Bilgola Plateau, Avalon, Palm Beach and Scotland Island.

Key socio-demographic trends :

- **Mona Vale will see moderate population growth in the near future:** In 2016, Mona Vale had an estimated population of 63,320, an increase of 2,849 people from 2011, or 4.71% over the five year period. The population of Mona Vale is projected to increase to 69,061 people by 2036, representing a 9.07% growth over the total period or an additional 5741 people. This includes the anticipated increase through the Ingleside Precinct Plan.
- **the highest proportion of older adults (aged 65 and over) live in Mona Vale:** Mona Vale has the highest proportion of older adults of all planning areas, with this age group contributing to 20% of its population in 2016
- **a family-oriented community:** With a large proportion of couples with children accounting for 40% (or 8,052) of households (in 2016).

Table 5. Council Managed Facilities in Mona Vale Planning Catchment Area

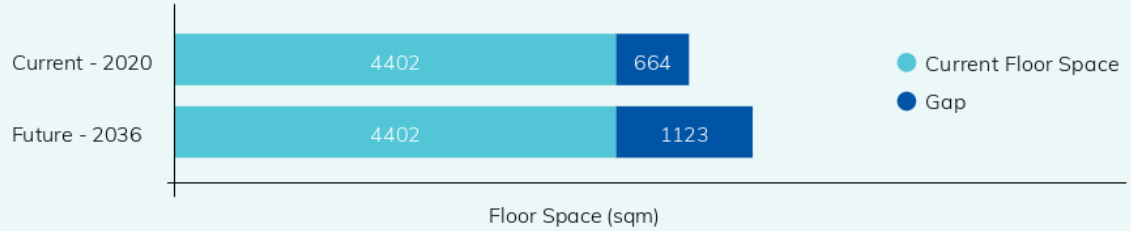
Hierarchy/Size	Capacity (People)	Multi-use area (sqm) weighted' against GFA*
Regional		
Nil	0	0
District		
Avalon Recreation Centre & Annexe	800	1,447
Nelson Heather Centre	190	926
Total District		**2,373**
Local		
Bilarong Community Hall	75	125
Elanora Heights Community Centre	110	127
Mona Vale Memorial Hall	275	534
Newport Community Centre	240	449
North Narrabeen Community & Tennis Centre	185	299
Ted Blackwood Youth & Community Centre	280	495
Total Local		**2,029**
Grand Total		**4,402**

* Refer to Appendix B for full GFA vs available GFA (weighted)

8.4. Mona Vale Planning Catchment Area (continued)

Benchmark Analysis

This Strategy utilises floor space as the method for determining benchmark assessment.



Findings

- The Mona Vale Planning Catchment Area is well provisioned with the number of community centres.
- Research has identified that due to the geographical distance for residents to access facilities in other planning catchment areas, and current usage patterns, more floor space in the Mona Vale CBD is needed.
- The centres are generally in good condition, with the exception of Warriewood, with relatively new facilities in Newport and Avalon meeting community demand for high quality multipurpose space.
- Avalon Recreation Centre is an example of an integrated community facility. It includes a community centre, community library, youth services, Early Childhood Health Centre and is well located for public transport, parking and adjacent to the shopping precinct and open space.
- There are opportunities to further integrate the existing community centre with other cultural facilities in Mona Vale.
- The Ingleside Precinct Plan anticipates the increase in population of up to 3000 by 2036.

Strategic Direction

- The current Nelson Heather site is nominated for a future Warriewood Community Centre, with planning commenced for a 2000sqm facility.
- The new Warriewood Community Centre will address the demand for community floor space generated by the Warriewood Valley Release Area and mainly fill the future gap of community centre floor space, as identified in the benchmark analysis. Design commenced in 2020.It will be environmentally sustainable and be able to be used in emergency situations.
- Explore opportunities to develop an integrated community and cultural hub in Mona Vale. This includes the Mona Vale Memorial Hall, the Library, proposed creative space and open space on the site.
- Investigate the provision of a local centre in Ingleside as the population grows.



Bilarong Community Hall

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TERREY HILLS COMMUNITY CENTRE
10
Terrey Hills Community Centre

8.5. Terrey Hills Planning Catchment Area

The Terrey Hills Planning Catchment Area encompasses a large amount of National Park, is the most rural planning area and covers the suburbs of Ingleside and Terrey Hills.

- **Terrey Hills is expected to see population growth over the next 20 years:** In 2016 Terrey Hills had a population of 3,770 people. Population growth is expected to continue for Terrey Hills by 2036, and rising to 4,257, and increase of 487 people, or by 12.92%. (.idcommunity/demographics 2020)
- **a family-oriented area:** With around half of the households made of couples with children (in 2016)
- **a large proportion of older adults, which is expected to grow:** With 19% of the population aged 65 years or over in 2016.

Table 6. Council Managed Facilities in Terrey Hills

Hierarchy/Size	Capacity (People)	Multi-use area (sqm) weighted' against GFA
Regional		
Nil	0	0
District		
Nil	0	0
Local		
Terrey Hills Community Centre	150	361
Grand Total		**361**

*Refer to Appendix B for full GFA vs available GFA (weighted)

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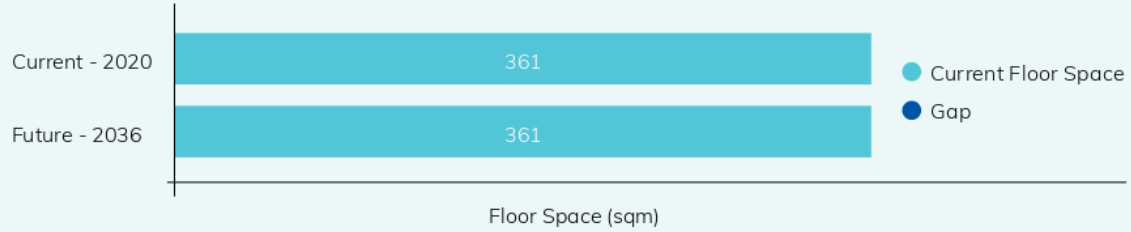
8.5. Terrey Hills Planning Catchment Area (continued)

Benchmark Analysis

This Strategy utilises floor space as the method for determining benchmark assessment.



Findings

Terrey Hills is the only local planning area with a current and future over supply of around 150sqm of Council managed community centres.

Strategic Direction

- Maintain and upgrade centre as part of the Community Centres Network.

9. Implementation Strategies, Measures and Action Plan

The Community Centres Strategy will be implemented through:

- Asset Management Plans
- a funding plan to implement the strategy, including the possible divestment of some centres considering location, utilisation and condition
- long term Capital Works Program and financial management plans
- Local Strategic Planning Statement, Local Environment Plan and Development Control Plans
- Place Planning of Strategic Centres
- Voluntary Planning Agreements
- leasing/licensing arrangements of other Council owned facilities.
- Capital Grants Programs NSW Government, Sport and Recreation Facility Grants Programs
- innovative management models and partnerships for non-Council managed and/or owned facilities to maximise community centre floor space available to the community.

The Community Centres Strategy will be measured through:

+ Increase in floor space in accordance with the Strategy
+ Increase in the number of community centres that are fully accessible
+ Increase resident satisfaction with:
  - facilities and services for youth
  - facilities and services for older people
  - arts and cultural facilities
+ Increase in community pride and connectedness

The strategic framework and responses (7 & 8), along with key actions, will inform Council's decision making over the next 10-20 years.

Informed by best practice and evidence-based research, these strategic directions influence our current and future state. The integrated framework will deliver a more sustainable, modern and flexible community centre service that welcomes and supports community activities now and into the future, contributing to community connections, cohesion and wellbeing.

The Strategy will be reviewed every five years, in line with changes in demographics and community needs. Actions in line with the strategic directions will be included in Council's Delivery Program and annual operational plans and reported through the Annual Report and end of term Reporting.

Oxford Falls Peace Park

Forest Community Arts Centre

10. Appendices

10.1. Appendix A

Table 7. Population Change, 2016 – 2036[4]

Population	2016	2021	2026	2031	2036	Change no. 2016-2036	Change % 2016-2036
Mona Vale	63,320	63,806	65,397	67,043	69,061	5,741	9.07
Terrey Hills	3,770	3,869	4,037	4,154	4,257	487	12.92
Frenchs Forest	39,677	39,809	45,223	51,530	55,012	15,335	38.65
Brookvale-Dee Why	96,666	100,191	103,360	106,681	110,131	13,465	13.93
Manly	58,361	59,209	59,842	60,781	61,892	3,531	6.05
TOTAL NB	**261,794**	**266,884**	**277,860**	**290,189**	**300,353**	**38,559**	**14.73**

Source: id population/demographics 2020
Revised figures tabled above factor in:
1. Inclusion of Ingleside Planned Precinct (revised figures 2020)
2. Inclusion of Frenchs Forest Planned Precinct

[4] Demographic data is based on the ABS ERP for 2011-2016 data, and TPA ERP (POPD + PNPD) for 2021-2036.

10.2. Appendix B

Table below shows the Gross Floor Area (GFA) of Council managed community centres. In order to represent a realistic GFA provision of Council managed community centres a weighted factor has been applied if the facility is considered to not be available to the entire community due to exclusivity or time constraints

Table 8. List of Existing Council Managed Centres

ID	Community Centre	Planning Area	Hierarchy	Main area capacity	GFA (sqm)	% available for multi-use	GFA available for multiuse
CC3	Beacon Hill War Memorial Hall	Brookvale-Dee Why	District	250	914	100%	914
CC5	Brookvale Community Centre	Brookvale-Dee Why	Local	40	248	75%	186
CC6	Collaroy Plateau Youth & Community Centre	Brookvale-Dee Why	Local	200	510	60%	306
CC7	Collaroy Swim Club Community Centre	Brookvale-Dee Why	Local	50	126	100%	126
CC8	Cromer Community Centre	Brookvale-Dee Why	District	600	1,252	75%	939
CC9	Curl Curl Sports Centre	Brookvale-Dee Why	Local	125	295	90%	266
CC10	Curl Curl Youth & Community Centre	Brookvale-Dee Why	District	250	815	80%	652
CC15	Griffith Park Sports Facility	Brookvale-Dee Why	Local	25	101	70%	71
CC16	Harbord Literary Institute	Brookvale-Dee Why	Local	100	298	50%	149
CC23	Narraweena Community Centre	Brookvale-Dee Why	Local	180	533	100%	533
CC27	North Curl Curl Community Centre	Brookvale-Dee Why	Local	150	342	100%	342
CC35	Tramshed Arts & Community Centre	Brookvale-Dee Why	Local	365	706	95%	671
CC4	Belrose Community Centre	Frenchs Forest	Local	100	234	50%	117
CC12a	Forest Community Arts Centre	Frenchs Forest	Local	165	609	100%	609
CC12b	Forestville Senior's Centre	Frenchs Forest	Local	235	453	95%	430
CC13	Forestville Memorial Hall	Frenchs Forest	District	430	821	95%	780

ID	Community Centre	Planning Area	Hierarchy	Main area capacity	GFA (sqm)	% available for multi-use	GFA available for multiuse
CC14	Forestville Community Hall	Frenchs Forest	Local	200	461	80%	369
CC17	Lionel Watts Sports & Community Centre	Frenchs Forest	Local	100	163	80%	130
CC29	Oxford Falls Peace Park	Frenchs Forest	Local	50	54	100%	54
CC36	YOYO's - Forest Youth Centre	Frenchs Forest	Local	150	217	100%	217
CC1	Allambie Heights Public Hall	Manly	Local	50	146	100%	146
CC18	Manly Library Meeting Room	Manly	Local	40	125	50%	63
CC19	Manly Seniors Centre	Manly	Local	230	472	30%	142
CC20	Manly Vale Community Centre	Manly	Local	200	531	70%	372
CC21	Manly Youth and Community Centre	Manly	Local	225	458	100%	458
CC26	North Balgowlah Community Centre	Manly	Local	120	416	100%	416
CC30	Seaforth Community & Sporting Pavilion	Manly	Local	80	293	80%	234
CC31	Seaforth Community Centre	Manly	Local	200	651	70%	456
CC32	Seaforth Village Community Centre	Manly	Local	90	444	75%	333
CC2	Avalon Recreation Centre	Mona Vale	District	760	1242	100%	1242
CC39	Avalon Annexe	Mona Vale	Local	100	205	100%	205
CC38	Bilarong Community Hall	Mona Vale	Local	75	166	75%	125
CC11	Elanora Heights Community Centre	Mona Vale	Local	110	254	50%	127
CC22	Mona Vale Memorial Hall	Mona Vale	Local	275	534	100%	534
CC24	Nelson Heather Centre	Mona Vale	District	190	926	100%	926
CC25	Newport Community Centre	Mona Vale	Local	240	561	80%	449
CC28	North Narrabeen Community & Tennis Centre	Mona Vale	Local	185	599	50%	299
CC33	Ted Blackwood Youth & Community Centre	Mona Vale	Local	280	495	100%	495
CC34	Terrey Hills Community Centre	Terrey Hills	Local	150	380	95%	361
	Total				**18,050***		**15,244****

*When including PCYC, the total GFA is 18,410 **When including PCYC, the total GFA available for multipurpose is 15,604

10.3. Appendix C

Table 9. List of other buildings owned by Council, managed through leases/licenses and currently not in the community centre network. This list is not conclusive. There are numerous other Council buildings leased/used by various sporting clubs across the LGA, including golf, bowling, tennis and other sporting clubhouses. They have some capacity for community use and will include these buildings in a 'Indoor Sporting Recreation Strategy' to commence in 2021.

Community Building	Address	Planning Area
Cromer/Dee Why Scout Hall	17 Arthur St, Dee Why	Brookvale-Dee Why
1st Collaroy Plateau Scout Hall	37 Goodwin St, Narrabeen	Brookvale-Dee Why
1st/2nd Harbord Scout Hall	43 Stirgess Ave, Curl Curl	Brookvale-Dee Why
North Narrabeen Swim Club	Narrabeen Park Parade, North Narrabeen	Brookvale-Dee Why
Freshwater Surf Club	Kooloora Avenue, Freshwater	Brookvale-Dee Why
South Curl Curl Surf Club	Carrington Parade, Curl Curl	Brookvale-Dee Why
North Curl Curl Surf Club	Griffin Rd, North Curl Curl	Brookvale-Dee Why
Dee Why Surf Club	The Strand, Dee Why Beach	Brookvale-Dee Why
Long Reef Surf Club	Off Pittwater Rd, Long Reef Beach. Collaroy, 2097	Brookvale-Dee Why
Brookvale Oval – Presidents Lounge & Heritage Lounge	Pittwater Rd, Brookvale	Brookvale-Dee Why
Collaroy Surf Club	Pittwater Rd, Collaroy	Brookvale-Dee Why
South Narrabeen Surf Club	1200 Pittwater Rd, Narrabeen	Brookvale-Dee Why
Narrabeen Surf Club	"Lions Park" ~ Cnr Albert Street & Ocean Street	Brookvale-Dee Why
North Narrabeen Surf Club	2 Malcolm St, Narrabeen	Brookvale-Dee Why
Stony Range Meeting Room	810 Pittwater Rd, Dee Why (this is managed by Council by the reserves bookings team)	Brookvale-Dee Why

Community Building	Address	Planning Area
Freshwater Swim Club	4 Lumsdaine Drive, Freshwater	Brookvale-Dee Why
South Curl Curl Swim Club	South Curl Curl Beach	Brookvale-Dee Why
North Curl Curl Swim Club	North Curl Curl Beach	Brookvale-Dee Why
Dee Why Swim Club	Dee Why Beach	Brookvale-Dee Why
Beacon Hill Scout & Guide Hall	Beacon Hill Reserve, Willandra Rd, Beacon Hill	Brookvale-Dee Why
Belrose Scout Hall	33 Maitland Street, Davidson	Frenchs Forest
Davidson Scout Hall	33 Maitland St, Davidson	Frenchs Forest
Frenchs Forest Scout Hall	7 Utyana Pl, Frenchs Forest	Frenchs Forest
1st Forestville Scout Hall	Forestville Ave, Forestville	Frenchs Forest
Forestville Guide Hall	Forestville Ave, Forestville NSW	Frenchs Forest
1st Fairlight/Manly Scout Hall	Park Ave, Manly	Manly
Queenscliff Swim Club	North Steyne (Road), Queenscliff	Manly
Balgowlah Scout Hall	Pickworth Avenue, Balgowlah	Manly
Avalon Beach SLSC	558A Barrenjoey Road, Avalon Beach	Mona Vale
Scotland Island Community Centre	Robertson Road, Scotland Island	Mona Vale
Bayview Scout Hall	Bayview Park, Pittwater Road, Bayview	Mona Vale
Newport Scout Hall	Barrenjoey Rd, Newport	Mona Vale
Newport SLSC	394 Barrenjoey Rd, Newport	Mona Vale

Community Building	Address	Planning Area
Kitchener Park Sports Centre	1610 Pittwater Rd, Mona Vale	Mona Vale
1st Bayview Scout Hall	Bayview Park, Pittwater Rd, Bayview	Mona Vale
Mona Vale Scout Hall	LOT 101 Barrenjoey Rd, Mona Vale	Mona Vale
Mona Vale Guides Hall	Same as Scout Hall	Mona Vale
Elanora Guides	43 Elanora Rd, Elanora Heights	Mona Vale
Warriewood Surf Club	Narrabeen Park Parade, Warriewood	Mona Vale
Mona Vale Surf Club	Surfview Rd, Mona Vale	Mona Vale
Bungan Beach Surf Club	97 Myola Rd, Newport	Mona Vale
Newport Surf Club	394 Barrenjoey Rd, Newport	Mona Vale
Bilgola Surf Club	Bilgola Plateau	Mona Vale
Avalon Surf Club	558A Barrenjoey Rd, Avalon Beach	Mona Vale
Whale Beach Surf Club	227 Whale Beach Rd, Whale Beach	Mona Vale
North Palm Beach Surf Club	Beach Rd, Palm Beach	Mona Vale
Terrey Hills Scout Hall	Beltana Avenue via Oval Car Park, Terrey Hills	Terrey Hills

Scout & Guide Halls Surf Club Pavilions Swim Clubs Others

10.4. Appendix D

Based on existing and anticipated population growth (refer Table 7) the following tables show the Council managed community centre shortfall/gaps for each planning area.

Table 10. Benchmark assessment of Community Centre shortfall/gap 2020

Shortfall/Gap 2020

Planning Area	2016 population	Recommended Floor Area @ 80sqm/1000	Council Managed Community Centre GFA (Floor space available for multiuse activities)	GAP
Brookvale-Dee Why	96,666	7,733	5,515	-2,218
Frenchs Forest	39,677	3,174	2,706	-468
Manly	58,361	4,669	2,620	-2,049
Mona Vale	63,320	5,066	4,402	-664
Terrey Hills	3,770	302	361	59
TOTAL NB	**261,794**	**20,944**	**15,604***	**-5,340**

*15,604 includes the 360sqm of the community rooms at Dee Why's PCYC

Table 11. Benchmark Assessment of Community Centre Shortfall/Gap 2036

Shortfall/Gap 2036

Planning Area	2036 population	Recommended Floor Area @ 80sqm/1000	Council Managed Community Centre GFA (Floor space available for multiuse activities-weighted)	GAP
Brookvale-Dee Why	110,131	8,810	5,515	-3,295
Frenchs Forest	55,012	4,401	2,706	-1,695
Manly	61,892	4,951	2,620	-2,331
Mona Vale	69,061	5,525	4,402	-1,123
Terrey Hills	4,257	341	361	20
TOTAL NB	300,353	24,028	**15,604***	-8,424

*15,604 includes the 360sqm of the Dee Why PCYC

Table 12. Existing Council Managed Community Centre Provision (GFA) 2020

Planning Area	GFA (Total Floor space) sqm	GFA (Floor space available for multi-use activities) sqm	Population 2016	Existing Rate of Provision (sqm/1000 population)
Brookvale-Dee Why	6,500	5,515	96,666	57
Frenchs Forest	3,102	2,706	39,677	68
Manly	3,535	2,620	58,361	45
Mona Vale	4,949	4,402	63,320	69.5
Terrey Hills	361	361	3,770	95.7
Total Council facilities	**18,447**	**15,604**	**261,794**	**59.6**

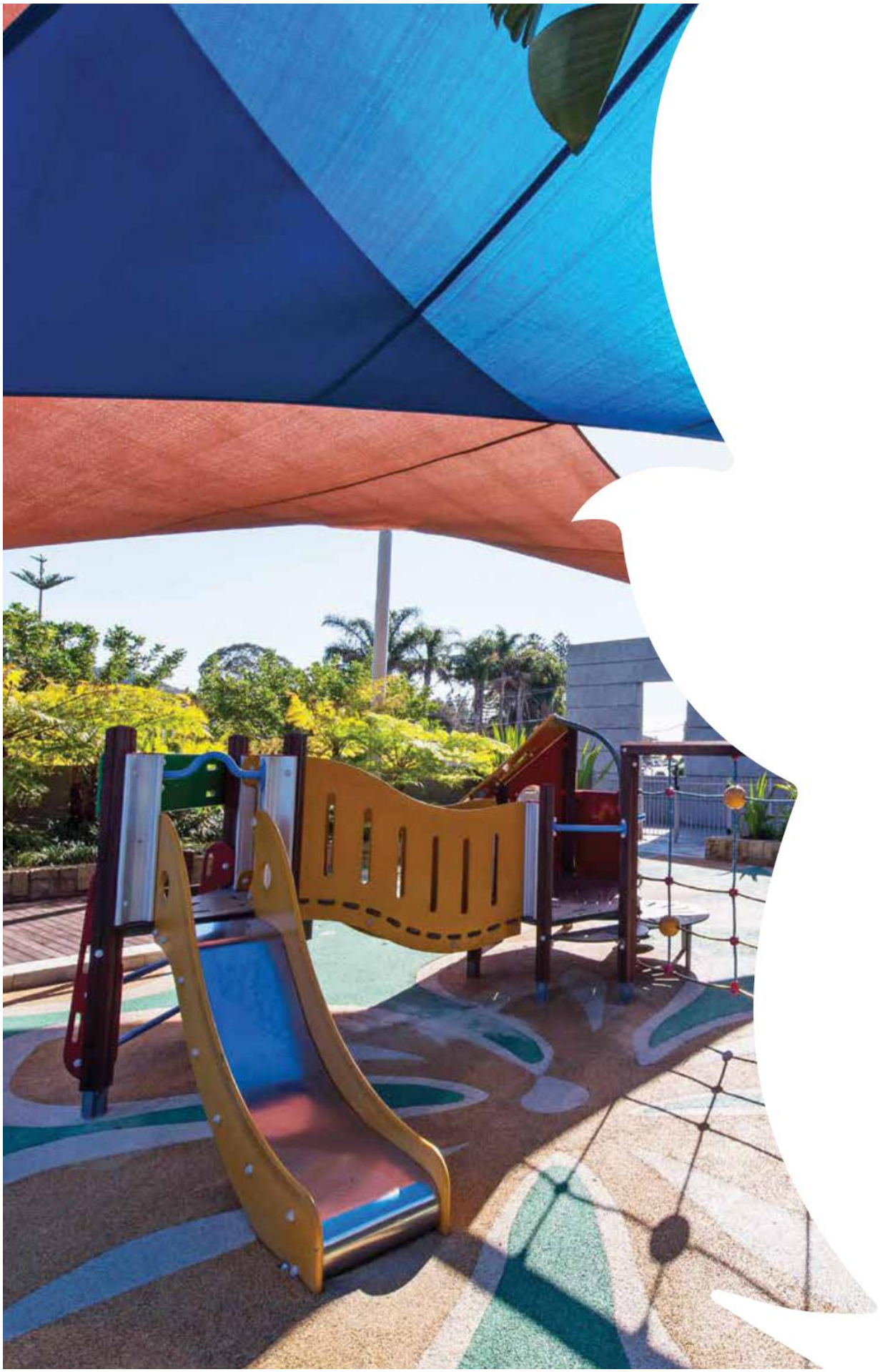
northern beaches council

Community Centres Strategy

Action Plan

March 2021





Community Centres Strategy - Action Plan

As outlined in the Community Centres Strategy, the following actions will assist the planning and delivery of a strong community centre service for the Northern Beaches.

This Action Plan will be reviewed annually.

Strategy 1 – Improve utilisation rates of existing centres

Ensure that facilities are utilised to their optimum potential to meet community needs.

	Actions	Timeframe
1.1	Identify opportunities for target groups to utilise the centres, by each Centre.	Short Term
1.2	Develop a technology plan for each Centre, and include in annual operational budgets.	Short to Medium Term
1.3	Innovative renewal of existing centres to improve vibrancy and accessibility, included in capital works program.	Short to Long Term

Strategy 2 - Maximise fair and equitable access to existing centres

Develop a management framework that will have fair and equitable booking practices.

	Actions	Timeframe
2.1	Implement the new organisational booking system.	Short Term
2.2	Review terms and conditions on an annual basis.	Annually/as required
2.3	Review fees and charges on an annual basis.	Annually

Strategy 3 – Implement 'community hubs'

Explore the co-location and integration of existing and future community centres in areas that are accessible via active and public transport in support of the 30 minute city concept.

	Actions	Timeframe
3.1	Identify existing centres in locations that may be suitable for 'community hubs'	Short Term
3.2	Identify future 'community hubs in suitable locations when planning for new centres	Medium to Long Term

Short Term = one to two years
Medium Term = three to five years
Long Term = five years plus

Strategy 4 – Identify the location of a regional community centre within the Local Government Area

Investigate the needs and opportunities for a new regional multipurpose community centre that is centrally located with good access to and from other planning areas.

	Actions	Timeframe
4.1	Consider the inclusion of a regional community centre in the Dee Why Town Centre, through the Local Environmental Plan and Masterplans.	Long Term

Strategy 5 – Increase the number of district community centres to service the Northern Beaches

If utilisation rates at local neighbourhood centres are unable to increase due to location and facility limitations, consider disposal of centres to fund the required larger district/sub-regional community centres.

	Actions	Timeframe
5.1	Identify opportunities for the development of new district multipurpose community centres in central locations.	Short Term
5.2	Identify opportunities for new district centres in Brookvale, Frenchs Forest and Manly.	Medium to Long Term
5.3	Work with Property on a detailed Asset Management plan	Ongoing/ Medium term

Strategy 6 – Develop a community centre marketing strategy

Increase community understanding of Council community facilities through the development of a consistent marketing strategy for all centres as welcoming and inclusive spaces for the whole community.

	Actions	Timeframe
6.1	Develop and implement a marketing strategy for all centres, as welcoming and inclusive spaces for the whole community.	Short Term

Strategy 7 – Create inviting, accessible and welcoming community centres

Develop a plan to upgrade and refurbish centres to create inviting, welcoming functional spaces that reflect the community.

	Actions	Timeframe
7.1	Development of minimum design standards for community centres.	Short Term
7.2	Develop a program of works for the refurbishment of community centres.	Short Term
7.3	Develop a long-term asset management plan for community centres.	Short to Medium term
7.4	Implement recommendations for each community centre in Council's portfolio (see Attachment 1)	Short to Long Term

Strategy 8 – Investigate management models for non-Council managed and/or owned facilities to maximise floor space available to the community

	Actions	Timeframe
8.1	Develop standard leases for community groups in Council owned buildings, including a minimum standard for broad community access, and implement when leases are reviewed over time.	Short to Medium Term
8.2	Initiate discussions with lessees in Council owned buildings to identify opportunities for improved community access.	Short to Medium Term
8.3	Continue to work with the Department of Education on joint use opportunities for school halls and facilities.	Ongoing
8.4	Identify suitable facilities owned privately for opportunities for community access. e.g. Church halls.	Short to Medium Term

Strategy 9 – Develop a funding plan to enable the implementation of this strategy, including divestment, renewal, grant programs and the capital works budget.

	Actions	Timeframe
9.1	Research and apply for applicable grant programs.	Short to Medium Term
9.2	Prioritise capital upgrades and renewals, working with Property Department.	Short to Medium Term

Strategy 10 – Investigate the Aboriginal history of the sites of current and future centres, and ensure the history is recognised.

	Actions	Timeframe
10.1	Research the Aboriginal history of the current centres locations, in liaison with the Aboriginal Heritage Office.	Short Term
10.2	Develop a plan to implement the indigenous history findings of each site, ie, signage, information, cultural artefacts, etc	Short to Medium Term
10.3	Incorporate indigenous history into the design of new facilities.	Short to Long Term

Identified actions for existing Community Centres

Council has 39 community centres in its portfolio for the purposes of this strategy, as detailed in the list below.

These actions below should be read in conjunction with the Strategic Directions for each planning area in the Community Centres Strategy. This will provide a complete picture of future directions and actions in each area across the Northern Beaches. These actions were developed in consultation with internal and external stakeholders.



ID	Community Centre	Actions
Brookvale - Dee Why Planning Area		
CC3	**Beacon Hill War Memorial Hall**	**Short Term:** Research and document veterans memorialised in the garden. Install basketball hoop mechanism in first half of 2021. Investigate short term storage options for the Beacon Hill Youth Club. **Medium to Long Term:** Undertake a masterplan for the site including the oval and other community buildings, to look at opportunities for redevelopment to increase space, especially for indoor sport hall demand, incorporating storage for sports groups, amenities and scout hall. **Long Term:** Maintain centre as part of the Community Centres network.
CC5	**Brookvale Community Centre**	**Short Term:** Undertake investigation for a replacement facility as part of the Brookvale Precinct Master Plan. **Short to Medium Term:** Maintain facility and transfer/sale of asset once replacement facility is provided for. **Medium to Long Term:** Replacement facility in more central location. District sized centre needed.
CC6	**Collaroy Plateau Youth & Community Centre**	**Short to Medium Term:** General maintenance and improvements as required. **Medium Term:** Investigate upgrade of the upstairs hall.Landscaping and exterior improvements needed. **Long Term:** Maintain centre as part of the Community Centres network.
CC7	**Collaroy Swim Club Community Centre**	**Short Term:** General maintenance as required. **Medium to Long Term:** Maintain centre as part of the Community Centres network.
CC8	**Cromer Community Centre**	**Short to Medium Term:** Refurbishments to address modernisation, minor maintenance and access issues. Upgrade courtyard bathrooms and accessibility. **Long Term:** Maintain centre as part of the Community Centres network and promote as district/community centre.
CC9	**Curl Curl Sports Centre**	**Short Term:** Upgrades to windows to improve airflow and cooling. Targeted marketing and promotion to increase utilisation. **Short to Medium Term:** Refurbishment to address maintenance issues. **Long Term:** Maintain centre as part of the Community Centres network.

ID	Community Centre	Actions
CC10	**Curl Curl Youth & Community Centre**	**Short Term:** General maintenance and improvements as required. Investigate pincode or other access not requiring keys, making this site a priority for implementing a new access system. **Medium to Long Term:** Investigate opportunities for redeveloping/ expanding the centre to cater for increasing demand for a variety of indoor sports across the Northern Beaches.
CC15	**Griffith Park Sports Facility**	**Short to Medium Term:** Targeted marketing and promotion to increase utilisation. **Long Term:** Maintain centre as part of the Community Centres network.
CC16	**Harbord Literary Institute**	**Short and Medium Term:** Playground upgrade, soft fall replacement and drainage to be addressed. Investigate heating and cooling. **Long Term:** Maintain centre as part of the Community Centres network.
CC23	**Narraweena Community Centre**	**Short to Medium Term:** Modernisation of the building exteriors and landscaping. **Long Term:** Maintain centre as part of the Community Centres network.
CC27	**North Curl Curl Community Centre**	**Short Term:** Improvements to facility as per the Concept Plan for North Curl Curl Community Centre 2016. External, accessible bathroom facilities for reserve users are being built in early 2021. **Medium Term:** Investigate the feasibility of extending or reconfiguring the building to enable multiple groups to use the building, and to cater for the growing demand for community space (as per the Concept Plan for North Curl Curl Community Centre 2016). Increase accessibility to the building, parking and toilet facilities. Parking upgrade is essential for all user groups at this well utilised site. **Long Term:** Maintain centre as part of the Community Centres network and promote as a district/sub-regional community centre.
CC35	**Tramshed Arts & Community Centre**	**Short and Medium Term:** Maintain centre as part of the Community Centres Network. Investigate storage and access improvements. New shelving in Pottery Room. **Long Term:** Council to consider building a second storey on top of the Tramshed hall section, with accessibility via the existing lift to Lakeview Hall.

ID	Community Centre	Actions
Frenchs Forest Planning Area		
CC4	Belrose Community Centre	**Short to Medium Term:** Look at opportunities to undertake refurbishment internally to increase space, improve storage, and improve internal and external appearance. Playground upgrade. **Long Term:** Maintain centre as part of the Community Centres network.
CC13 & CC12b	Forest Community Arts Centre	**Short to Medium Term:** Internal and external modernisation and improvement of whole building, including signage upgrade. Investigate office window installation in the hallway side of the office. **Long Term:** Maintain centre as part of the Community Centres network.
CC13 & CC12b	Forestville Memorial Hall & Forestville Seniors Centre	**Short Term:** Minor refurbishments to address maintenance issues and modernisation. Storage improvements. **Medium Term:** Investigate opportunities to upgrade the Forestville Memorial Hall and Seniors Centre to improve this multipurpose facility. Upgrade foyer and entrance of the Seniors Centre **Long Term:** Maintain centre as part of the Community Centres network and promote as a district community centre. Explore concept for this site to be redeveloped as a major integrated community hub.
CC14	Forestville Community Hall	**Short Term:** General maintenance as required. Install new fans and heaters. Playground upgrade. **Medium Term:** Investigate the integration of the three community buildings (including the former Guide Hall and current Scout Hall) on the site and increase usage by improving external connections and synergies with the activities undertaken on the site. **Long Term:** Maintain centre as part of the Community Centres network.
CC17	Lionel Watts Sports & Community Centre	**Short and Medium Term:** Targeted marketing and promotion to increase utilisation and improve storage. Kitchen upgrade. **Long Term:** Maintain centre as part of the Community Centres network.

ID	Community Centre	Actions
Frenchs Forest Planning Area Continued		
CC29	Oxford Falls Peace Park	**Short Term:** Targeted marketing and promotion to increase utilisation during weekdays. **Medium Term:** Address bush toilet, upgrade facilities, storage and access. **Long Term:** Maintain centre as part of the Community Centres network.
CC36	YOYO's - Forest Youth Centre	**Short to Medium Term:** Maintain until transfer/sale of asset if replacement facility is provided in new Frenchs Forest Town Centre redevelopment. **Long Term:** Replacement facility in a new multipurpose centre located in Frenchs Forest Town Centre as part of the Community Centre network.
Manly Planning Area		
CC1	Allambie Heights Public Hall	**Short to Medium Term:** Upgrade bathroom facilities, address accessibility, playground upgrade required. Improve lighting for better visibility and access at night. **Long Term:** Maintain centre as part of the Community Centres network.
CC18	Manly Library Ground Floor Meeting Room	**Short to Medium Term:** Ongoing maintenance as required. **Long Term:** Use the space for library programming and activities once a district/sub-regional multipurpose centre located in central Manly is developed as part of the Community Centre network.
CC19	Manly Seniors Centre	**Short Term:** Maintenance as required. **Medium to Long Term:** Install kitchenette into the Activity Room to enable separate use from the main hall facilities. . Bathroom and accessibility upgrades. Further investigate parking issues and future use of the unused land beside the centre to the north. **Long Term:** Maintain centre as part of the Community Centres network.

ID	Community Centre	Actions
Manly Planning Area Continued		
CC20	**Manly Vale Community Centre**	**Short to Medium Term:** Access and modernisation improvements around kitchens, bathrooms and outdoor space between the two halls. New outdoor furniture for Lovett St Hall. Upgrade sink/bathroom area and playground off Lovett St Hall **Long Term:** Maintain centre as part of the Community Centres network.
CC21	**Manly Youth & Community Centre**	**Short Term:** Major renovation was completed in April 2020. Investigate solution for sound proofing of the Main Hall due to noise from the attached preschool. **Medium to Long Term:** Maintain centre as part of the Community Centres network.
CC26	**North Balgowlah Community Centre**	**Short Term:** Undertake minor refurbishment to address current maintenance issues and modernisation. Playground and bathroom improvements. **Medium to Long Term:** Consider consolidation with Seaforth Community Centre (CC31) due to site unsuitability. It is surrounded by close neighbours restricting the use of the halls and has limited parking in close proximity. If remaining in Community Centre network, requires major upgrade of the playground, toilets and full accessibility.
CC30	**Seaforth Community & Sporting Pavilion**	**Short Term:** Targeted marketing and promotion to increase utilisation, address acoustic issue. **Medium to Long Term:** Maintain centre as part of the Community Centres network.
CC31	**Seaforth Community Centre**	**Short Term:** General maintenance upgrades as required. Playground upgrade a priority. **Medium to Long Term:** Upgrade to meet current and future needs for space at this site. The investigation to look at options for the current facility to be more flexible with expanded space, see North Balgowlah Community Centre (CC26). Maintain centre as part of the Community Centres network.
CC32	**Seaforth Village Community Centre**	**Short Term:** Ongoing maintenance as required. **Medium to Long Term:** Maintain centre as part of the Community Centres network.

ID	Community Centre	Actions
Mona Vale Planning Area		
CC2	**Avalon Recreation Centre**	**Short to Medium Term:** Improve acoustics, storage and update exhibition and other equipment. **Long Term:** Maintain centre as part of Community Centres network.
CC39	**Avalon Annexe**	**Short Term:** Improve storage and acoustics. **Medium to Long Term:** Investigate opening up the southern side to the park by adding a balcony and glass doors for improvements to the space, lighting and amenity.
CC38	**Bilarong Community Hall**	**Short Term:** Major upgrade completed in 2020 and available to the wider community to hire outside Scouts usage'. Investigate enclosing the grounds immediately in front of the centre with fencing, to make it child safe and improving the overall facility usage. **Short to Medium Term:** Maintain hall as part of the Community Centres network
CC11	**Elanora Heights Community Centre**	**Short to Medium Term:** Minor refurbishment to address the lack of storage and other issues for multi-use needs. Bathroom and access upgrades. **Long Term:** Maintain centre as part of Community Centres network.
CC22	**Mona Vale Memorial Hall**	**Short Term:** Refurbishment of internal layout to maximise use of former council chambers, install air-conditioning, improve signage and increase storage. **Medium Term:** Develop an integrated community and cultural hub, including the Hall, Library, Arts space and open spaces on the site. **Long Term:** Maintain centre as part of the Community Centres Network and investigate opportunities for upgrade to a district community centre.
CC24	**Nelson Heather Centre**	**Short Term:** Planned replacement with the new district Warriewood Valley Community Centre on same site. In 2020/2021 staff will work with the user groups to relocate them to alternate centres during the building of the new Warriewood Valley Community Centre. **Medium to Long Term:** New facility to be a multipurpose community hub within the Community Centre network.

ID	Community Centre	Actions
Mona Vale Planning Area Continued		
CC25	**Newport Community Centre**	**Short Term:** Install projector and screen into hall. Improve storage rooms and storage. Investigate leasing of the Tennis Courts management. **Medium Term:** When childcare lease expires in 2023, refit the large office area to a meeting room space to meet the current and future needs of the wider community. Address storage requirements for the multi-use hirers at this centre. **Long Term:** Maintain centre as part of the Community Centres network.
CC28	**North Narrabeen Community & Tennis Centre**	**Short to Medium Term:** Address sound and acoustics between the halls. Investigate storage improvements for the Kindergarten's 'pack away' requirements that will benefit all user groups. Investigate leasing of the Tennis Courts management. **Short to Medium Term:** Modernise and upgrade hall and toilets. **Long Term:** Maintain centre as part of the Community Centres network.
CC33	**Ted Blackwood Youth & Community Centre**	**Short and Medium Term:** Upgrade toilets, kitchen, storage and stage area. **Long Term:** Maintain centre as part of the Community Centres network.
Terrey Hills Planning Area		
CC34	**Terrey Hills Community Centre**	**Short to Medium Term:** Look at opportunities to increase utilisation of centre. Toilets, kitchen and meeting room upgrade. **Long Term:** Maintain centre as part of the Community Centres network.




Oxford Falls Peace Park



MINUTES

COMMUNITY SAFETY COMMITTEE

held as an online meeting on

THURSDAY 26 NOVEMBER 2020

Minutes of the Community Safety Committee

held on Thursday 26 November 2020 as an online meeting

Commencing at 8am

ATTENDANCE:

Cr Candy Bingham	Deputy Mayor – Acting Chair
Cr Sue Heins	
Cr Kylie Ferguson	
Zali Steggall OAM MP	Federal Member for Warringah represented by Peta Garrett
James Griffin MP	State Member for Manly represented by Kim Preston-Hiney
Inspector Jillian Walters	Northern Beaches Police Area Command
Michelle Comito	Catholic Care
John Kelly	Community Northern Beaches
Michelle Povah	Community Representative
Ray Mathieson	Community Representative
Roberta Conroy	Community Representative
Michelle Erofeyeff	Department of Communities and Justice (DCJ)
Trish Bramble	Manly Warringah Women's Resource Centre
Melissa Palermo	NASLHD Health Promotion
Ron Malm	Northern Beaches Liquor Accord
Tony Hilliger	Surf Lifesaving Sydney Northern Beaches
Belinda Volkov	Sydney Drug Education & Counselling Centre (SDECC)
Kamal Krishan	State Transit Authority Northern Region

Council Officer Contacts

Ray Brownlee	Chief Executive Officer
David Kerr	Director Community and Belonging
Kylie Walshe	Executive Manager Community, Arts and Culture
Azmeena Kelly	Executive Manager Environmental Compliance
Rob van den Blink	Manager Youth and Community Development
Sue Johansson	Community Development Officer
Helen Askew	Program Support Officer Youth and Community Development

Visitors

Cr Vincent De Luca OAM	Observer
Jacquie Grove	Manager, Environment Resilience & Climate Change
Kara Taylor	Senior Sustainability Officer
Russell Peake	Manager, Social Planning & Services
Anita Ugarkovic	Manager, Building Compliance - Environmental Compliance

1.0 ACKNOWLEDGEMENT OF COUNTRY

The Deputy Mayor acknowledged the traditional custodians of the land on which the meeting gathered, and paid respect to Elders past and present.

2.0 APOLOGIES

Apologies were received from:

Cr Michael Regan	Mayor
Patrick Sharkey	Superintendent Northern Beaches Police Area Command

The following members were not in attendance:

Cr Stuart Sprott	
Luisa de Bont	Community Representative
Stephen Pirovic	Community Representative
Christina Franze	Manly Chamber of Commerce
Drew Johnson	Manly Chamber of Commerce

3.0 DISCLOSURES OF INTEREST

There were no disclosures of pecuniary or non-pecuniary conflicts of interest.

4.0 CONFIRMATION OF MINUTES OF PREVIOUS MEETINGS

4.1 MINUTES OF COMMUNITY SAFETY COMMITTEE MEETING HELD 8 OCTOBER 2020

DECISION

The Minutes of the Community Safety Committee meeting held 8 October 2020, copies of which were previously circulated to all Members, are hereby confirmed as a true and correct record of the proceedings of that meeting.

Moved Cr Ferguson, Seconded Cr Heins

5.0 ACTIONS UPDATE

5.1 ACTIONS UPDATE

DISCUSSION

ITEM NO.	ACTION	ACTION UPDATE
6.3	Council staff to provide feedback to Ray Mathieson on whether any actions relating to access paths and lighting safety are in Council's Road Safety Plan and Pedestrian Plan.	Action taken. Council staff contacted Ray Mathieson and discussed issues relating to access paths and lighting safety around Manly. An offline conversation will be held between Council and Police to determine an appropriate COVID safe date for a Manly late night safety audit.
6.4	Council to invite SDECC to attend the November Suicide Response Steering Group Meeting as the focus will be youth, and SDECC can provide alcohol and drug expertise to this discussion.	Action taken. SDECC invited to the Suicide Response Steering Group Meeting on 18 November.

6.0 AGENDA ITEMS

6.1 POLICE REPORT

DISCUSSION

Acting Superintendent Jillian Walters provided an update on local Police matters.

- Comparison from Sept/Oct 2019 and Sept/Oct 2020 crime statistics continue to indicate a general downward trend.
- Conversely, Police legal action rate (charges) have increased and the Northern Beaches Area Command has the highest legal action rate within the Northern West region which is very positive.
- Break and enters, steal from motor vehicles and stolen vehicles have increased. This reflects an overall metropolitan increase. As a result of a regional response, arrests have recently been achieved in relation to stolen vehicles.
- Youth issues have increased and become quite prevalent including youth on youth robberies. Those involved generally don't wish to provide statements or progress investigations for fear of retribution.
- Reported resident concern in regard to Northern Beaches youth issues was discussed. These incidents are known to Police. A recent assault investigation in Avalon has not progressed due lack of cooperation from those involved and no CCTV.
- Following a successful October operation, 'Summer Safe' will be reintroduced during December/January. With a focus on youth issues, the operation will involve the Local Area Command, Youth Command, Police Transport Command (PTC) and high visibility regional Policing Unit.

- Police are meeting with the Director of Education for the Pittwater network to discuss strategies for a collaborative approach with schools, parents and all agencies to manage youth drug and alcohol and related issues.
- Reminder to the Committee that members of the public need to report specific crime issues to Police when they occur to assist investigations and action.
- Concern from a resident about anti-social behaviour and Neighbourhood Watch at Glenrose Shopping Centre, Belrose. The Command's Crime Prevention Officer will make contact with the resident to discuss establishing a community led local group.

The Committee provided the following feedback:

- The Committee was reminded to be mindful of demonised language regarding young people. The increase in Police statistics and experiences with youth and parents is also being reflected at SDECC. There is a need for implementation of proactive and protective factors, for example at skate parks.
    - Request for crime data in relation to adolescent violence against parents for under 18 year olds – offline conversation between SDECC and Police.
- Cr De Luca commented on youth incidents – Police to respond directly to resident.
- Cr Ferguson commented about recent vandalism in the community and the benefits of CCTV installation. Police indicate that CCTV is a deterrent and is helpful during investigations.

ITEM NO.	ACTION	RESPONSIBLE OFFICER	DUE DATE
6.1.1	To assist with patterns of crime identification, staff were requested to include a Council community eNews item in relation to the importance of reporting specific crime issues to Police when they occur.	Community Safety Coordinator	18 Feb 2021
6.1.2	First meeting of 2021 Agenda to focus on youth crime	Manager, Youth & Community Development	18 Feb 2021
6.1.3	Crime Prevention Officer to contact resident regarding Neighbourhood Watch in Belrose	Police	Dec 2020
6.1.4	Provide feedback at the next meeting on local Neighbourhood Watch initiatives	Police	18 Feb 2021
6.1.5	Provide crime data in relation to adolescent violence against parents for under 18 year olds to SDECC	Police	18 Feb 2021
6.1.6	Police to contact concerned resident re youth issues	Police	Dec 2020

6.2 COMPLIANCE REPORT

DISCUSSION

The Executive Manager Compliance provided the Committee with an update on Compliance matters:

- Animal Management.
    - Increase in dog attacks during October.
    - An incident at Long Reef marine reserve where a dog attacked a seal has resulted in

the dog owner being fined. Council Rangers have notified National Parks and Wildlife Service who are also investigating the incident under their powers.
    - In October a search warrant was executed in relation to suspected breaches of a dangerous dog order resulting in the dog being seized under powers of the Companion Animal Act. Investigations are continuing.
    - Two recent court matters in relation to the Companion Animal Act have resulted in offences being proven.
- Alcohol Free Zone.
    - Patrols are continuing and recent warmer weather has seen an increase in actions.
    - Ranger numbers have doubled enabling numerous patrols at various times until 10.30pm every night.
- Proactive Compliance.
    - Increased dumped waste reports and collections. Continue to work with property managers to improve dumped waste and litter management.
    - Increased communication with shopping centres to ensure proactive trolley management in the lead up to and over the busy shopping period. Trolley incidents should be reported as they occur to enable Council to liaise with shopping centre management and quickly address the issue.
- Environmental Health.
    - COVID safety checks with food premises continuing. Recommencing normal food safety inspection program in the new year.
    - Recently held a small business and community groups waste reduction webinar 'Swap for Good - Contactless Cafes'.
    - Mosquito trapping program to recommence 30 November until April 2021 at Warriewood Wetlands and Deep Creek as part of the NSW Health Arbovirus Surveillance Program. More than likely this will become annual program.
    - 'Get the Site Right' Program recent blitz focusing on site management and sediment control of building sites has resulted in numerous warnings, prevention notices and penalty infringements.

Cr Bingham praised the work of the Compliance Team.

6.3 URBAN NIGHT SKY PLACE PROPOSAL FOR PALM BEACH

DISCUSSION

Council's Environment and Climate Change staff gave a presentation on the proposal to designate the Palm Beach Headland as an *Urban Night Sky Place,* under the International Dark Sky Places Program.

A working group was established to investigate the proposal and stakeholders include National Parks and Wildlife Service, Palm Beach Whale Beach Residents Association, community members, Pittwater Natural Heritage Association, Palm Beach Golf Club, Boathouse Restaurant, Australasian Dark Sky Alliance and the North Sydney Astronomical Society.

The proposed activities are consistent with the current guiding documents for the area, such as the Plan of Management and in principle support has been provided by a number of stakeholders. Additionally, the NSW Department of Planning & Environment actively support the concept of Dark Night Sky Planning and promote education programs including 'Dark Sky for Teachers' and 'Dark Sky for Kids'.

Community engagement to date has been vastly positive. Council's Youth Advisory Group identified that this is another activity that families and under 18s could get involved in.

Safety concerns raised include neighbourhood and street safety, event safety and general safety of persons at night in the area.

An experienced outdoor lighting design consultant has been engaged to assist with the area's Lighting Management Plan (LMP) which will include consideration of sustainable light upgrades which will increase efficiency and reduce costs.

Urban Night Sky Place proposal is open for community comment until 6 December 2020.

The Committee provided the following comments:

- Police indicated that the proposal was a positive idea. The lighting will assist Police in their role and also provides an ambient environment. In regard to the likelihood of increased crime, when activities are on, events are generally a deterrent and reduces crime in the area.
- Cr Ferguson has observed a great family environment at similar events.

Cr Bingham complimented the staff on the work to date on this proposal.

6.4 SOCIAL SUSTAINABILITY STRATEGY DEVELOPMENT

DISCUSSION

Council's Social Planning staff presented the *Better Together, Social Sustainability Strategy 2041* that is currently being developed.

The aims of the Strategy are the provision of:

- a long term social direction that builds upon existing services, resources skills, strengths and protective factors
- a framework for building skills and knowledge so the community can support each other and respond to social challenges through strong partnerships
- community strengthening to recover from unexpected social, political, environmental or financial impacts so the Northern Beaches is able to respond and bounce back.

The current development phase is an opportunity to gather new information from stakeholders with community consultation being launched in the coming weeks.

Better Together - Northern Beaches Social Sustainability Strategy 2041 begins the conversation with the community and will identify priority focus areas.

The Strategy Vision "The Northern Beaches is a safe and resilient place to live, work and visit where there is a collective feeling of comfort and security" will be tested in the next couple of months and refined and built upon based on community feedback.

The Committee provided the following comments:

- The draft strategic framework is very solid and thorough and the themes Safety, Connection and Inclusion were particularly liked.
- How will the Strategy come to fruition and actions implemented? Staff confirmed that Police will be included in co-design sessions planned for February 2021.
- Questioned if the Strategy should include need for CCTV as this may assist with future funding applications. Staff advised that tangible, operational issues, such as CCTV, are more appropriate in the Community Safety Plan.
- DA compliance building issues need to be addressed as they impact social sustainability, such as issues of safety and fire protection.

6.5 COMMUNITY SAFETY PLAN 2020-2025

DISCUSSION

An update on the progress of the *Draft Community Safety Plan* was provided.

Data analysis including local Police, BOCSAR and health related data continues. Emerging issues that help inform the Plan are also being considered.

Outcomes have indicated:

- Northern Beaches is a very safe place with relatively low crime statistics
- Community perceptions of safety are high
- Results correlate with key focus groups and targeted local service consultation.

As circulated with the Agenda, the Plan's new structure was discussed and has been reframed to reflect common themes:

1. Safe Places
- 1.1 Safe open spaces
- 1.2 Safe at night

2. Safe Online
- 2.1 Safe for children & young people
- 2.2 Safe against scams, fraud & gambling
- 2.3 Safe use of language

3. Safe at Home
- 3.1 Safe relationships

4. Health & Wellbeing
- 4.1 Improved mental health responses
- 4.2 Reduced harms associated with alcohol and other drugs
- 4.3 Improved response to public health & safety issues.

The Committee provided the following comments:

- Action 1.1.1 - Include a specific action regarding CCTV.
- Action 1.2.7 - Public open spaces and liquor licences - NSLHD Health Promotion would like to be more connected in this space to gain better outcomes for young people.
    - CDAT is proactive in making submissions in regard to liquor licence applications.
    - Update was provided to the Committee on the recent changes to how retail premises and food premises can operate. Smaller venues can apply for a Complying Development Certificate via a different planning mechanism. Applications still come to Council and in conjunction with Police Licencing, are reviewed for community impact or compliance concerns to ensure all matters are addressed.

- Action 2.1 - Northern Beaches Child & Family Interagency could also be a partner. CatholicCare Family Support service touches on online safety with parents and could look at doing more with other family support services in the area.

- Action 2.3. -5 - Proactive parental education is also needed to raise awareness of online safety issues.

- Action 3.1.4 - Women's Domestic Violence and Court Advocacy Service (WDVCAS) capture a lot of data relating to this point.
- Action 3.1.6 – CatholicCare's Family and Youth services supports a lot of families in this space.
- Action 3.1.6 – Primary Ethics also does a lot of work in this area in schools.
- General comment that State and Federal mental health reform is required to make significant change. Also, lobbying the Attorney General to re-fund the Violence Against Women (VAW) Coordinator would be a positive outcome.

Committee members were encouraged to submit any further comments to Council.

In summary, the Community Safety Plan is broad to capture as much as possible. It is also the intention to develop and integrate a Crime Prevention Plan which will allow Council to apply for funding from the NSW Attorney General (Department of Communities & Justice).

The next steps;
- Council endorsement for the Draft Plan to go on public exhibition - early in 2021
- Submission reviews and reporting to Council for final adoption by June 2021.

Cr Bingham complimented staff on the Draft Plan.

6.6 MEETING DATES FOR 2021

DISCUSSION

The following 2021 meeting dates were accepted:

- 18 February
- 22 April
- 17 June
- 5 August
- 7 October
- 25 November.

It was noted that until further notice, meetings will be held online.

7.0 GENERAL BUSINESS

Cr Bingham acknowledged the valuable work of the Community Safety Committee and thanked all Committee members for their commitment during 2020.

SUMMARY OF ACTIONS

ITEM NO.	ACTION	RESPONSIBLE OFFICER	DUE DATE
6.1.1	To assist with patterns of crime identification, staff were requested to include a Council community eNews item in relation to the importance of reporting specific crime issues to Police when they occur.	Community Safety Coordinator	18 Feb 2021
6.1.2	First meeting of 2021 Agenda to focus on youth crime	Manager, Youth & Community Development	18 Feb 2021
6.1.3	Crime Prevention Officer to contact resident regarding Neighbourhood Watch in Belrose	Police	Dec 2020
6.1.4	Provide feedback at the next meeting on local Neighbourhood Watch initiatives	Police	18 Feb 2021
6.1.5	Provide crime data in relation to adolescent violence against parents for under 18 year olds to SDECC	Police	18 Feb 2021
6.1.6	Police to contact concerned resident re youth issues	Police	Dec 2020

The meeting concluded at 9.45am

This is the final page of the minutes comprising 10 pages numbered 1 to 10 of the Community Safety Committee meeting held on Thursday 26 November 2020 and confirmed on 18 February 2021.

MINUTES

PUBLIC ART WORKING GROUP

held as an online meeting on

THURSDAY 3 SEPTEMBER 2020

Minutes of the Public Art Working Group

held on Thursday 3 September 2020

as an online meeting

Commencing at 6:00PM

ATTENDANCE:

Committee Members

Cr Penny Philpott	Chairperson
Cr Sue Heins	
Cr Kylie Ferguson	
Ashley McDonald	Community member
John Pearson	Community member
Marissa Bateman	Community member
Penny Polkinghorne	Community member
Simon Barrett	Community member

Council Officer Contacts

Kylie Walshe	Executive Manager Community, Arts & Culture
Josephine Bennett	Manager Arts & Culture
Christiane Statham	Public Art Coordinator

Visitors

Dr Emma Hicks	Community member representing Aunty Clair Jackson
Eilis O'Beirne	Chime Projects
Sharonne Broderick	Chime Projects
Rhett Hutchence	Chime Projects

1.0 ACKNOWLEDGEMENT OF COUNTRY

The Chair, Councillor Penny Philpott, acknowledged the traditional custodians of the land on which the meeting gathered, and paid respect to Elders past and present.

Councillor Philpott also welcomed Dr Emma Hicks, who appeared as a representative of Aunty Clair Jackson. Dr Hicks also gave an Acknowledgement of Country, partly in Gamilaraay language.

2.0 APOLOGIES

Apologies were received from:

- Aunty Clair Jackson, community member
- Billie Routledge, community member

3.0 DISCLOSURES OF INTEREST

There were no disclosures of pecuniary or non-pecuniary conflicts of interest.

4.0 CONFIRMATION OF MINUTES OF PREVIOUS MEETINGS

4.1 MINUTES OF PUBLIC ART WORKING GROUP MEETING HELD 4 JUNE 2020

RECOMMENDATION

That the Minutes of the Public Art Working Group meeting held 4 June 2020, copies of which were previously circulated to all Members, are hereby confirmed as a true and correct record of the proceedings of that meeting.

5.0 ACTIONS UPDATE

Nil

6.0 AGENDA ITEMS

6.1 CHIME PROJECTS PROPOSAL - UPDATE

PRESENTATION

Chime Projects presented to the Public Art Working Group their proposal for *Michael – A Tribute*.

The project is a proposed donation to Council of a sculptural tribute to Michael Hutchence, which was originally presented to the Public Art Working Group on 2 April 2020. The Public Art Working Group's recommendation from that meeting was:

The proposal needs further development in order to align with Council policies and guidelines, including the Public Art Policy and Guidelines, and the Cultural Collection Management and Gifts Policy and Guidelines.

Chime Projects responded to the feedback of the Public Art Working Group via the Mayor, and requested the opportunity to present their Addendum to *Michael – A Tribute* directly to the Public Art Working Group. The group presented to the Public Art Working Group at their meeting on 3 September 2020..

DISCUSSION

Following the presentation, Chime projects invited questions from the Public Art Working Group. Questions raised included:

1. Maintenance: What is the proposed financial component of the donation to Council for maintenance of the sculpture during its lifetime?
2. Site specificity: What is the relevance of the sculpture to this particular site (Manly Cove) beyond the Hutchence family connection?
3. Noise Mitigation: What is the potential for mitigating noise complaints from local residents?
4. Policy Framework: How does the proposed donation respond to Council's curatorial framework, as contained in its Public Art Policy and Guidelines?
5. Procurement: How would an artist be procured? What involvement would Council have in this procurement process? Who are the three artists you are currently in negotiations with?
6. Project Management: Who would manage the project? What skills and experience do they have in successfully delivering similar public art works in the public domain? What involvement is anticipated from Council?
7. Accessibility: What are the accessibility needs of the local community?
8. Funding: How is the project to be funded and is this funding confirmed?
9. Technology: How do Chime Projects propose to address the future obsolescence of technical components of the work?
10. Timeline: Can you please confirm the timeline for the project?

Chime Projects requested that the Working Group's questions be documented and forwarded to Chime for response.

Chime Projects left the meeting.

The Public Art Working Group continued their discussion of the project and provided the following feedback:

- They did not consider that their feedback from the meeting on 2 April 2020 had been adequately addressed by Chime Projects in the project addendum or in their presentation.
- The selected site (Manly Cove) is not relevant to or appropriate for this work. This is a site with high exposure and usage by the public. There is no pressing need to increase tourism to this site. There is also often alcohol-relation anti-social behavior in this area, which may increase the likelihood of the sculpture being damaged. The Chime Projects response that this site would be protected by passive surveillance and private CCTV surveillance is not sufficiently dependable for a work of this nature.
- The preferred site is a site of great significance to Aboriginal Australians and also contains a number of public artworks already.
- The work does not correspond to Council's curatorial framework, as evidenced by its Public Art Policy and Guidelines.
- It is unclear what the ongoing maintenance costs would be for Council.
- The method of procurement of an artist is unclear, and as this would not be undertaken by Council, this lack of clarity is problematic.
- It is unclear how noise mitigation would be undertaken or managed.
- The technology included in the work may become obsolete quickly, rendering the sculpture non-interactive.
- Michael Hutchence is famous all over Australia and the world, and this type of tribute would be better suited to a site where live music is created and performed.

RECOMMENDATION

The Public Art Working Group recommended that staff collate the above questions, distribute them to the Working Group for feedback/amendments/additions, and then provide to Chime Projects for a response, to be considered by the Public Art Working Group at their next meeting.

6.2 COAST WALK PUBLIC ART - PROJECT UPDATES

DISCUSSION

Staff presented an update on the Coast Walk Public Art projects.

The Aboriginal Art & Storytelling Project is the first public art project for the Coast Walk. A meeting with key Aboriginal stakeholders was held on 2 September and staff received positive feedback at this meeting. This feedback will be incorporated into the Artist Brief for the Aboriginal Art & Storytelling Project, which will then be provided to the group for feedback on 16 September.

Staff have met recently with the Australian Museum, who have offered access to their collections for the selected Aboriginal artist's team for this project.

Council has received correspondence from the Co-Founder and a Trustee of the Manly Freshwater

World Surfing Reserve, registering a request to be consulted as part of community engagement as the McKillop Park project moves forward.

Staff also updated the Public Art Working Group on the creation of a Commissioning Agreement for Council's public art program, which is now complete.

RECOMMENDATION

The Public Art Working Group noted that Covid-19 had caused delays to the Coast walk Public Art program and recommended that staff progress these projects as a priority. The Group requested a timeline of projects be presented by staff to the Group at its next meeting.

6.3 BUNGAN LANE MURAL PROJECT

DISCUSSION

Staff presented an update on the completed Bungan Lane Mural Project, as the first project in Council's new Street Art Program. The street art program comprises an expression of interest and selection process, community engagement and the involvement of young people for skills development.

The Public Art Working Group provided positive feedback on this project, and passed on numerous positive comments from community members. The Group were keen to see more street art on the Northern Beaches, particularly projects that involve young people.

RECOMMENDATION

The Public Art Working Group recommended that staff continue with implementation of the Street Art Program currently being developed.

6.4 OTHER PUBLIC ART PROJECT UPDATES

DISCUSSION

Staff presented updates on other public art projects, including:

- St David Avenue Park, Dee Why
- Dee Why Art Panels
- Newport Sewer Pumping Station
- Freshwater Community Bank Youth Art Prize
- Herminie's Landing

RECOMMENDATION

The Public Art Working Group recommended that staff continue to progress with these projects.

6.5 FUNDRAISING PLAN - COUNCIL RESOLUTION

DISCUSSION

Staff presented an update on the development of a fundraising plan for the Coast Walk Public Art program, as resolved by Council.

Staff have met with a number of cultural organisations and funding bodies, including Creative Partnerships Australia and the Australian Museum, to explore options for fundraising.. Council has also engaged specialist lawyers to provide advice regarding the funding mechanisms available to Council, including the extension if its existing DGR status for the Manly Art Gallery and Museum.

Staff summarised these conversations, and, within the context of achieving the vision of the adopted Coast Walk Public Art Strategic Plan, requested feedback on a fundraising target in the vicinity of $20 million. The Working Group agreed that this amount was reasonable to properly implement the strategy and deliver tourism and other outcomes for the community. The Group discussed the Sydney Modern project, as a successful exemplar project.

The Working Group felt that the first few major Coast Walk Public Art projects will be integral to raising community support and will increase the fundraising capacity for the project.

RECOMMENDATION

The Public Art Working Group recommended that members provide further contacts and that staff continue with their research.

7.0 GENERAL BUSINESS

Staff requested that the Group consider their proposal to record Public Art Working Group meetings that are held online via Teams, and will raise this query again at the next meeting.

SUMMARY OF ACTIONS

ITEM NO.	ACTION	RESPONSIBLE OFFICER	DUE DATE
6.1	That the questions from the Group are distributed to the Group for feedback and provided to Chime Projects for response, and for consideration the next Public Art Working Group meeting.	Manager Arts and Culture	30 September 2020
6.2	That staff present a timeline of projects to the Group at its next meeting on 19 November.	Public Art Coordinator	19 November 2020

The meeting concluded at 7.30pm

This is the final page of the minutes comprising 7 pages
numbered 1 to 7 of the Public Art Working Group meeting
held on Thursday 3 September 2020 and confirmed on 19 November 2020.

MINUTES

PUBLIC ART WORKING GROUP

held in the online on

THURSDAY 19 NOVEMBER 2020

Minutes of the Public Art Working Group

held on Thursday 19 November 2020

in the online

Commencing at 6.00pm

ATTENDANCE:

Committee Members

Cr Penny Philpott	Chairperson & Councillor
Cr Sue Heins	Councillor
Cr Kylie Ferguson	Councillor
Ashley McDonald	Community member
Billie Routledge	Community member
John Pearson	Community member
Aunty Clair Jackson	Community member
Marissa Bateman	Community member
Penny Polkinghorne	Community member
Simon Barrett	Community member

Council Officer Contacts

Kylie Walshe	Executive Manager Community, Arts & Culture
Josephine Bennett	Manager Arts & Culture
Christiane Statham	Public Art Coordinator

1.0 ACKNOWLEDGEMENT OF COUNTRY

The Chair acknowledged the traditional custodians of the land on which the meeting gathered, and paid respect to Elders past and present.

2.0 APOLOGIES

Aunty Clair Jackson has given her apologies and nominates Eliza Pross to be her representative on the Public Art Working Group for meetings in the first half of 2021. The Group are in agreement with this proposal.

Apologies were also received from:

- Simon Barrett, community member
- Billie Routledge, community member

3.0 DISCLOSURES OF INTEREST

A Disclosure of Interest was received from community member Marissa Bateman, who is currently employed by Urban Art Projects (UAP), who will be submitting an Expression of Interest for the Coast Walk Public Art Project - Aboriginal Art & Storytelling Project.

4.0 CONFIRMATION OF MINUTES OF PREVIOUS MEETINGS

4.1 MINUTES OF PUBLIC ART WORKING GROUP MEETING HELD 3 SEPTEMBER 2020

RECOMMENDATION

That the Minutes of the Public Art Working Group meeting held 3 September 2020, copies of which were previously circulated to all Members, are hereby confirmed as a true and correct record of the proceedings of that meeting.

5.0 ACTIONS UPDATE

5.1 ACTIONS UPDATE

DISCUSSION

ITEM NO.	ACTION	ACTION UPDATE
6.1	That the questions from the Group are distributed to the Group for feedback and provided to Chime Projects for response, and for consideration at the next Public Art Working Group meeting	Questions were distributed to the Group, collated and provided to Chime Projects. Please find their response attached.
6.2	That Staff present a timeline of projects to the Group at its next meeting on 19 November 2020.	Action taken.
10.2	At Council meeting 27 October 2020 the Mayoral Minute No 10/2020 was unanimously endorsed "That Council no longer pursue a permanent artwork to remember, as a narrative, how the Northern Beaches community responded during the COVID-19 pandemic."	Action taken.

ACTION 6.1

The Public Art Working Group received responses to their questions to Chime Projects and provided feedback. They found the information provided to be inadequate and the proposed project to present serious risks for Council and the Northern Beaches community.

The Group discussed the difficulty of assessing a proposal when no artwork had been completed, and were concerned about the lack of transparency in procurement methodology, funding sources, ongoing maintenance costs and noise mitigation, and felt that sites proposed to date were inappropriate.

RECOMMENDATION

ACTION 6.1

The Public Art Working Group does not recommend proceeding with the Chime Project proposal due to the:

- financial risks
- safety risks
- operational risks
- disparity between the project and Council's public art policies and guidelines
- lack of detail in response from Chime Projects

- lack of financial clarity
- lack of clarity around proposed procurement methodology
- inappropriate sites proposed
- potential noise complaints
- ongoing maintenance costs for Council
- concerns that other members of the band INXS are not involved

6.0 AGENDA ITEMS

6.1 COAST WALK PUBLIC ART - PROJECT UPDATES

DISCUSSION

Staff provided project updates on current Coast Walk Public Art Projects.

Aboriginal Art & Storytelling Project

Staff presented a project update and timeline. The Expression of Interest is currently open for this project, closing 24 November.

Staff have liaised with the local Aboriginal community and received three nominations for the position of Voluntary Cultural Advisor to the Public Art Selection Panel. These Advisors will assist the Selection Panel at their meetings in December 2020 and February 2021 in the shortlisting and final selection of Aboriginal artist-led teams.

South Mona Vale Headland (Robert Dunn Reserve)

Staff presented a project update and timeline. Expressions of Interest are currently open, closing 24 November, to the members of the Public Art Artist Panel.

McKillop Park, Freshwater

Staff presented an update on this project and presented a project timeline. The Expression of Interest for this project will open in February 2021.

Fundraising for the Coast Walk

Staff presented a draft indicative budget in response to Notion of Motion No 30/2020 – Future Funding for Manly to Palm Beach Art Walk, which identifies 21 recommended locations for integrated public art.

The draft budget identifies probable costs for future artworks suitable for each site, with budgets ranging from $10,000 to $500,000.

The Working Group discussed the proposed sites for Stages 2.

Collaroy Beach South

- The Group noted that this location is highly impacted by storm events, and that any artwork location should be above the zone that is regularly affected.
- The Group were otherwise positive about this site.
- The Group suggested that local surf clubs be contacted to ascertain whether they would be interested in making a contribution to public art.

Newport Beach Reserve

- The Working Group is very positive about this site, as it is a gathering place for the local community. Fresh food markets are currently being trialled here on a weekly basis.
- The Group feel that this is a very visible site, and an appropriate location for an iconic public artwork.

Freshwater Reserve (adjacent to Pilu)

- The Group feel that this is an appropriate site for an integrated work, that provides a place for contemplation and viewing the ocean
- The Group suggested that Pilu Restaurant be approached for contributions.

Mona Vale Surf Life Saving Club

- The Working Group had no objections to this proposed site, and felt that Surf Life Saving Clubs would be appropriate sites for local artists to undertake projects.

Long Reef Life Saving Club

- The Working Group had no objections to this proposed site, and felt that Surf Life Saving Clubs would be appropriate sites for local artists to undertake projects.

RECOMMENDATION

The Public Art Working Group recommend that the proposals are supported.

6.2 OTHER PUBLIC ART PROJECTS - UPDATE

DISCUSSION

Staff presented an update on other public art projects across the LGA.

ST DAVID AVENUE PARK, DEE WHY

Staff presented an update on this project. Three artists have been shortlisted, and the final selection will be undertaken by the Public Art Selection Panel at their meeting on 14 December.

STREET ART PROGRAM

Staff presented an update on this project. The Expression of Interest is currently open, closing 9 December, for the following three sites:

- Peninsula Carpark, Manly
- Whistler Street Carpark, Manly
- Brookvale Community Centre, Brookvale

The Working Group requested a copy of the Expression of Interest document, and also requested that staff research potential walls for large murals in the western parts of the LGA.

DEE WHY ART PANELS / HERITAGE PHOTOGRAPH

Staff presented an update on this project, which has been on hold awaiting Councillor feedback. The Working Group are keen for the project to progress.

HERMINIE'S LANDING, PALM BEACH

Staff presented an update on this project, and are currently liaising with the Palm Beach Whale Beach Association regarding their donation.

TRIANGLE PARK, DEE WHY

Staff presented an update on this project, a collaborative project with Council's Capital Works team to deliver an integrated public artwork in Triangle Park, Dee Why.

The Working Group noted the nearby presence of a microbat colony and the major drains that are located underneath the park, which has been the subject of community education events about water and Dee Why Lagoon.

MANLY BOLLARDS

Staff presented an update on this project, a collaborative project with Council's Parks Assets team

to deliver a public artwork on Vehicle Mitigation Bollards in Manly town centre.

RECOMMENDATION

The Public Art Working Group recommend that this process is supported.

6.3 PUBLIC ART IN PRIVATE DEVELOPMENTS - DRAFT DCP CONTROLS

DISCUSSION

Staff provided an update on the development of Public Art in Private Developments controls proposed to be included in the Development Control Plan (DCP) for the Northern Beaches.

The Group questioned how staff had decided to apply the controls to developments over $10m and were advised that this is in line with other Councils in Sydney.

RECOMMENDATION

The Public Art Working Group recommend that this process is supported.

7.0 GENERAL BUSINESS

There was no other business.

SUMMARY OF ACTIONS

ITEM NO.	ACTION	RESPONSIBLE OFFICER	DUE DATE
6.2	The Working Group requested a copy of the Street Art - Expression of Interest document	Christiane Statham	23/11
6.2	The Working Group requested that staff research potential walls for large murals in the western parts of the LGA.	Christiane Statham and Josephine Bennett	4/3/21

The meeting concluded at 8pm

This is the final page of the minutes comprising 10 pages
numbered 1 to 10 of the Public Art Working Group meeting
held on Thursday 19 November 2020 and confirmed on 4 March 2021.

Public Space Vision & Design Guidelines

Response to submissions report

ASPECT Studios

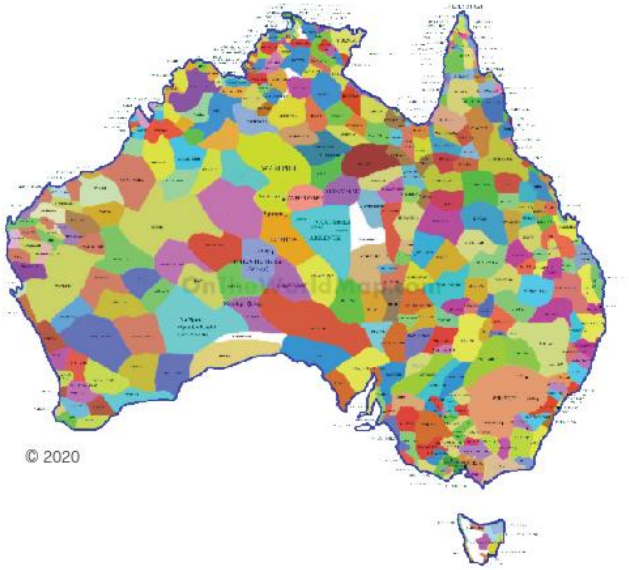
northern beaches council

ACKNOWLEDGMENT OF COUNTRY

ASPECT Studios acknowledges the Traditional Custodians of the Northern Beaches and their Country on which we gather today. By these words we would also like to show our respect to all Aboriginal people.

We Acknowledge the Elders in the past and in the present and Acknowledge the culture, heritage, spirits and ancestors of the Clans that lived in this area.

The Northern Beaches local government area (LGA) encompasses the areas of Manly, Allambie and Seaforth to the south, being lands occupied by the Gayamaygal people and the Barrenjoey areas occupied by the Garigal people to the north and is recognised historically and contemporaneously as being a meeting place for people from different clans. These may have been kinship connections. The clans of Sydney spoke the same.



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TEAM

Northern Beaches Public Space Vision and Design Guidelines were prepared by ASPECT Studios for the Northern Beaches Council.

DOCUMENT CONTROL				
V	DATE	DESCRIPTION	BY	REVIEW
1	13.03.2020	Draft Submission	OM/GH	NB
2	10.08.2020	Draft- Consolidated Feedback	GH	NB
3	17.08.2020	Draft- For Review	GH	NB
4	18.09.2020	For Exhibition	OM/GH	NB
5	05.02.2021	Response to submission	OM	NB
6	05.02.2021	Final Submission	OM	NB

Contents

Purpose & Background	04
What we asked	05
Response to Feedback	06
Conclusion	07
Appendix	08

Purpose & Background

The Northern Beaches Public Space Vision and Design Guidelines set out to unify and consolidate public domain policy documents from three former council areas in order to ensure consistency and standarardisation for projects of all scales across the entire local government area (LGA) whilst also recognising and maintaining the distinct nature of our celebrated unique and individual places.

The Public Space Vision and Design Guidelines seek to retain and enhance the Northern Beaches unique landscape character whilst providing additional environmental, social, health and economic outcomes within its centres and neighbourhoods through the introduction of best practice street design and appropriate material selection. Six key objectives form the foundation of the guidelines which are derived from state government public domain targets and previous community consultations.

The Key objectives are as follows;

OBJECTIVE 1
Enhance and protect the Bush, Beach & Water character.

OBJECTIVE 2
Encourage social activation through street design.

OBJECTIVE 3
Inspiring healthy & active lifestyles through safe and inclusive footpath & cycleway networks.

OBJECTIVE 4
Implement traffic calming interventions creating safe environments.

OBJECTIVE 5
Integrate water sensitive urban design into streets and open spaces.

OBJECTIVE 6
Increase tree canopy, green cover and landscaping on streets.

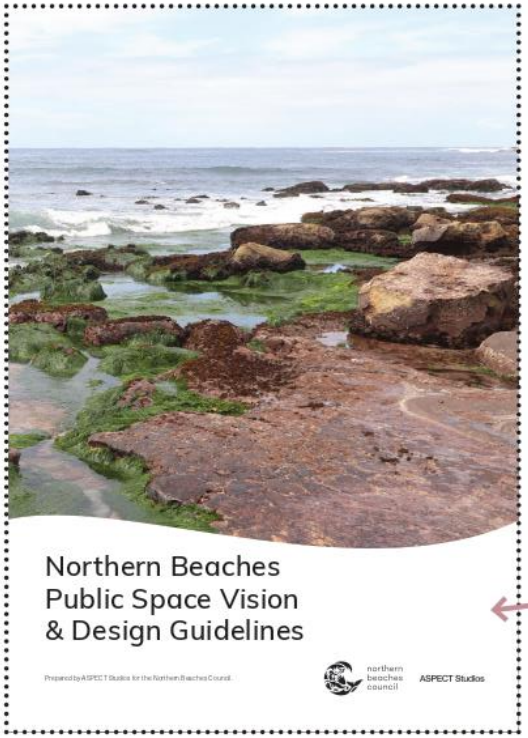
A key addition to the guidelines is the inclusion of a street types chapter. Best practice urban design identify 'streets as the backbone of public space', often accounting for a quarter or more of the total lands area in our cities and neighbourhoods. Streets typically make up around 80% of all public space in an urban area, with parks and squares comprising less than a fifth of our shared spaces.

During the process of consolidating the former Interim document 2019 into the Public Space Vision and Design Guidelines, it became apparent that there were several sections within the document requiring further investigation. These areas include a street types chapter, identifying streets as a vital component to any urban design and open space policy document. Other areas include an introduction of four key material palettes "Coastal, Urban, Bush and Waterfront" which are responsive to their environmental conditions whilst still providing an overall cohesiveness to the entire LGA.

Stage



What we asked?



What did you think?

Key Community Feedback

The response to submission received 26 responses from community. From these responses '6 key themes' have been outlined below along with key strategies to how the Public Vision and Design guidelines have addressed raised items. All feedback and responses are outlined in Appendix A.

1. Identity loss "One size fits all"

— Beach and Waterfront palettes are too similar.

These two palettes however are subtly differentiated with the selection of the charcoal powder coating to better address Waterways (whilst also being able to provide a palette selection for some of the more high profile or heritage character areas) to provide a distinct/alternate character response. (Character Areas Material Palettes).

— Areas that have unique/heritage characteristics would suffer.

The public domain guidelines do call out heritage areas to be expressed through appropriate design responses such as materials, furniture etc. These areas will be designed and addressed as unique areas with their own set of material palettes.
(Heritage Areas and Places).

— Loss of unique 'village' style and feel to each town centre.

Within each material palette, especially for the village centers, there are a variety of materials to choose from- as a direct response to existing material and characters of areas.
The need to establish a cohesive material palette is to ensure design excellence for future developments, to ease and reduce maintenance cost and to ensure sustainability practices are included. (Character Areas Material Palettes).

2. Loss of Parking due to increased Tree Canopy

— Loss of on-street parking however must be considered in Urban areas so a sensible balance needs to ab achieved between planting and parking, particularly in Manly where on-street parking is limited.

Extended kerbs to achieve additional mass planting and trees proposed will be strategically placed in order to minimise on-street parking reductions. Mostly kerbs will be extended around pedestrian crossing areas- where there cannot be any street parking, as well as less areas with less parking demand.

Whilst smaller planter boxes play a role in the greening of a particular area, the guidelines seek to create areas which maximise tree canopies and permeable paving to create healthy, sustainable environments. Optimal soil volumes and water sensitive urban design through planting in ground (Street and Open Space Components, Sustainability).

3. Purpose of the Public Vision and Design Guidelines

— The Corso needs to be considered as a design project of its own.

The public domain guidelines do not seek to design the entire LGA- but rather layout design principles/objectives in order to maintain good design practice throughout the LGA. A Place Plan for Manly is due to commence in the next month. This Place Plan will include extensive community engagement. Consideration of the Corso will be included as part of this project.
Distinctive and high-profile spaces would be designed separately by designers/architects/ landscape architects (pg. 90), which is where Manly Corso would fall under. It is up to the designers/council to decide how these feature projects would be interwoven into the overall LGA which the guidelines specify. (Distinctive and High profile spaces).

— Closure and one way direction only of Manly streets. I live on eastern hill and access on busy days is extremely difficult already.

The PSV&DG do not propose any direct changes to streets in Manly. The primary function of the public domain guidelines is to navigate future

infrastructural/local projects to have a common design language, as well as to help facilitate infrastructural strategies such as the bike plan (please refer to council document bike plan) to be integrated within the public domain. The guidelines do not propose to remove elements, but rather to outline possibilities where relevant/possible. designers/architects/ landscape architects (pg. 90) which is where Manly Corso would fall under. It is up to the designers/council to decide how these feature projects would be interwoven into the overall LGA which the guidelines specify.

4. Wayfinding and Signage

— I was unable to to find any information on way-finding signs. This is extremely important and should be considered as part of the overall design concept. Mosman do very attractive way-finding signage and would be a good example of what to consider.

Having an overarching wayfinding strategy is incredibly important in any precinct. This falls under a specific Wayfinding strategy document which does not sit within these guidelines

— I know there is a 'signage review' going on but hey, it's about time someone took a stand and 'harmonised' all the compliance signs, the bike pictograms on roads and paths, actually all pictograms, to a standard and then installed them. Every light pole along East and West Esplanade has at least one, in some locations several, signs attached. As a guideline, nothing should be attached to these light poles. Look carefully and you can see that the concrete stands on the bottom has been design with an inlay for signs to be attached.

Requirement for a seperate wayfinding strategy. The guidelines also encourage the use of smart poles "that provide multifunction facilities eg signs + street banners" in order to de-clutter the public domain as much as possible and to enable as much consistency as possible. (Signage and Wayfinding interpretation, Lighting).

5. Cycleways

— Closure and one way direction only of manly streets. I live on eastern hill and access on busy days is extremely difficult already.

The Public Space Vision & Design guidelines do not propose any direct changes to streets in Manly. The primary function of the Public Space Vision & Design guidelines is to guide future infrastructure/local projects to have a common design language as well as to help facilitate infrastructure strategies such as Council's Bike Plan, to be integrated within the public domain.

Any changes to streets in Manly will be subject to a separate engagement process.

— It is the SIGNIFICANT COST to transition to a "sustainable e-transport mode" that seems to be LACKING within the guidelines. The idea of using 1 lane each way bike paths in Surry Hills does not illustrate the "COST" of removing the kerb side car lane.

The primary function of the public domain guidelines is to navigate future infrastructural/local projects to have a common design language, as well as to help facilitate infrastructural strategies such as the bike plan (please refer to council document bike plan) to be integrated within the public domain. The guidelines do not propose to remove elements, but rather to outline possibilities where relevant/possible.

— There is no evidence of general community demand for more bike lanes, cycleways and facilities and nobody accepts at face value the statement that 40% of LGA residents rode a bike within the past 12 months or that 26% of residents cycle for transport purposes.

The guidelines set out to identify streetscape components (i.e. planting zones, pedestrian zone's etc) to demonstrate how these components can work together to maximise both the function and useability of a streetscape. These components are derived from best practice design benchmarks such as NSW design suite "Better Placed" and "Towards 2030 LSPS".

The guidelines cannot emulate the entire street network of the LGA and recognises that placing all components onto to each street is not feasible. It aims at introducing a palette of best practice components to be used where appropriate to achieve the guiding principles mentioned within the guidelines. This approach recognises the "number of solutions" to every problem and aims at introducing flexibility required to tackling the Public domain within The Northern Beaches. (Distinctive and High profile spaces).

6. Sustainability

— Would like to see the plan include the "how to green" our environment from harsh pavement and roads to create for "green environment".

Sustainability and reducing heat island affects are primary targets which the guidelines set out to achieve. 'Greening environment" is best practice strategy in overcoming a lot of harsh environmental conditions. Making sure there is sufficient volumes for planting and tree's enable an increase in permeability, as well as making sure proposed tree canopies can mature (reducing heat island effect) and providing cohabitation of fauna and insect environment. Tree species selection is carefully considered to encourage biodiversity. (Soil Volumes, Tree Species Selection).

— We support the use of WSUD to improve conditions in public spaces (Objective 6).

Conclusion

Overall the responses submitted were positive and constructive. It reaffirmed the importance of the overall objectives, as well as the usefulness of establishing set character palettes. Response to submission feedback was incorporated into the Public Space Vision and Design Guidelines where appropriate. This feedback is the final round of public review and sits alongside final stakeholder and Council review stages. The Public Space Vision and Design Guidelines will now move into the last and final delivery phase.

APPENDIX 1. PUBLIC SUBMISSIONS AND RESPONSES – PUBLIC SPACE VISION AND DESIGN GUIDELINES

No	Post code	Section	Subsection	Pg.	Submission summary	Aspect Response
1	NA	Character Areas Material Palettes	Character Areas	94	Similarity of palettes between beach and waterway 1. Page 94, the descriptions of Beach and Waterfront are identical, right down to the typo (paving) in the first point. Apart from fixing the typo, you might want to look at whether those were meant to be exactly the same across all points. I note the actual palette's are (almost) identical (e.g. grey versus charcoal grey powder coating) so perhaps they are meant to read the same.	The almost identical palettes for both the Beach and Waterfront is a considered and well workshopped selection that addresses various considerations; limiting the palettes to selections that address the economics of both maintenance and availability of materials, sustainability and a response to areas that can be treated in similar ways; Beach and Waterway. These two palettes however are differentiated subtly with the selection of the charcoal powder coating to better address Waterways (whilst also being able to provide a palette selection for some of the more high profile or heritage character areas) to provide a distinct/alternate character response. **Recommendation** No change
					Typo - paving	Confirm correct spelling **Recommendation** Amend
		Character Areas Material Palettes	Character Areas Map	95	Mapping of character areas inconsistency 2. The character map has some boundaries that clued me in to out of area designers doing the work (as good as ASPECT are). The line down the middle of Barrenjoey Headland was the one I called out in the article but at a more granular level, the bush/waterfront divide isn't correct around the Bayview/Church Point area. You could pretty much decide that off street and elevation. Also, there are areas on the map missing a key colour, but I didn't call that out as I assume it's just a mistake.	Mapping to be amended revised following exhibition and community feedback. **Recommendation** Amend in accordance with exhibition feedback
2	2089	Character Areas Material Palettes	Character Areas Map	110	I had previously mentioned and noted that the PSV&DG has got it wrong with pavements in former Manly, disregarding existing pavements already in place, and the dominance of paving and bitumen in Manly (not a lot of concrete paths in CBD area). Victoria Ave is currently paving, and replacing a section with concrete will look out of place – regardless of the PSV&DG. The generic approach of the PSV&DG for Local Streets will change local characters such as Manly. Without adoption of the PSV&DG, replacing like for like is the correct action.	Landscape have also noted that a brick paver, along with appropriate tree selections and tree grates will support the growth of trees better than the concrete solution as selected. As such this will result in looking at the following streets as High Streets rather than Collector/Local streets; Wentworth, Victoria and Ashburner Streets noting their significant axial connections to both the western waterfront and eastern beach character areas and the Darley Road commercial centre. We will update the mapping in the PSV&DG to reflect this. Refer page 110 High Streets. **Recommendation** Amend in accordance with exhibition feedback
3	2105	Open Space, Parks & Reserves Character Areas Material Palettes	Heritage Areas and Places Character Areas Material Palettes	91	While the guidelines are very welcome greater emphasis needs to be placed on site specific character with reference to the materials and furniture palettes. I am a member of the Church Point Aesthetics Advisory Group and someone who has long been involved in planning issues at Church Point. In these roles it has become very clear that a one size fits all approach does not work in such unique places. The guidelines mention that there will be locations needing unique design approaches. This is a welcome acknowledgement which needs emphasis in the document. Church Point is a case in point. Here a community of long term residents and Design professionals have established a desired materials and furniture palette based on marine timbers and sandstone. The success of stage 1 of works at Church Point is due to an appreciation of the site's unique environment, history and demographics. As a heritage precinct, the Draft guidelines are in this case not suitable. They do not relate to the preferred palette of materials and furniture which build on the highly successful Bayview Church Point walkway and the new boardwalk and pocket parks, ie marine timbers, timber baulk seating and sandstone block seating in pocket parks, sandstone seawall and pavement. It may also be beneficial for the guidelines to recommend formation of similar qualified advice groups in other design areas.	The introduction of 4 material palettes was a direct response against the "one size fits all approach" and seeks to address not only to maintaining/complimenting existing character through material palettes, but to address environmental conditions as well. The public domain guidelines do call out heritage areas to be expressed through appropriate design responses such as materials, furniture etc. These areas will be designed and addressed as unique areas with their own set of material palettes. To confirm, the public domain guidelines does not seek to design the entire LGA- but rather layout design principles/objectives in order to maintain good design practice throughout the LGA

No	Post code	Section	Subsection	Pg.	Submission summary	Aspect Response
					I look forward to development of the guidelines.	
4	2095	Open Space, Parks & Reserves	Distinctive and High profile spaces	72, 90	The Corso needs to be considered as a design project of its own. It cannot be treated as part of the overarching design principles in terms of style of furniture, materials used, and colours associated with it. A world-class design team such as CHROFI (Manly-based practice) should be working around an individual concept design to ensure Manly finally gets the public space it has been desperate for so many years... Clearly more planting is extremely important, as are concessions for bike paths which are absolutely essential! I commend Council on the proposed additional 'greenscaping' of all areas however I note that there is not much consideration for smaller planter boxes. I may have missed something here but if not, I believe Council should be considering this kind of planting in addition to trees for both High Streets and Urban areas. Loss of on-street parking however must be considered in Urban areas so a sensible balance needs to ab achieved between planting and parking, particularly in Manly where on-street parking is limited. Finally, I was unable to find any information on way-finding signs. This is extremely important and should be considered as part of the overall design concept. Mosman do very attractive way-finding signage and would be a good example of what to consider.	The public domain guidelines do not seek to design the entire LGA- but rather layout design principles/objectives in order to maintain good design practice throughout the LGA. Distinctive and high-profile spaces would be designed separately by designers/architects// landscape architects (pg. 90)- which is where Manly Corso would fall under. It is up to the designers to decide how these feature projects would be interwoven into the overall LGA which the guidelines specify. Extended kerbs to achieve additional mass planting and trees proposed will be strategically placed in order to minimise on-street parking reductions. Mostly kerbs will be extended around pedestrian crossing areas- where there cannot be any street parking, as well as less areas with less parking demand. Whilst smaller planter boxes play a role in the greening of a particular area, the guidelines seek to create areas which maximise tree canopies and permeable paving to create healthy, sustainable environments. Optimal soil volumes and water sensitive urban design through planting in ground Having an overarching wayfinding strategy is incredibly important in any precinct. This falls under a specific Wayfinding strategy document and is not part of the public domain guidelines.
5	2097	Street and Open Space components Using the guidelines	Kerb Extensions Bike Plan Process	57 XX XII	These guidelines will form part of a suite of Council and engineering reference material that will have broad use. This material will help Council and developers when upgrading public spaces, ensuring that they are people-centric, safe and sustainable. The guidelines will also help residents understand future upgrades to infrastructure such as cycle path networks and water sensitive urban design. It is the SIGNIFICANT COST to transition to a "sustainable e-transport mode" that seems to be LACKING within the guidelines. The idea of using 1 lane each way bike paths in Surry Hills does not illustrate the "COST" of removing the kerb side car lane. Then the "Guideline" has a local "non- Corporate Shopping Mall street Scape with kerb-side car parking . So an updated "Guideline could be formulated" as the Greener Places booklet has had a number of "revisions".	The primary function of the public domain guidelines is to navigate future infrastructural/local projects to have a common design language, as well as to help facilitate infrastructural strategies such as the bike plan (please refer to council document bike plan) to be integrated within the public domain. The guidelines do not propose to remove elements, but rather to outline possibilities where relevant/possible. Improving public infrastructure such as adding cycle lanes as part of an overall cycle network does have a cost associated with it (Bike Plan). However, such measures to improve sustainability and health are not only key council objectives but are part of larger state government targets. A functioning cycle network will also help alleviate traffic congestion on the roads. The guidelines are a process-based document (page xii) which goes through numerous consultation and stakeholder meetings/workshops in order to make sure that it delivers and responds to community's need. There are several rounds or 'revisions' of the document in order to make sure all relevant feedback is included.
6	2107				This document is important to any council and I'm please to see it has been produced by the NBC. I've been a resident of Avalon for the past 30 years and a active Senior Surveying manager in many of Sydney's major infrastructure projects, I have over the years witnessed NB Developments and works projects with interest. Many of these have been conducted without direction or long term place planning strategies. Rate payer's funds wasted by cowering to the minority vocal groups (Avalon is a classic example) Quick fixes to silence them. NBC with this development reference document can achieve excellence in Place for People. Consistency and financial savings for both council and the rate payer. Its is the streets/places and pedestrians of the NB's who will benefit from the standards expressed in this document. Its is my hope that NBC now embraces materials that last. In the past having worked on both the Cross city tunnel and Eastern Distributor developments, I was please to see those projects utilise Granite over concrete pavers. The outcome is a 100 year life cycle. In contrast the Dee Why precinct (and yes its an ugly development) used concrete pavers and already they fail. Long term life materials (granite) will save millions over the years for rate payers. Be true to the Standards, commitment and strategy this document provides for future development of place. I congratulate the NBC Urban Designer and the project team. Well done	
7	2096	Open Space, Parks and Reserves	Foreshore Parks and Reserves	88	I would like to see a comprehensive development of the Curl Curl Beach dog park please. The area around the beach end of the carpark and around the tap is run down, full of trip hazards, looks unsightly and does not service all the people who use it. I suggest that a full deck is placed on the northern side adjacent to the car park and where the tap is. This could	Whilst the public domain guidelines do outline suggested material palette for open spaces, including proposed furniture suites- it does not outline upgrades or future design projects. We have forwarded your request to the relevant council department who deal with park upgrades.

No	Post code	Section	Subsection	Pg.	Submission summary	Aspect Response
					be stepped up to from the car park and be significantly long and wide. The space could also include seating for those who purchase coffee from the coffee van which is a great asset to the community. I would also like to see a significant reduction in the carpark fees. I am pretty embarrassed by the fact visitors to our beaches have to pay $10 per hour on the weekend for the privilege of using a beach which belongs to every Australian. Maybe $5 per hour for a maximum of $20 but not more. I have friends who do not bother coming down to the beach because of the cost which is a shame. We should be welcoming visitors not discouraging them.	
8	2099	Character Areas Material Palettes	Character Areas Map		I suggest permanent closure and paving of the "The Strand" Dee Why beachfront between Pacific Pde and Dee Why Pde. This area encompasses the majority of Cafes, restaurants & shops on the beach front and could be viewed as a mini corso. The paved area could be referred to as eg "The Place, Dee Why". Beach and urban furniture could be incorporated in the paved area opening onto the beach directly. Shading could also be provided. This area would be a major attraction that would give the area a prominent, unique feature similar to The Corso at Manly, and would maximise retail, dining, art, shopping and live entertainment opportunities. Dee Why has a comparable dimension to Manly in that it has dining and retail options directly on the beachfront as well as retail, restaurants & cafes, Coles, Woolworths, Aldi. 3 shopping centres between Pacific, Oak and Howard Ave plus numerous individual retailers/shops on Pittwater Rd - all with good public transport access and an easy stroll to the beach. The proposed improvements to the Strand would attract and maximise retail and economic opportunities for the whole of Dee Why and, more broadly, the Northern Beaches.	Whilst the public domain guidelines outline suggested material palette for the Dee Why area, it does not propose specific design projects or Urban design proposals. Street activation through retail is important for economic + social activation. Key features of this such as planting, tree's, furniture + awnings are also described within the public domain guidelines. We have forwarded your request to the relevant council department who deal with urban renewal strategies.
9	2093	Using the Guidelines	Public Art		I think the plan looks good. I would just like to consider urban areas such as sydney road - Balgowlah where the use of fairy lights in the trees and plenty of seating creates a festive and community feel. I would like more of this.	Public Art + Events are important elements in creating a sense of community and identity. The public domain guidelines reference relevant council documents for further information which deal primarily with these elements.
10	2095	Using the Guidelines	Bike Plan		Closure and one way direction only of manly streets. I live on eastern hill and access on busy days is extremely difficult already. I'm concerned if emergency services are required in the area. Dropping and picking up kids from manly village is already hard and dangerous enough. I also feel there are so many empty shops why create more space for dining and cafes. Use the under utilised space we have on the Corso and in the empty stores. Bikes have a Kane on the beach side, there is no need to push them through manly.	The primary function of the public domain guidelines is to navigate future infrastructural/local projects to have a common design language, as well as to help facilitate infrastructural strategies such as the bike plan (please refer to council document bike plan) to be integrated within the public domain. The guidelines do not propose to remove elements, but rather to outline possibilities where relevant/possible. Establishing a well-connected cycle network will help mitigate traffic congestion and alleviate pressure on the road- especially around school zones. For this reason, it is important to connect cycle lanes to establish cycle routes. Although the public domain offers guidance on outdoor dining- (paving types, awning, furniture etc determining future commercial + retail areas are not part of this document.
11	2095				I really like everything I have read. Thank you for all the time spent on this. It would be great to see this plan transformed into action.	
12	2095	Using the Guidelines Street and Open Space components	Tree Canopy Plan Intersections: Kerb Ramps		This is an excellent plan. My only comments are as follows; 1]Heritage Trees should be listed on a register and cared for accordingly. Some trees , like the Morton Bay Figs in Manly should have a succession plan, as well as succession planting before they die. 2]Existing trees that are not thriving or are too old should be replaced. 3]Some nesting boxes should be installed to provide living quarters for native fauna, as generally old trees with holes are regarded as dangerous and removed. 4] in many older areas the pram ramps are too steep for easy /safe unassisted wheelchair use.	Whilst the public domain guidelines do provide a list of tree species for both streetscapes and open spaces, The Northern Beaches Urban Tree Canopy Plan" council document is more relevant for understanding council's future plans for tree canopy within the LGA. There are also documents including the "Significant Tree Policy, Tree Preservation Order which outline heritage and succession plans for existing significant trees. Guidelines do refer to kerb ramps and outline varying ramp strategies for different area types. All new ramps will be compliant with AS1428.
13	2096	Character Areas Material Palettes			I only moved to the Northern Beaches 12 years ago, but one of the things that strongly resonated with me then and still does to an extent today, is the strong sense of loyalty people have to the Beaches as a whole, but also to their own suburb. When I moved here, each of the town centers was still a "village" with its own unique style and feel. Each one was similar, but at the same time distinct. At the time, the Northern Beaches were administrated as 3 distinct Councils and I believe this contributed to this distinction. My	The introduction of 4 material palettes was a direct response against the "one size fits all approach" and seeks to address not only to maintain/complement existing character through material palettes, but to address environmental conditions as well. Within each material palette, especially for the village centers, there are a variety of materials to choose from- as a direct response to existing material and characters of areas.

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					concern is that by combining the 3 councils and then trying to impose a sweeping brush across the region with a consistent look and feel, the charm and sense of individuality of each of the villages will be lost. I am certain that allowing each of the town centers to have a different look and feel, contributed to at a local level, will not add substantially to costs and will add substantially to their unique character.	The need to establish a cohesive material palette is to ensure design excellence for future developments, to ease and reduce maintenance cost and to ensure sustainability practices are included where possible.
14	2108	Street design Street and Open Space components Character Areas Material Palettes	Street Priorities for Local Street Signage and Wayfinding and interpretation		This is all very good but the priority needs of local areas are not being met. Why don't you just get on and repair the roads and put footpaths in where it's currently dangerous to walk. For example between the Greedy Goat cafe (now Coast) and Avalon. This is a higher priority than the coastal walk and associated art. Put signs in Newport says the roads are unsafe for bicycles from the bends north until the road is made satisfactory and safer for cars. Signs that advise parking is limited on weekends and congestion should be expected. The words and focus in this and most council reports seem to flow from articulate consultants but are far from the core focus of local needs which don't appear to get met despite the "consultation" called for ad nausea. These reports seem almost to be designed to be incomprehensible to the average ratepayer. I think we could save money and do better. My thoughts for your consideration	A major consideration for the proposed material palette is durability and ease of maintenance in order to minimise the described situation. With the public domain guidelines, all materials are specified, which should enable an easier process for maintenance. Including compliant footpath on at least one side of streets was a primary objective in order to achieve compliance access for all. Although signage and wayfinding is mentioned within the guidelines, an overarching strategy and specific location will be identified in a separate wayfinding strategy council document.
15	2087	Character Areas Material Palettes			I wish to support the proposed Northern Beaches Public Space Vision and Design Guidelines. The council has done an excellent job in developing these guidelines. My interest is in the Bush and Urban palettes, and these look very good. I agree with the objectives identified and believe the guidelines support these objectives. My only reservation is that the council needs to dedicate the necessary funds to implement these guidelines in a reasonable timeframe. They could dry up in the sand without budget to implement.	Council endorsement of this public domain guidelines take into consideration the financial commitment that it will take to implement the proposed design elements, as well as ongoing maintenance.
16	2101	Street and Open Space Components	Utilities	65	Re: General Development Consent condition requirement to move aerial power lines to underground in front of commercial properties as they come up for redevelopment is unfair. The cost impost on individual developments is onerous, often amounting to several hundred thousand dollars. Worse, the net affect visually is a hotch-potch of remnant poles and wires, with often disturbed paving left that has a far greater deleterious impact than any benefit from the removal of overhead wires. The long term benefit of underground utilities in whole precincts is undeniable, but the benefit is shared by the whole community in that precinct or neighbourhood centre. Therefore it is logical that the cost of creating the benefit should also be shared. As a suggestion, the mechanism and funding for doing so could be by establishing a special level on all commercial properties in the precinct, spread over a three period. This would make it both affordable and fair for all.	Agreed, as outlined under the utilities guiding principles. Point 2 discusses the preference for under grounding over overheard services where feasible.
17	2096	Character Areas Material Palettes	Urban Material Palette	97	My family would all prefer the urban areas to also be more green than "Grey." There is enough grey in the world without adding to it. Having green space and nicer painted colours actually enhances workplace activity. Grey is just drudgery. It will also be nicer for us to be in those areas, I currently cannot stand to be in any of the urban areas, even Warringah Mall for example. Just hate the place. The entire Brookie greyness for example is just	The proposed urban palette does introduce a range of colours in order to strategically enhance greenery such as mass planting and trees whilst introducing high quality/durable finishes such as stone. Proposed furniture includes steel with timber/modwood batons to increase warmth and comfortable to the public. Subtle/recessive colour finishes allows for natural greenery to be the focal point, whilst also allowing design flexibility to future projects.

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					bleugh. Lighten it up with happy colours and many more trees. Let us all enjoy living in an alive world, not just greyness.	The proposed palette also takes into consideration the existing materials. This is important as it allows for the retention of current functioning spaces to promote sustainability and to focus on areas that require upgrades. The proposed material palettes are the baseline of quality and materials that is delivered for the typical streets and open spaces within the LGA. For areas that are unique (heritage, culturally significant, parks or foreshore areas, for example) these will be dealt with under 'special places/ culturally significant/ heritage places', and seek a unique design response in consultation and approval with Council.
18	2095	Street and Open Space components Street and Open Space components	Signage and Wayfinding and interpretation Lighting	72 67	There does not appear to be any mention of signage in the documentation. Maybe I missed this but signs are a necessary evil. Currently on all high streets, local streets, laneways, collector streets, industrial roads, pathways, bike paths, shared pathways and all manner of poles, bollards, special signs structures and walls, just to mention a few places. I know there is a 'signage review' going on but hey, it's about time someone took a stand and 'harmonised' all the compliance signs, the bike pictograms on roads and paths, actually all pictograms, to a standard and then installed them. Every light pole along East and West Esplanade has at least one, in some locations several, signs attached. As a guideline, nothing should be attached to these light poles. Look carefully and you can see that the concrete stands on the bottom has been design with an inlay for signs to be attached. On another note. There is a reason why Smith Street is the only street in Manly, probably the city that has a permeable surface. Was controversial when it was installed and surely there are has been some innovative developments since it was installed a decade or so ago. It is a nightmare to ride a bike on and incredibly noisy to drive a car over. SMITH STREET, MANLY// ASPECT STUDIOS Permeable paving and trees within carriageway	The public domain guidelines do outline guiding principles for both signage and wayfinding as well as lighting/light poles. The guiding principles will facilitate a separate wayfinding strategy which will analyse existing and create a consistent signage strategy for the entire LGA. The guidelines also encourage the use of smart poles "that provide multifunction facilities eg signs + street banners" in order to de-clutter the public domain as much as possible and to enable as much consistency as possible. Smith Street Manly was used as a precedent to highlight the use of permeable paving with the public domain, however the permeable paving proposed is an open grade asphalt with a smooth surface- rather than the concrete pavers which were installed on Smith Street. The permeable asphalt will only be used in areas where it is applicable with concrete being used in other areas.
19	2095				Great to see that the consultants have been imaginative in their choice of Light poles for the Northern Beaches. It matches the ones used along Brighton Le Sands, the main street of Mildura and pretty much everywhere else. Great savings achieved through mass production and also never short of replacement parts using this catalogue light fitting. LIGHTPOLE FITTING BEGA 84402: GOOSENECK &360 & DIRECTIONAL (OR SIMILAR- TBC WITH COUNCIL) POLE AND FITTING: DULUX FERREKO NO.3 IN NATURAL GREY POWDERCOAT	The guidelines aims to use/compliment the existing palette was much as possible for reason outlined "ease of maintenance" and not having to replace functioning elements.
20	2103				P49 C7 Northern Beaches Street Hierarchy Map Bassett St East should be redesignated as a 'Local Street' as this area is residential. There is no street section running down to the Basin (public footpath through reserve only). Bassett St West is both industrial and residential.	
21	2102				As an adjunct to the submission I sent yesterday I am sending photos of a corner in Mona Vale where there are 13 signs.	
22	2102	Street and Open Space components Street and Open Space components	Signage and Wayfinding and interpretation Lighting	72 67	I am a long term resident of Warriewood and love the unique environment that surrounds me. Over the last few years the amount of street signage that is appearing has grown so much. Every open space is surrounded by signs and It is becoming more difficult to find these open spaces 'to sit, relax, ponder and play' as one is surrounded by the unnecessary ugliness of street signs. As a pedestrian, cyclist and car driver these signs are a blight and there are so many of them as a car driver one never has time to read them all. Why are they necessary? Are we here on the Northern Beaches such terrible drivers that we need reminding every 10 metres what to do?	The public domain guidelines do outline guiding principles for both signage and wayfinding as well as lighting/light poles. The guiding principles will facilitate a separate wayfinding strategy which will analyse existing and create a consistent signage strategy for the entire LGA. The guidelines also encourage the use of smart poles "that provide multifunction facilities eg signs + street banners" in order to de-clutter the public domain as much as possible and to enable as much consistency as possible.

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23	2095	Street and Open Space components	Soil volumes Tree Species Selection	78	Great to see a plan in place. Would like to see the plan include the "how to green" our environment from harsh pavement and roads to create for "green environment". Large trees for shade and earth cooling; Did you see "Prince Williams- our planet" special and what they are doing in London... excellent example of creating city gardens, water, lakes, bug environments for animals and people to co habitate. My street - golf pde has shrubs...but where are the tall trees for shade, cooling, birds, butterflies, flowering trees for bees etc etc etc. Look at the Harris Farm roundabout. Perfect for a wildflower garden to encourage bees/insects. Also ocean care should included - more marine parks and water parks for fish etc.	Sustainability and reducing heat island affects are primary targets which the guidelines set out to achieve. 'Greening environment" is best practice strategy in overcoming a lot of harsh environmental conditions. Making sure there is sufficient volumes for planting and tree's enable an increase in permeability, as well as making sure proposed tree canopy's can mature (reducing heat island effect) and providing cohabitation of fauna and insect environment. Tree species selection is carefully considered to encourage biodiversity. The guidelines provide guiding principles which encourage best design practice and sustainability where possible such as incorporating wetlands, raingardens and endemic species. For areas that are unique (marine and water parks) these will be dealt with under 'special places/ culturally significant/ heritage places' and seek a unique design response in consultation and approval with Council.
24	2103				This is a total waste of ratepayers money. Obviously to get this far has probably cost a lot. Please concentrate on services such as garbage, road maintenance and not on aesthetics. Do you people not have enough to occupy yourselves with in the current climate?	The guidelines deal with management of important infrastructure within open spaces and ensuring that management of existing and installation of new hardworks and softworks in the public domain achieves the priorities outlined and targets set by state government (including reduction in heat island effects, ongoing lifecycle management, sustainability etc). We have forwarded your concerns to the relevant council department who are responsible for the matters raised.
25		Street Design Using the guidelines Using the guidelines Street and open space components Using the guidelines Street and Open Space Components Character Areas Material Palettes	The importance of streets The Case for Change Bike Plan Traffic Calming Safer by Design Kerb Extensions Trees and understory Planting	19 XIII XX 55 XXII 57 73 93	The Local Government Area has an enormous variety of open spaces from spacious three-lane main roads to narrow and steep hillside roads with no verges or footpaths. This document tries to do too much in seeking to impose a single set of broad new planning policies across this variety of open spaces which is what these guidelines in many cases do, without consideration of the local conditions, the local needs of residents or public safety. There are few carve-outs for adaption to local conditions which might make this suite of proposals workable. There are many good ideas for improving streets for both residents and pedestrians which are of wide application but there are many involving road use which suggest a social engineering approach and are not suitable for general application. A preferable approach would have been to lay out the problems and consequences and discuss a number of solutions. An example is "Road space and facilities to match changing community needs". There is no evidence of general community demand for more bike lanes, cycleways and facilities and nobody accepts at face value the statement that 40% of LGA residents rode a bike within the past 12 months or that 26% of residents cycle for transport purposes. One only has to stand on Barrenjoey Road or in Mona Vale Shopping Centre for an hour or so to see how few people use bikes. A proportion of schoolchildren use bikes on very short journeys to get to and from school but very few adults. A much more accurate and useful figure found in other Council documents is that only 0.8% of residents use bikes for commuting. Doubling this figure - the Council's target – still only makes 1.6% of the population, a tiny minority and it will remain so. Therefore the emphasis on bikes and bike facilities is substantially overstated and the expenditure required to implement this part of the Guidelines cannot be justified. In many cases road corridors are not suitable for bike use, such as in Palm Beach, Whale Beach, parts of Avalon and Bilgola, parts of Elanora Heights, parts of Oxford Falls, parts of Manly and so on. Many of these roads are narrow, steep and have rough, unfinished edges which is how many residents like them but they are dangerous for bike use. These policies will not, we suggest, have any effect of encouraging people out of cars and onto bikes and there is no evidence provided to demonstrate that this is what the populace want. From this emphasis on bike facilities hangs a whole suit of street policies which will make the LGA a less attractive place for residents. Take the proposal to square off corners and make roads narrower for example. There is still going to be much the same number of cars on the road but they will now have to slow down and accelerate more often, creating more pollution, noise and congestion and it would be dangerous to make these changes to local roads leading directly off one of the main trunk roads, such as Barrenjoey Road. In many cases, such measures will make already narrow roads even narrower which will have the	<u>Street Design</u> The inclusion of a "streets and open space" with the public domain guidelines encourages best urban design practice and identifies the streetscape to hold a great potential (accounting for 80% of all public space) in addressing increased and changing community needs. Guiding objectives have been derived from government set targets which identify the complex nature of the streetscape and its ability to influence connectivity, transport, health, safety, sustainability, retail and an overall sense of community (please refer to page 19). The guidelines set out to identify streetscape components (i.e. planting zones, pedestrian zone's etc) to demonstrate how these components can work together to maximise both the function and useability of a streetscape. These components are derived from best practice design benchmarks such as NSW design suite "Better Placed" and "Towards 2030 LSPS" The guidelines cannot emulate the entire street network of the LGA and recognises that placing all components onto to each street is not feasible. It aims at introducing a palette of best practice components to be used where appropriate to achieve the guiding principles mentioned within the guidelines. This approach recognises the "number of solutions" to every problem and aims at introducing flexibility required to tackling the Public domain within The Northern Beaches. Targets that influence increased infrastructural requirements such as cycle lanes are derived from both community survey's, consultation and other forms of feedback, as well as state government targets and initiatives that seek out to encourage safer and cleaner modes of transport. The guidelines seek to integrate already established council policy's (Bike Plan document- Refer to A5.3) which outline exact locations for bike routes. Please note: Bike routes are already established; the guidelines demonstrate how cycle lanes can be better integrated where feasible in order to generate best practice design outcomes. The purpose of the guidelines is to articulate principles/objectives for future developments in order to create a cohesive approach towards the public domain. As an outcome, the guidelines do not propose to amend current carriageways. References to lane width restrictions will only be applied where possible (or feasible) and are subject to design standards (page 55) <u>Road Safety</u> Safety is a primary target driven by the "towards zero" program. Reducing speed is one strategy in creating safer streets as well as other interventions outlined in this document which also create other sustainability opportunities such as increased permeability and WSUD. The traffic calming measures

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					effect of making the roads more dangerous for bikes rather than safer and more uncomfortable to negotiate for motorists, particularly in areas of on-street parking. We are happy to support the creation of additional off-road cycle tracks for recreational use but believe that the proposals to reshape public roads to give priority to cyclists over cars is misplaced and not necessary, partly because, apart from schoolchildren, the main use for bikes would appear to be for recreation. We would also support more secure storage racks in the LGA, for example on the edges of shopping centres and villages, in order to keep bikes safe and stored in a tidy manner. There is also a case for more traditional (and less expensive) traffic calming measures such as slower speeds in heavily used pedestrian areas and in areas of narrow roads, such as Palm Beach where a 40 km/h limit would be safer than the present 50 km/h. There is also a case for speed humps, particularly the "mid-lane" design used on Bannerman Street, Mosman which can be safely negotiated by bikes. This part of the guidelines also calls for widespread removal of parking places. In many of our town centres, such as Mona Vale, Avalon and Manly, parking places are already at a premium and reducing the number of spaces available will cause chaos. For a population with a high proportion of older residents which is relatively dependent upon car use, this is unwise and looks like trying to impose rules on the populace, rather than working with the populace to resolve problems. Recent research published in London demonstrates that the introduction of bike lanes and bike preference in that city has caused substantial problems for bus transport, particularly significant delays from having to give way to cyclists. The idea that a bus carrying 30-40-50 passengers has to cede preference to a much slower bicycle with a single person on board is risible. We strongly oppose cycleways through village and town centres as being inherently dangerous and destructive to the very atmosphere/character which the Council is striving to preserve through its Place Plans. SHARED WALKWAYS/CYCLEWAYS Opinion amongst our membership uncovers substantial opposition to shared walkways/cycleways – they are regarded as extremely dangerous, particularly for three groups of people – more senior citizens, mothers with children and prams or strollers and people walking dogs. Cyclists do not observe speed limits (often can't because of lack of a speedometer) and are basically silent and frequently don't use their bells (if they have one), they also display a sense of entitlement. TREE CANOPY The need to increase tree canopy is strongly supported for its benefits in heat control, pollution control and beauty (Objective 5). There are a number of easy steps for the Council to take to help achieve this aim: - • Council's policy should be explicitly "Save the tree". Council should seek to stop people chopping trees down to improve their views or stop leaves blocking their gutters or to put in a swimming pool or whatever. One can hear the shredders going almost every day in Pittwater. • The fines for illegal removal of trees should be more significant – i.e. in the thousands of dollars and enforced. • Enforce the requirement that new trees be planted for every one that is removed on the basis of multiple replacements for each tree removed. If the tree can't be replaced on the private land, it should be replaced at the owner's expense on public land. • Investigate more carefully claims that particular trees are rotting from the centre or represent a danger. Many of them are/do not. • Make adjoining owners responsible for the protection of street trees and be prepared to prosecute when they are killed or removed. Beautifying streets is desirable and supported but the principal reason for the streets being there has to remain, namely to facilitate the movement of people and goods. HEAT CONTROL	proposed aims at shifting the priority towards the pedestrian as well, rather than the vehicle only in order to create a more successful public domain. Parking Lanes The guidelines highlight opportunities to use portions of parking lanes to introduce additional tree canopy and mass planting. These locations will be strategically placed in order to not affect significant parking numbers. For example, around raised pedestrian crossing where there are restrictions to where parking bays are possible. The mentioned example regarding some possible issues around bike lanes outlines the importance of designing and understanding how streets function. Proposed cycle lanes within High street and collector streets where buses run is kept completely separated with physical barriers such as trees are present. Shared Walkways/cycleways Shared cycleways/walkways are encouraged on local streets only with an increased width in footpath to cater for all access movement. Tree Canopy Whilst the public domain guidelines do provide a list of tree species for both streetscapes and open spaces, The Northern Beaches Urban Tree Canopy Plan" council document is more relevant for understanding council's future for tree canopy within the LGA. There are also documents including the "Significant Tree Policy, Tree Preservation Order which outline heritage and succession plans for existing significant trees. Heat Control + Footpaths Using appropriate material was a key consideration within the guidelines. A selection criteria included appropriate environmental context, durability, cost and sustainability in order to ensure material selection was appropriate. Accessible, high quality footpaths are critical for a successful streetscape. Existing conditions where footpaths are either not there, or in a bad state are key areas which will directly benefit from the guidelines. Upgrades to these parts will be consistent, with appropriate material palette, WSUD, tree canopy due to a clear public domain direction. Design Place-based is largely around community as its surrounding environment- as you have stated people make places. For this reason, the guidelines are a process-based document (page xii) which goes through numerous consultation and stakeholder meetings/workshops in order to make sure that it delivers and responds to community's need. Palette Each proposed material palette had several considerations depending on each environmental context and existing condition. Sepia brick and insitu concrete paving are existing conditions and need to be considered in order to achieve a cohesive seamless public domain. Proposed stone is porphyry which typically varies between a red-grey tone creating a much warmer affect. Although aesthetic criteria are important, performance materials such as porous asphalt are proposed to promote permeability and WSUD. These materials are strategically placed and will not be the prominent material. Stainless steel furniture components are a response to the coastal environment to offset rusting and are overall more durable within these contexts. Other amenities such as light poles, rubbish bins, and railings are strategically chosen to be more recessive elements within the public domain in order to create hierarchy. Subtle/recessive colour finishes also allows for natural greenery to be the focal point, whilst also allowing design flexibility to future projects.

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					For reasons specified in the Guidelines but not observed, asphalt is not a suitable surface for pathways and should not be used. It is also a petro-chemical and that is another ground for ceasing to use it. WATER SENSITIVE URBAN DESIGN We support the use of WSUD to improve conditions in public spaces (Objective 6). FOOTPATHS Instead of spending a huge amount of money on an unnecessary bike plan ($170 million over 5 years compared to Council's usual capital expenditure of $100 million p.a.), more attention needs to be paid to footpaths. The Guidelines state that "footpaths on local roads are vital in providing residents (with) viable connections to essential services and destinations" but many roads, including such an important road as Barrenjoey Road, do not have footpaths for significant parts of their length, making walking on them dangerous or highly dangerous. DESIGN The Guidelines make the statement that "good design is ….. place-based and relevant to and resonant with local character and communal aspirations". With the greatest respect, good design is people-based – it is to meet and improve upon people's aspirations and needs. Local character is created by people's endeavours up to this point, no doubt shaped by their view of their surroundings but people created the local character. PALETTE Having described Beach colours as warm sandy, why do we end up with sepia paving, grey cobblestones, black porous asphalt, off-white cement, charcoal boardwalks, black bollards, shiny stainless-steel bin enclosures and railings, grey light poles and charcoal gravel for tree planting? Why is the palette for Waterfront the same? "Waterfront" includes the idea of water so why no blues as well as the greys? There is no differentiation between Beach and Waterfront and an unsuitable selection of colours. SUMMARY In summary, we support: - • Objective 1 – Enhance and Protect Bush, Beach and Water; • We believe there are substantial problems with Objective 2- Social Activation through Street Design, requiring its substantial reconsideration; • There are problems in trying to implement Objective 3 – Healthy Active Lifestyles - on public roads in this LG; • Objective 4 – Traffic Calming - imposes costs and restrictions on local transport with no discernible benefit; and • We support Objectives 5 – Water Sensitive Urban Design - and 6 – Tree Canopy.	The difference between the Waterfront and Beach Material Palette is very subtle and is mostly in order to make sure the specified finishes are appropriate for the environmental conditions, existing material palette and future design upgrades. The proposed material palettes are the baseline of quality and materials that is delivered for the typical streets and open spaces within the LGA. For areas that are unique (heritage, culturally significant, parks or foreshore areas, for example) these will be dealt with under 'special places/ culturally significant/ heritage places' and seek a unique design response in consultation and approval with Council.
26		Using the guidelines Street and open space components Using the Guidelines Street and Open Space Components Street Design	A Case for change Trees and understory planting Tree Canopy Plan Safer by design Public Art Traffic calming	XIII 73 XXI XXI I XXI II 55 23 31	NORTHERN BEACHES PUBLIC SPACE VISION AND DESIGN 1. FRESHWATER'S TREES Street trees are a basic ingredient of a well-established coastal urban environment. In Freshwater, there are three Avenues of trees that are heritage-listed (Soldiers' Avenue, Kooloora Avenue and Wyuna St., These trees provide much needed shade and ambience in summer, as well as important shelter for birds, insects and other fauna. Their heritage status affords them special tree management and greater longevity. The Avenue of Honour Movement in Soldiers Avenue, after World War 1, established an enduring tree scape that would provide an ongoing focus for commemoration and reflection. Some of these plantings of Queensland Brush Box Trees are nearly reaching centurion status. Successive plantings of Brush Box by the local community and schools on such occasions as Arbour Days, in surrounding' streets such as Glen, Eric and Marmara, have created an ambient local environment. Alongside these trees have also grown rogue Camphor Laurels which are causing costly problems for nearby residences as well as curbing and underground utilities. These noxious plants should be systematically removed and replaced by non-invasive native trees such as Queensland Brush Box. Some of Freshwater's streets are bereft of any tree scape and a major effort should be made to rectify this as an important public space initiative. For example, one of the most	<u>Freshwater's Tree's</u> Street tree's play a fundamental role within the public domain guidelines as a direct response to state government targets "planting 5 million trees in Sydney by 2030", heat island effect (greener places and Urban Tree Canopy Guide) and other best design practice benefits relating to health and wellbeing. The criticality of providing streetscape's that enable mature tree canopy growth has been raised throughout the guidelines (D14 Trees and understory planting) outline guiding principles and design standards by which all proposed tree planting will abide, as well as a tree species selection list, of which mentioned *Lophestemon confertus* has been listed. The guidelines also recognise the need for infrastructural support such as sufficient soil volumes, WSUD, passive irrigation and permeable paving to make sure that trees are in the correct conditions for growth. Heritage tree protection and succession plan information is provided within other council documents including "Significant Tree Policy, Tree Preservation Order. Whilst the guidelines provide design objectives and principles which relate to Urban Tree's, the more relevant council document which locate and provide more information for future treescape development is the Tree Canopy Plan (A5.4). We have forwarded your feedback relating to Moore Road to the relevant council department.

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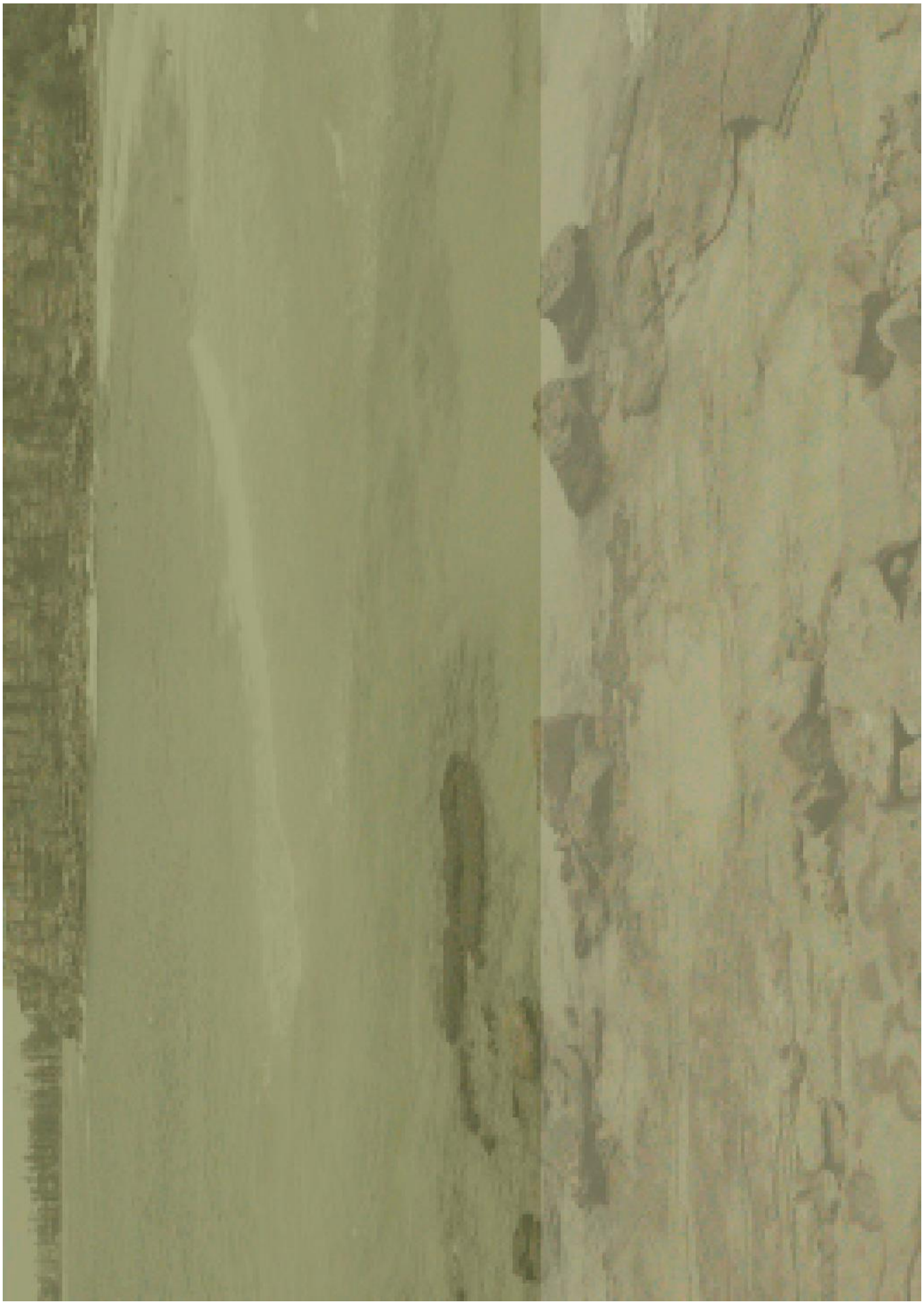
			Street priorities for Local Streets Street priorities for High Streets		important streets, Moore Road, which links Freshwater Village with Freshwater Beach has no trees and only a few shrubs along its 500 metre length. Its lack of shade, in high summer, detracts from people venturing from the beach to the village. The width of Moore Road was established to allow trams to arrive at a tram terminus at the Beach on their regular runs from Manly. This unusual Street width gives great scope for the establishment of an Avenue of trees. A similar planting program has been successful for Pittwater Road from Raglan Street to the Roundabout at Harris Farm, and this could be emulated. Some other Streets in Freshwater also suffer from a lack of trees. Plantings should be encouraged with the support of local schools and other community groups. 2. SAFE PEDESTRIAN MOVEMENT Much has been made of the inadequacies of Lawrence Street, Freshwater, in terms of safe pedestrian movement. It has four pedestrian crossings, each of which have become problematic due to intense traffic movements and poor vehicle sight lines. Many accidents and near misses have occurred at these pedestrian crossings. Eventually Lawrence Street and the Village it services, will have to become more pedestrian safe. A starting point would be to close Albert Street, where it joins Lawrence Street, to both remove a pedestrian crossing and create an augmented public space at the Freshwater Village Plaza. Further consideration should be given to freeing up Lawrence Street from its role as a major artery for all services. Traffic Engineers could also be commissioned to design an upgraded traffic movement for the whole suburb including an increasing cross role for Wyndora Avenue where it runs from Harbord road to Albert Street. Recently Council established its Walk Plan to provide a schedule for the creation of foot paths through the LGA. Freshwater was the beneficiary of a new foot path along the northern side of Soldiers Avenue which has been well utilised by families and school children moving between two primary schools, three pre-schools and Freshwater Village. Consideration could also be given to providing footpaths for those streets that have high levels of foot traffic but no existing foot paths. Examples would include Glen and Martin Streets. 3. SHARED PEDESTRIAN AND CYCLE PATHWAYS There is only one shared pathway in the suburb and it runs from Manly Village to Warringah Mall. It is 2.Sm wide and safely copes with the interaction of pedestrians and cyclists. Unfortunately, when cyclists arrive on the shared pathway at Warringah Mall, they are blocked from crossing at the lights and instead have to use lifts to negotiate the overpass in order to access bike racks at the Mall. An extension of the Shared Pathway at Oliver Street could be created, utilising the eastern side of Oliver Street to safely allow pedestrian and cycle travel through to Freshwater and beyond to Curl Curl. This would need to compliment the Northern Beaches Bile Plan. 4. PUBLIC ART IN PUBLIC SPACES An important component of Council's Freshwater Beach Reserves Master Plan, which is in the process of implementation, is the creation of new open space in McKillop Park, and with it the introduction of public art. Public art is envisaged to be installed at a renovated Mckillop Park Lookout as well as along the Pathway. Green space will be introduced on the former Harbord Diggers Eastern Car Park, which will return to community use. There is an opportunity to install public art in this space to complement the adjacent Surfing Memorial. Freshwater currently has little public art and this presents a great opportunity. There are many wall spaces for mural art in the Village and elsewhere. There are also many artistic ways to showcase Freshwater's now century-old history Freshwater Community Bank has recently introduced a Youth Art Prize with the winning entry being offered display of the work on the Bank's wall. Freshwater has a group of artists, sculptors, ceramicists who would benefit by local outdoor displays of their output.	<u>Safe Pedestrian Movement</u> Designing safer streets is another key objective "this guide will help to deliver safer streets in The Northern Beaches through traffic calming interventions" as a response to the Towards Zero program. Designing future streets to be safer can include a variety of different elements depending on the street type and movement intensity. These measures can include major infrastructural upgrades, as well as minor interventions to make sure site lines are clear and pedestrian priority is recognised. These guiding principles are outlined under "traffic calming". Your comments regarding specific danger concerns regarding Lawerence Street, Freshwater will be forwarded to the relevant council department. Street priorities for Local Street upgrades (Martin and Glen Street) is outlined on page 23 where it states, "there is at least one footpath on the street". Council recognises that requirement to ensure inclusive footpaths are provided where feasible for all users. As mentioned, the Public Domain guidelines will work alongside other council documents such as the "Walk Plan" to ensure all user groups have equal access within the public domain. <u>Shared Pedestrian and Cycle Pathways</u> The need for an established Bike Plan network is fundamental in making cycling a viable and safe mode of transport within The Northern Beaches. The guidelines outline varies ways to integrate cycling within varies types of streetscapes (Street Design). The chapter will be used alongside the Bike Plan document to implement a cohesive cycle network. Within this document it recognises the need to "provide and maintain end-of trip facilities". Your specific feedback in regard to the shared pathway at Warringah Mall will be forwarded to the relevant council department. <u>Public Art in Public Spaces</u> The Public domain guidelines references Northern Beaches Public Art Policy document which keys out the importance of considering public artworks throughout any concept's for streetscape and open space improvements phases. It also identifies 3 separate types of Public Art "that which is made by community groups and individuals". Thus, facilitating supporting local artists is a key principle. Information regarding specific public art locations and artists are projects based. I have forwarded your feedback regarding the need for an art strategy within Mckillop Park and Harbord Diggers Eastern Car Park to the relevant council department. <u>The importance and Viability of our village</u> Urban renewal -projects are a critical component to addressing increased demand onto the public domain whilst facilitating state government targets which relate to housing, jobs opportunity, green infrastructure and commercial opportunities. Establishing vibrant village is directly addressed within the Street Design Chapter of the guidelines- specifically the important role that High Streets can perform to enhance local retail + commercial success through awning, street furniture, high quality paving and lighting to activate throughout both day and night. The public domain guidelines aim at providing a framework for all future public works of a best design practice standard. <u>Anticipating Future Needs</u> <u>Recharging of Electric Vehicles in Freshwater</u> Council have an Electric vehicle charging infrastructure on public land policy to ensure streets are 'future proofed' and allow for initiatives mentioned. Policy also outlines design standards and other obligations such as wayfinding and signage to ensure equitable access. Please refer to council's EV policy for more information

No	Post code	Section	Subsection	Pg.	Submission summary	Aspect Response
					5. THE IMPORTANCE AND VIABILITY OF OUR VILLAGE Freshwater is among a handful of local villages that are not located on a major thoroughfare. It is important that it provide a diverse range of consumer and professional Services for its local community. Currently it has been going through the digestive process of adjusting to a series of major development projects. When this is completed, there will be the opportunity to re-establish the vibrant Village that previously was the case. The Friends of Freshwater is grateful for the work of Council's Curl Curl Place Co-ordinators, Zoe Johnson and Deb Richardson Bull for their work in re-invigoration of the Village. This is ongoing work 6. ANTICIPATING FUTURE NEEDS 6 (a) RECHARGING OF ELECTRIC VEHICLES IN FRESHWATER One of the major obstacles to the uptake of electric vehicles (apart from their cost) is the lack of easily accessible charging stations beyond the one's home. A recent initiative of electricity supplier, Ausgrid, and the start-up, Jolt, seeks to convert street-side power kiosks to EV Chargers. This widespread electricity infrastructure, of which there are at least more than a dozen in Freshwater alone, will be repurposed to overcome the electric barrier. According to Ausgrid CEO, Richard Gross, "It is exciting that Ausgrid is part of this world-first initiative, which is taking existing infrastructure and transforming them into state-of-the art charging stations". In Freshwater, we already have a 14 KV Ausgrid Electricity Sub Station conveniently beside the Oliver Street Car park, as a perfect opportunity for an EV Charging station. As well as for those many kiosks scattered around Freshwater. These deliver reliable power to existing medium density apartments. The JOLT proposal will see free charging from these modified Kiosks for 15 minutes, to enable vehicles to travel a further 4Skms. Charging for longer periods will involve a small cost. 6 (b) Modelling Sustainability Freshwater could become a model of urban sustainability, with a focus on water sensitive urban design, recycling of materials, solar power generation on all public buildings and bush regeneration of degraded sites. Good and sustainable public place management can incorporate all of the above and more. The Friends of Freshwater would be enthusiastic to work with Council on working towards range of these outcomes.	Council is currently investigating JOLT's proposal with Ausgrid. We have forwarded on your request to the relevant council department. Modelling Sustainability Sustainability has been a key objective for the public domain guidelines. Principles of sustainability have been incorporated throughout most design principles such as WSUD, Water usage, Tree Canopy Coverage, Material Selection and durability. **Recommendation** Aspect to include Electric Vehicle charging summary and reference to EV council policy to "future proof" chapter within guidelines.





Northern Beaches Public Space Vision & Design Guidelines

Prepared by ASPECT Studios for the Northern Beaches Council.

northern beaches council

ASPECT Studios

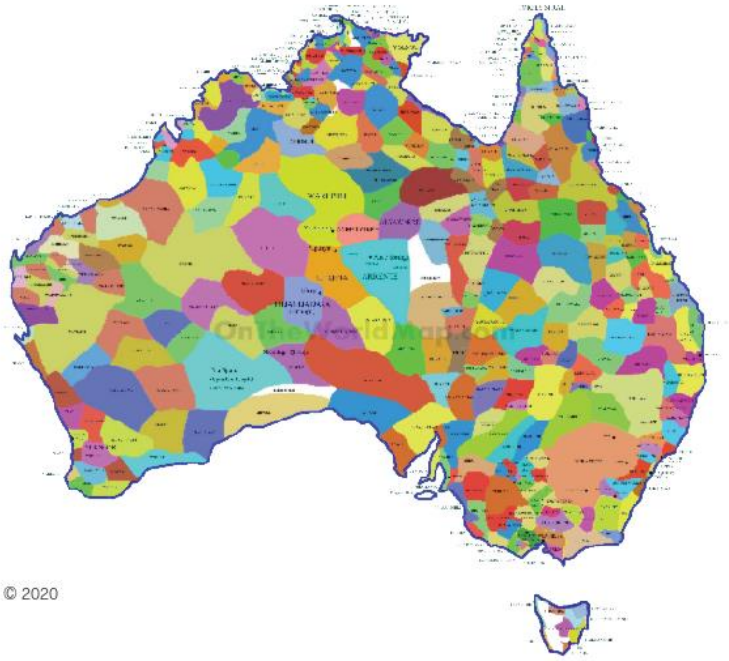
ACKNOWLEDGMENT OF COUNTRY

ASPECT Studios acknowledges the Traditional Custodians of the Northern Beaches and their Country on which we gather today. By these words we would also like to show our respect to all Aboriginal people.

We Acknowledge the Elders in the past and in the present and Acknowledge the culture, heritage, spirits and ancestors of the Clans that lived in this area.

The Northern Beaches local government area (LGA) encompasses the areas of Manly, Allambie and Seaforth to the south, being lands occupied by the Gayamaygal people and the Barrenjoey areas occupied by the Garigal people to the north and is recognised historically and contemporaneously as being a meeting place for people from different clans. These may have been kinship connections. The clans of Sydney spoke the same language and although never named it is now called the Sydney Language.

We recognise the Aboriginal Peoples continued connection to Country seen today in stories of place and cultural practices; art, song, dance, and caring for Heritage and Country.



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TEAM

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DOCUMENT CONTROL				
V	DATE	DESCRIPTION	BY	REVIEW
1	13.03.2020	Draft Submission	OM/GH	NB
2	10.08.2020	Draft- Consolidated Feedback	GH	NB
3	17.08.2020	Draft- For Review	GH	NB
4	18.09.2020	For Exhibition	OM/GH	NB
5	17.12.2020	Final Submission	OM	NB

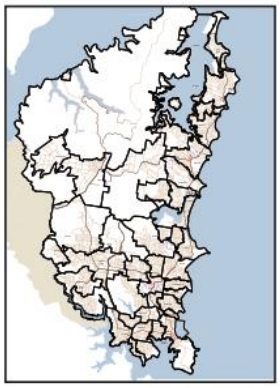
HOW DO YOU USE THESE GUIDELINES

WHAT IS THE ADDRESS



FIND IT ON THE MAP

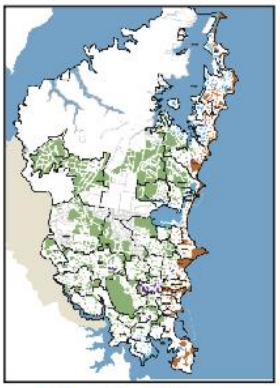
NORTHERN BEACHES STREET HIERARCHY MAPS



1. What kind of street is it?
2. What is the extent of associated paving?

CHOOSE MATERIALS

CHARACTER AREAS MATERIAL PALETTES



1. What is the character area of the street?
2. Selection of material combining street type with street character.

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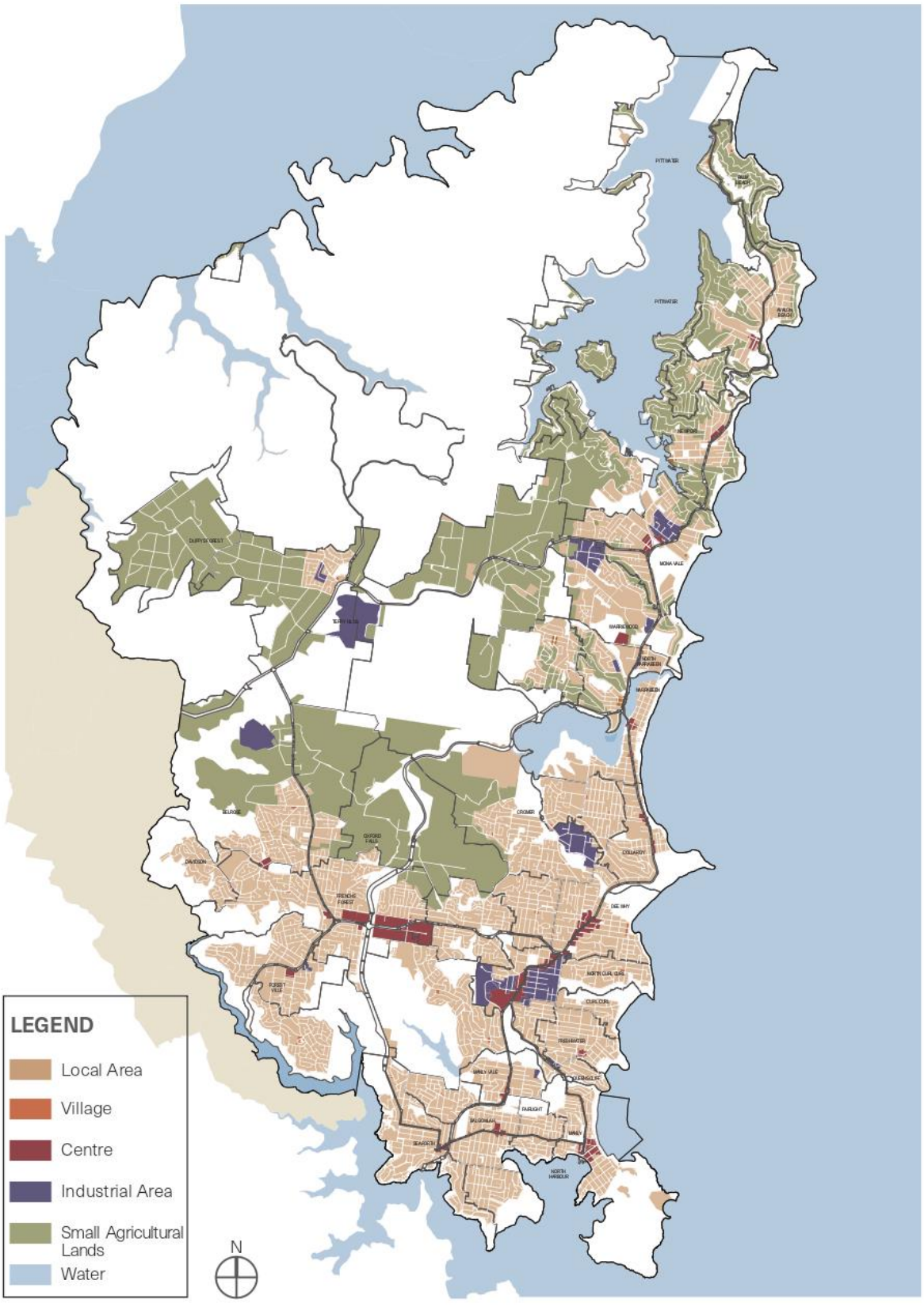
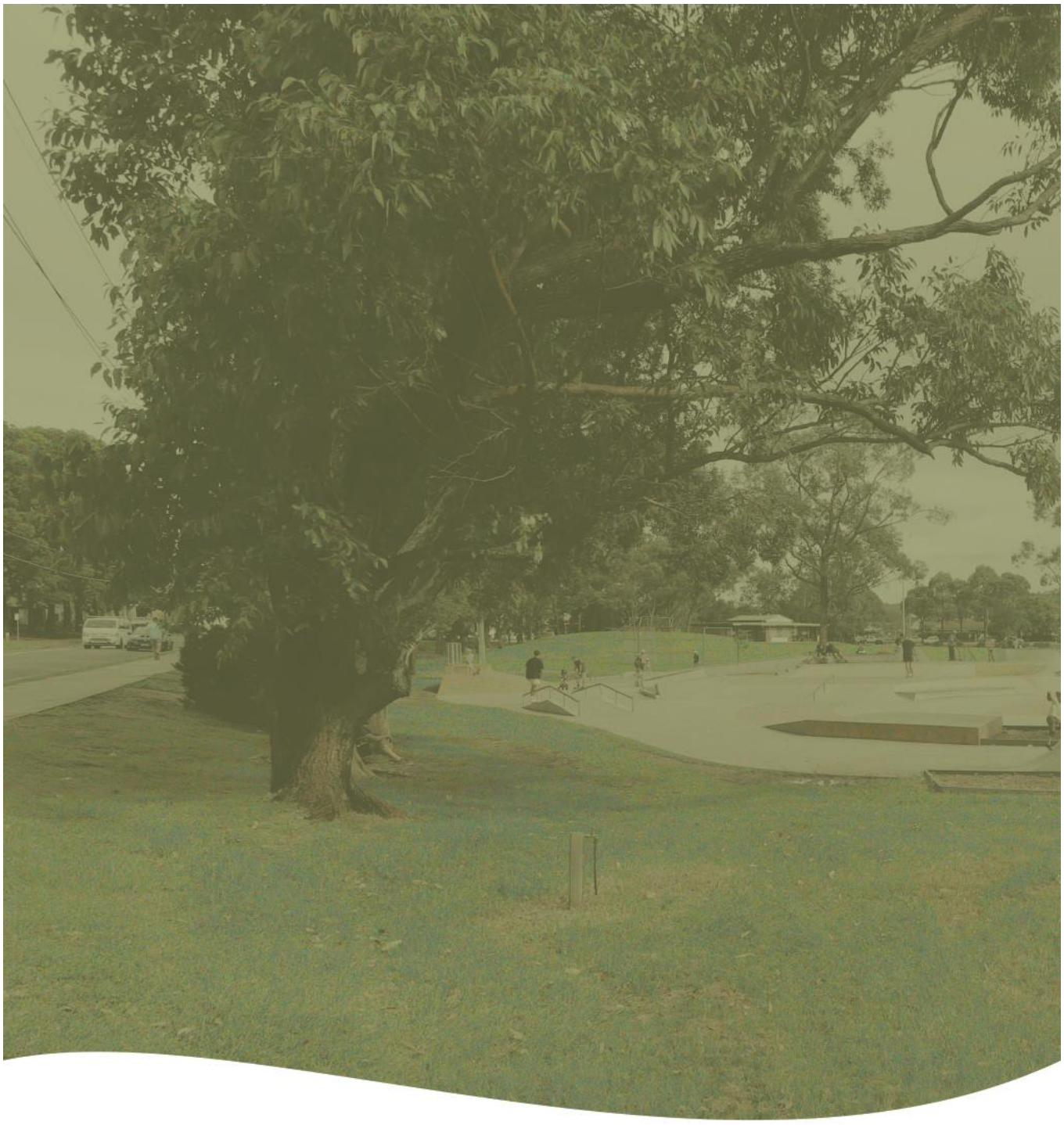
NORTHERN BEACHES LOCAL GOVERNMENT AREA CENTRES



NORTHERN BEACHES STREETSCAPE HIERARCHY MAP

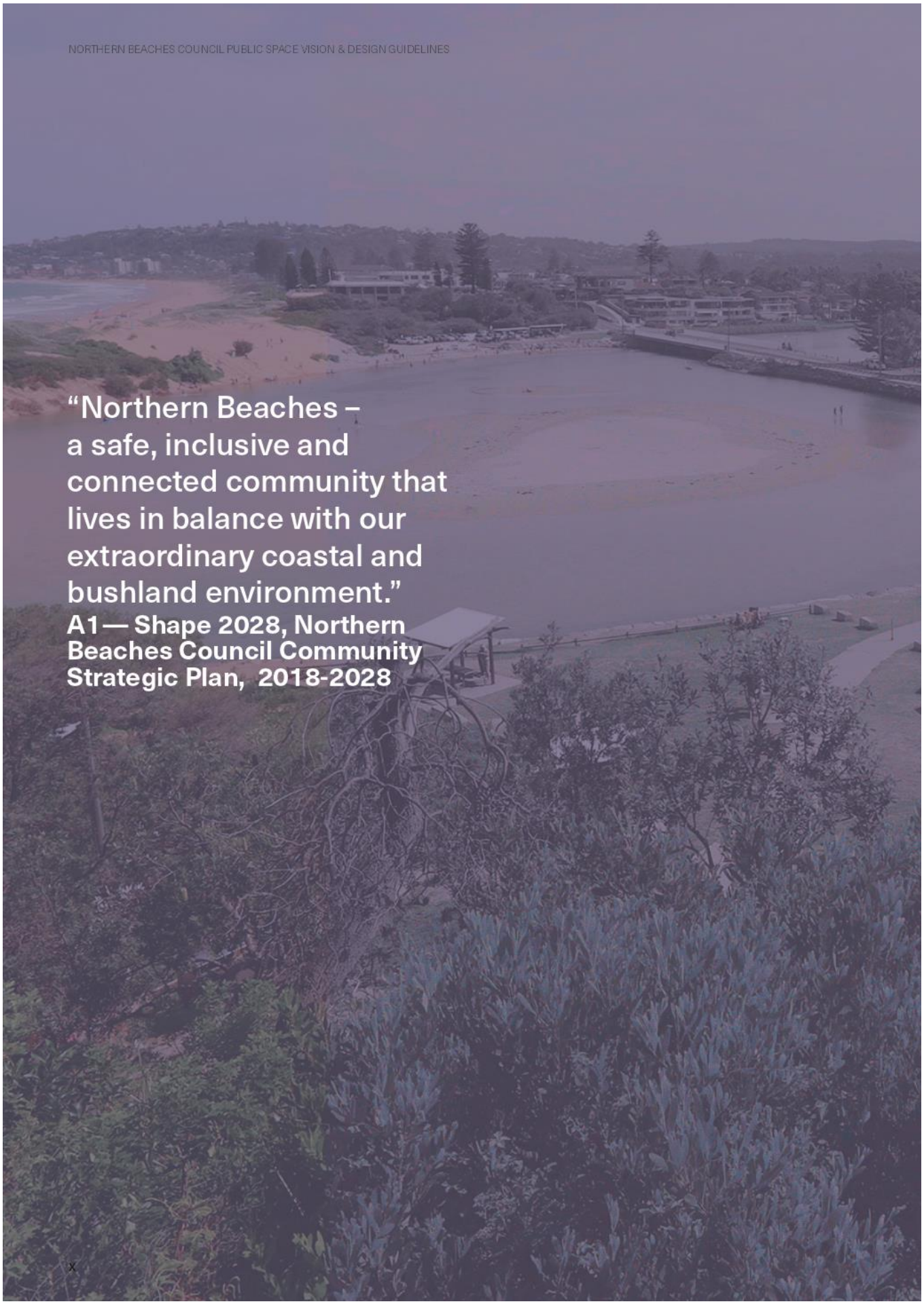






A

Using the Guidelines


NORTHERN BEACHES COUNCIL PUBLIC SPACE VISION & DESIGN GUIDELINES
"Northern Beaches – a safe, inclusive and connected community that lives in balance with our extraordinary coastal and bushland environment."
A1— Shape 2028, Northern Beaches Council Community Strategic Plan, 2018-2028

A2 PURPOSE

The Northern Beaches Public Space Vision & Design Guidelines (PSV&DG) set out to unify and consolidate public domain policy documents from three former council areas in order to ensure consistency and standardisation for projects of all scales across the entire Northern Beaches Local Government Area (LGA).

The guidelines are to be used as a guide for the evaluation, planning and design of streets and open spaces and public private interfaces.

The Northern Beaches PSV&DG seek to retain and enhance it's unique landscape character whilst providing additional environmental, social and health outcomes within its centres and neighbourhoods through the introduction of best practice street design and appropriate material selection. Six key objectives form the foundation of the guidelines which are derived from state government public domain targets and previous community consultations.

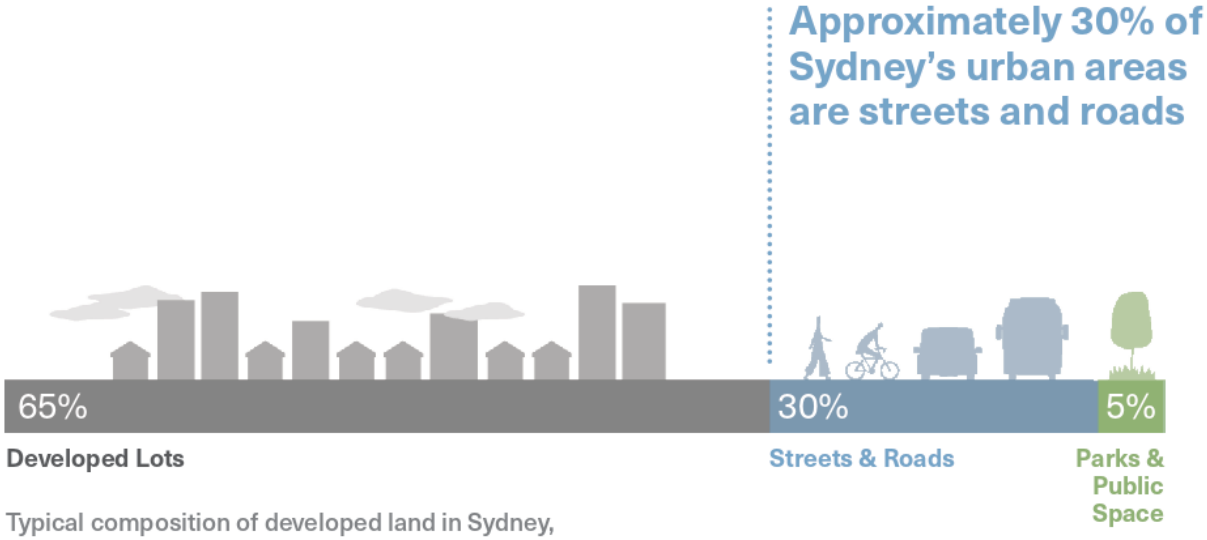
A key addition to the PSV&DG is the inclusion of a street types chapter. Streets are the backbone of public space, often accounting for a quarter or more of the total land area in our cities and neighbourhoods. Streets typically make up around 80 percent of all public space in an urban area, with parks and squares comprising less than a fifth of our shared spaces.

A3 BACKGROUND

With the formation of the Northern Beaches Council the policies of the three former Councils governing public domain design have been reviewed and consolidated to ensure uniform standards are applied throughout the whole LGA.

Following the amalgamation of the former three Councils, the newly formed Northern Beaches Council has undertaken a comprehensive review and consolidation of the former Councils' various public domain guidelines. This has included the consolidation of various material schedules, palettes and associated public domain policy documents, in collaboration with stakeholders and document users.

During the process of consolidating the three Public Domain Design Guidelines documents into the Interim Public Domain Design Guidelines 2019, it became apparent that there were several areas/sections within the document requiring further investigation. These areas include a street types chapter (Chapter D) identifying streets as a vital component to any urban design and open space policy document. Other areas include an introduction of four key material palettes "Coastal, Urban, Waterways and Bush" which are responsive to their unique environmental conditions whilst still providing an overall cohesiveness of public spaces across the LGA.



Typical composition of developed land in Sydney, Greening Sydney Plan, City of Sydney 2012

A4 PROCESS

STAKEHOLDER PROCESS + COMMUNITY CONSULTATION





During COVID-19 (2020) Council's position for public consultation was restricted to optimising our online digital platform Your Say for the consultation period. The consequences and timing of the current climate of COVID-19 restrictions drove the strategy to an online focused and interactive preliminary engagement process.

PUBLIC SPACE VISION & DESIGN GUIDELINES

A5 THE CASE FOR CHANGE

Greener and cleaner streets

Northern Beaches is growing quickly and future street design should anticipate changed environmental factors as well as provide the best possible outcomes for centres and neighbourhoods.

The improved retention and use of water in streetscapes is critical to establishing tree growth and healthy canopy, whilst reducing run–off pollution to local wetlands, creeks and rivers. A major factor in the livability of every neighbourhood in the region will be the ability of surfaces in new developments to avoid retaining and re-radiating heat. This needs to be mitigated through new design and landscape measures.

More Trees, Cooler Cities

There is overwhelming evidence good tree canopy reduces ambient temperatures and mitigate the urban heat island effect through shade and evapotranspiration. Ambitious targets to increase street trees and green space will help create liveable streets and communities in a part of Sydney that already has a high number of days with significant heat.

A Better Environment

Tree canopy extends animal habitat and increases the biodiversity of cities, serving as a home for animals and birds. Air quality is improved by removing fine particles from the air. Trees also mitigate the impact of climate change by acting as a storehouse for carbon dioxide. Permeable ground surfaces, rain gardens and swales help to reduce nitrogen and phosphorous pollution in our creeks and rivers.

This priority is part of a long term commitment to planting five million trees in Sydney by 2030 and managing environmental pressures including water quality and supply.



Designing safer streets

The NSW Government has a long-term ambition to reduce road fatalities to zero by 2056. A State Priority Target was established to reduce fatalities by at least 30% from 2008–2010 levels by 2021.

In NSW 70% of all fatalities occur on country roads, and rates of fatality are five times higher by population in rural areas — but around two-thirds of serious injuries occur in urban metropolitan areas.

Designing safer roads and reducing speeds in urban areas whilst also improving separation between various road users (including drivers, riders, cyclists and pedestrians) will not only assist to reduce death and injury but also greatly improve urban amenity.

Towards Zero

The Towards Zero program is designed to increase safety for all users of the street by adopting the Safe Systems approach, recognising that roads need to be designed for the separation of vulnerable road users and with safe speeds. This includes self-reinforcing road designs, pedestrian crossings, refuges and traffic calming devices.

This guide will help to deliver safer streets in The Northern Beaches through traffic calming interventions

TOWARDS ZERO



SHARED STREET IN SYDNEY// ASPECT STUDIOS

Making better public spaces

Streets are the most common type of public space in urban areas. Streets provide a great opportunity to contribute to the identity and amenity of every neighbourhood.

Better Placed by the NSW Government Architect establishes the value of good design. The document identifies key concepts, good process, and objectives for good design outcomes.

Good design in the built environment is informed by and derived from its location, context and social setting. It is place–based and relevant to and resonant with local character, and communal aspirations. It also contributes to the evolving local character and setting.

Better look and feel

The built environment should be welcoming and aesthetically pleasing, encouraging communities to use and enjoy local places.

The feel of a place, and how we use and relate to our environments and each other is dependent upon the aesthetic quality of our places, spaces and buildings. The visual environment should contribute to its surroundings and promote positive engagement.

Good design everywhere

Good design creates user friendly, enjoyable and attractive spaces, which provide value to people, the place and the natural environment as well as a high level of functionality. Good design brings benefits socially, environmentally and economically, and builds on these benefits over time — continually adding value. Good design is flexible and accommodates changing needs.

Streets can be much more than places for cars and trucks. They should be beautiful and well designed to encourage inhabitation and connection to community.



Improving health and wellbeing

It is acknowledged that current rates of walking and cycling in Northern Beaches are well below desired levels.

High vehicle dependence, longer travel distances, unfavourable climate and a reduced emphasis on the provision of high-quality walking and cycling environments have contributed to very low take-up rates of active transport.

Most people in Sydney make at least two walking trips per day and around 15% walk all the way to work when they live in proximity to major centres and employment hubs. But on average each Sydney sider only walks for about 11 minutes each day leading to poor health outcomes.

Walking to school

More than 50% of children live less than 2 km from school. However, the number of children walking to school has dropped significantly over the last four decades. Improved crossing design and better footpath environments will help to reverse this decline.

Making space now

To encourage a new generation of pedestrians and cyclists, safe and protected facilities should be included wherever possible. Implementing cycleways and shared paths that provide safe unhindered access for all ages and abilities is a priority to increase active lifestyles and reduce reliance on vehicles for local trips.

The Northern Beaches Public Space Vision & Design Guidelines places an increased emphasis on the need to construct well designed footpaths, shared paths and cycleways that promote behavior change and set new standards of comfort and safety.



MOOREBANK NORTH, LIVERPOOL
//ASPECT STUDIOS

Future-proofing streets

Technology and community needs change over time, and streets should be flexible enough to accommodate new requirements for the delivery of services, utilities and transport modes.

The NSW Government is seeking to improve infrastructure investment by embedding smart technology in new and upgraded infrastructure, adopting interoperability protocols and cybersecurity standards.

Changing transport

The recent rise in on–demand bus and ride share services aided by mobile phone applications is a good example of behavior change delivered through technology. Connecting people to services, real time tracking and digital contactless fare systems such as Opal are changing the transport options and the way streets are used. A shift to electric vehicles will also have an impact on streets with reduced emissions.

Technology and utilities

The roll out of 5G mobile services will deliver transfer speeds projected to be about 10 times higher than 4G. This speed will mean reduced data latency that can support significant advances in driverless vehicles and 'smart' components. The connection of a wide network of sensors and data points through these networks can have a significant impact on traffic, pollution and other environmental measures.

Crime prevention within the Public Domain will also be faciliated through contiunous upgrades in CCTV camera and street light technology

Electric Vehicle Charging Infrastructure

The increase of use of electrical vehicles places a direct demand on Electrical Vehicle (EV) infrastructure onto the public domain. Council's EV policy outlines conditions for both the installation and ongoing maintenance of charging stations in order to continuously support EV use and integrate it effectively within the transport network. The policy outlines 6 main principles to ensure equitable use for the current demands and support for future growth.

Smarter cities and neighbourhoods will always need to integrate new and changing technologies, that help shape places and change human behavior.



Movement and Place

Towards 2040 – Local Strategic Planning Statement (LSPS)

Priority 21 - Road space and facilities to match changing community needs

Road space and facilities change to match community needs. Re-thinking our traditional streetscape arrangements to be more efficient and responsive to the way we currently use our streets, more people, goods and services can be accommodated, and a safer and more attractive space can be achieved.

Future Transport 2056, the Greater Sydney Region Plan and the North District Plan

These documents identify a movement and place framework that considers how best to use road space to improve the livability and safety of places.

The framework acknowledges that the needs and expectations of the community change for different street environments.

Local streets need to be safe for people to walk, whilst main transport corridors must be designed to effectively and safely move people and goods.

The hierarchy and function of various roads shape opportunities for movement and place.

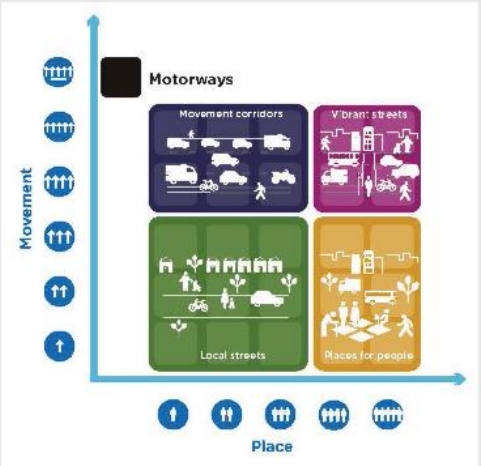
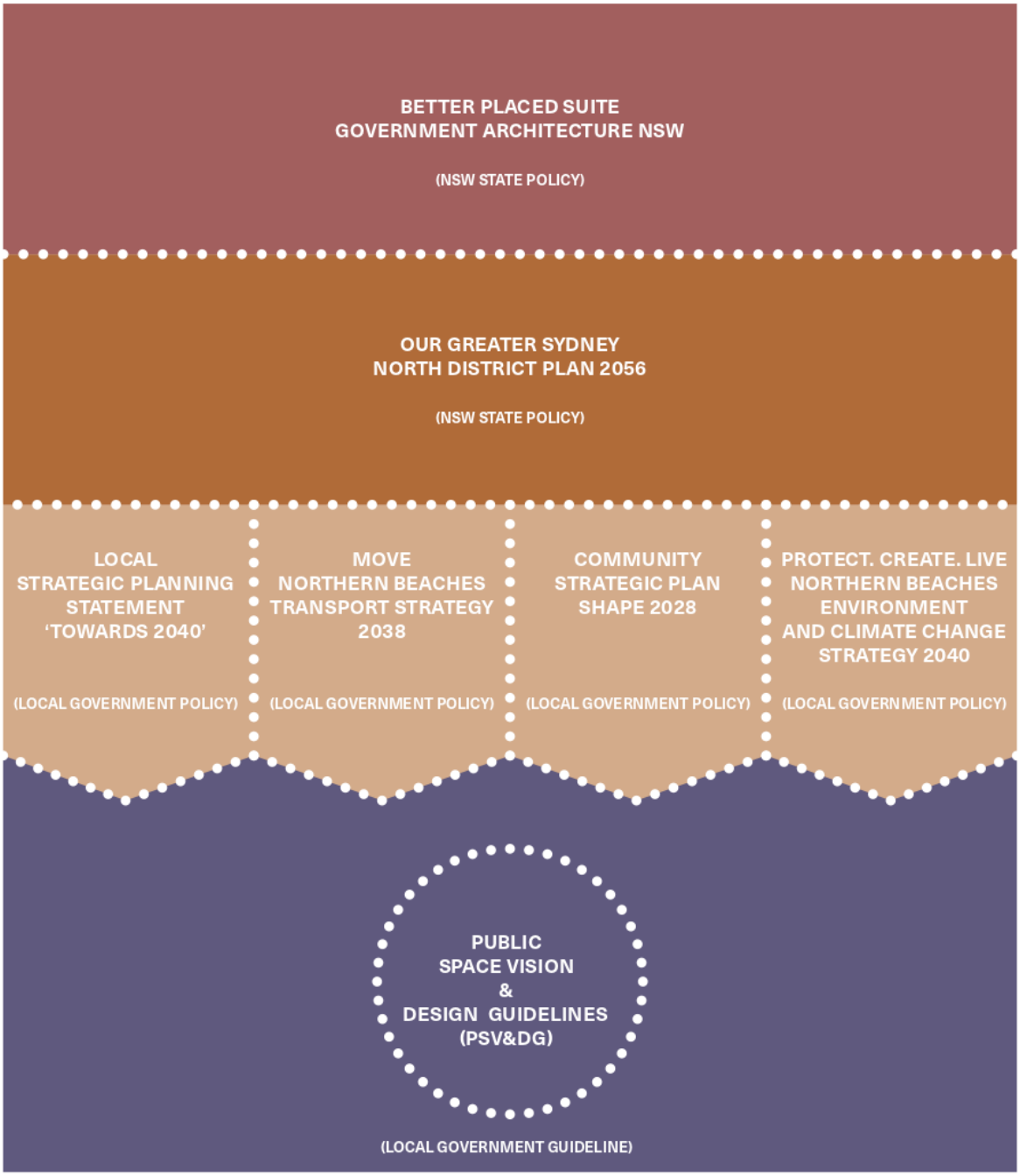


DIAGRAM //FUTURE TRANSPORT STRATEGY, 2056

A6 RELATED COUNCIL STRATEGIES & POLICIES

The Design Guidelines should be read in conjunction with a collection of policies and guidelines which form a holistic vision for the Northern Beaches:

northernbeaches.nsw.gov.au/council/publications/policies-and-codes



Our Greater Sydney, North District Plan, 2056, Greater Sydney Commission

A Metropolis of Three Cities the region plan for Greater Sydney is built on a vision of three cities where most residents live within 30 minutes of their jobs, education and health facilities, services and great places. This vision seeks to re-balance the economic and social opportunities and deliver a more equal and equitable Greater Sydney.

The North District forms a large part of the Eastern Harbour City and its economy leans to the Harbour CBD, which is the North District's metropolitan centre.

Planning priorities and indicators

- Infrastructure and collaboration
- Livability
- Productivity
- Sustainability

Livability and Accessibility

Focus on accessibility, inclusion and safety when designing and building neighbourhoods and public transport will encourage a greater cross-section of people to lead physically active and socially connected lives.

Sustainability

Increasing urban tree canopy and expanding on the Sydney Green Grid. Using resources wisely by the reduction of transport and associated greenhouse emissions. A resilient city adapting to a changing world, the impacts of urban and natural hazards and climate change.

Improving livability is about creating and renewing great places, neighbourhoods and centres. This requires place-based planning and design excellence that builds on local strengths and focuses on public places and open spaces.



Local Strategic Planning Statement 'Towards 2040' (LSPS)

Towards 2040 builds on the 10-year vision outlined in the Community Strategic Plan, Shape 2028, and will inform Council's new Local Environmental Plan (LEP) and Development Control Plans (DCP) and broader framework of Council policies and strategies.

Towards 2040 includes:
A 20-year vision

- Planning priorities that guide local land use planning
- Principles that underpin planning priorities and actions
- Actions that Council will take to help achieve the priorities
- Measures of success and an implementation program
- Identified Priorities relevant to the Guidelines
- Priority 1 – Healthy and valued coast and waterways
- Priority 2 – Protected and enhanced bushland and biodiversity
- Priority 5 – Greener urban environments
- Priority 6 – High quality open space for recreation
- Priority 7 – A low-carbon community, with high energy, water and waste efficiency
- Priority 8 – Greater community resilience to natural hazards and climate change
- Priority 17 – Centres and neighbourhoods designed to reflect local character and lifestyle
- Priority 20 – Sustainable local transport networks
- Priority 21 – Road space and facilities to match changing community needs

Towards 2040 is our road map for sustainably managing how we evolve and grow. Change is inevitable. Towards 2040 allows us to influence how it happens and plan for it responsibly.



Move – Northern Beaches Transport Strategy 2038

This strategy is Council's vision for a safe, sustainable and smart transport network. Its outlines the key Future Directions on transport infrastructure, reducing congestion and changing travel behavior.

The themes and key directions relevant to this document are:

Accessible and Livable Places

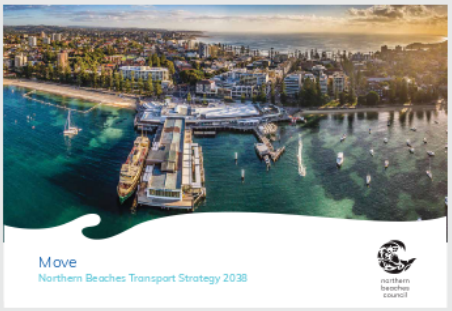
Create and enhance "Places for People" that are integrated with public transport, creating vibrant, connected places with wide footpaths, safe cycling options and reduction of reliance on vehicles as main mode of transport moving to the public transport modes of travel.

Active Travel

Prioritises smart, active travel network improvements (through technology, end of trip facilities and way-finding signage).

Expand footpath and shared path networks to improve connectivity and safety, making walking and cycling attractive alternatives to motor vehicle use.

Our Transport Vision is to "enable freedom of movement to, from and within the Northern Beaches using a safe, smart, efficient, integrated and sustainable transport network".



Shape 2028 Community Strategic Plan, 2018–2028

SHAPE 2028: Northern Beaches Draft Community Strategic Plan 2018–2028 addresses key outcomes of the community consultation process through the development of the key principles and supporting strategies that assist to guide and direct works in the public realm.

Of the identified eight outcome areas, the following have particular relevance to the PSV&DG:

Protection for the environment

Protection of the natural and built environment from the impact of climate change and population pressures.

Environmental sustainability

To be a leader in environmental sustainability, investing in cleaner technologies, actively promote sustainability, and lead by example.

Places for People

With a population of near 280,000 expected by 2028, the challenge is toward designing green developments that are good for people, encourage social interaction and align with local character.

Transport, Infrastructure and Connectivity

Dual challenge of meeting the needs for better road infrastructure whilst reducing the need for car-based travel. Transport is a fundamental issue strongly related to all outcome areas-affecting the economy, environment and social wellbeing.

This Community Strategic Plan (CSP) is our road map for the future of the Northern Beaches.

It defines our community's vision and sets a direction for everything we must do over the next decade to make the vision a reality.



A5.1 SUSTAINABILITY, ENVIRONMENT AND CLIMATE CHANGE

Sustainability

The Northern Beaches Council Environment and Climate Change Strategy 2040 is built around three major directions: Protect, Create, Live.

Create sets the direction that

"The places, parks, structures, district urban landscapes, homes, neighbourhoods and the connections between them will be built sustainably to protect our environment"

Sustainability is also identified as one of the four themes of the LSPS, with the LGA's environmental and recreational attributes identified as 'perhaps the most critical element of the Northern beaches lifestyle'.

Climate Change

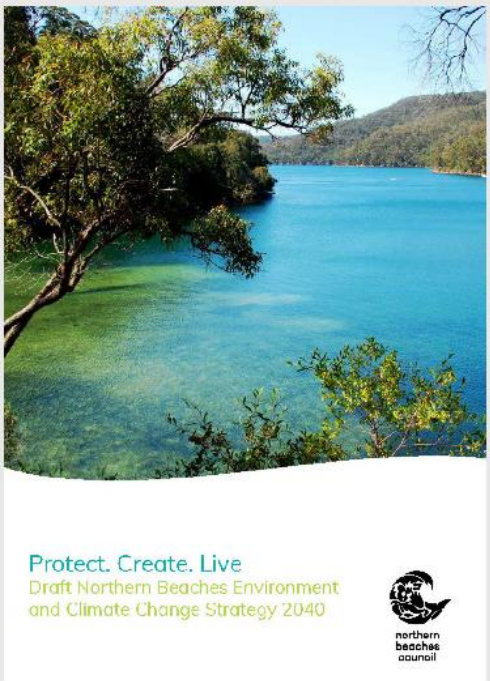
- protection of the LGA's natural Blue Grid, maintaining water quality and aquatic ecosystems by avoiding clearing of vegetation and stormwater management to reduce nutrient and sediment loads
- improving water quality discharged to beaches and waterways by integrating water sensitive urban design measures into the built form
- protecting and enhancing bushland and biodiversity, protecting core areas of high environmental value, and planting native species
- providing adequate public open spaces and recreational opportunities to alleviate pressures on National Parks
- reducing the heat Island effect by promoting urban tree canopy
- incorporation of other forms of green cover where space for trees in limited
- consideration toward life cycle costs, management and maintenance requirements when designing open spaces and selecting materials
- supporting increased building setbacks, conversion of road space and roof gardens to increase urban greening

Built and Natural Shade and UV Radiation

- correctly positioned shade, from both natural vegetation and built structures, can reduce exposure to ultra-violet (UV) radiation from the sun by up to 75 per cent
- UV radiation causes at least 95 per cent of melanoma skin cancer and 99 per cent of non-melanoma skin cancers
- shade also has many other benefits, including improving the amenity and comfort within our streetscapes and open spaces
- include trees with canopies that are dense and close to the ground
- built shade can be stand-alone, portable or add-on structures
- ensure the position provides shade during the middle of the day when UV is highest, or to provide shade when the area is in highest use
- assistance can be found in Guidelines to Shade - A practical guide for shade development in New South Wales, 2013 and other relevant technical documents

Material Selection

- care should also be taken in the choice of colour of light coloured paving, softfall and other manufactured ground surfaces
- although light colours do not store heat as much as dark colours, they increase the reflectivity of ultra-violet radiation (UVR)
- a balance needs to be found between reducing dark surfaces/colours (which store heat but which do not reflect UVR) and light surfaces (which reflect UVR but which do not get as hot)
- recent research has found that rubber soft fall playground surfacing absorbs heat. Design consideration should be given to ensuring appropriate shade over rubber softfall areas and equipment that may retain heat (such as metal slides), or substitution with alternative materials such as organic mulch softfall
- material selection should take into account a circular economy/reusability approach where appropriate.



A5.2 WALKING PLAN

The Northern Beaches Council Walking Plan prioritises safety and accessibility for pedestrians. As one of the most important modes of transport used on the Northern Beaches, walking supports community connectivity, promotes healthy lifestyles and activates our streetscapes. Aligned with the Northern Beaches Disability Inclusion Action Plan and the Northern Beaches Transport Strategy a connected and safe walking network is viewed as an asset to the community.

The Walking Plan has five strategic directions. They are as follows:

1. Connecting the network
2. Delivering the network
3. Making walking safe
4. Creating walking neighbourhoods
5. Encourage walking

Refer to the Northern Beaches Council Walking Plan and contact Council for further information.



SHARED PATH//ASPECT STUDIOS

A5.3 BIKE PLAN

The Northern Beaches Council Bike Plan sets out the directions and actions required to help the community choose cycling as a transport option and create a safer cycling environment. Initiatives include expanding and improving cycling networks, providing end-of-trip facilities and promoting cycling as a transport option.

To cater for different types of cycling the Bike Plan proposes two separate cycling networks for the Northern Beaches.

The Safe Cycling Network provides a safe and connected cycling environment that is largely separated from motor vehicle traffic. This network is designed to encourage cycling for transport with a focus on short trips to destinations. The proposed network includes a three-tier route hierarchy that consists of regional and district routes and local connections. Each of the hierarchy levels have different requirements that Council will aim to achieve when delivering infrastructure.

The Road Cycling Network identifies roads that are frequently used by recreational and commuter cyclists. Consideration should be given to upgrading cycling safety when improvements and maintenance activities are undertaken on these roads.

The Bike Plan includes 4 directions. They are as follows:

1. Expand, improve and maintain the Safe Cycling Network
2. Improve and maintain the Road Cycling Network
3. Provide and maintain end-of-trip facilities
4. Promote and encourage cycling

Refer to the Northern Beaches Bike Plan and contact Council for further information.



THE NORTHERN BEACHES BIKE PLAN //PHILIP GRAY

A5.4 TREE CANOPY PLAN

Northern Beaches Council is promoting canopy trees in the built environment, to establish green spaces that connect our community to the natural landscape by managing and enhancing trees along streets, within parks and open spaces, and within the urban centres.

The Draft Northern Beaches Urban Tree Canopy Plan, promotes the protection of trees to provide habitat, shade, wind protection and pleasing aesthetics, providing economic, environmental, social and health benefits, and encourages the enhancement of tree canopy planting within the urban environments.

Pulse of Greater Sydney, Greater Sydney Commission states a target of 40% urban tree canopy cover for metropolitan Sydney by 2036. The current average for Sydney is at 21%. Whilst the Northern Beaches fairs better in terms of canopy cover, it is noted that proposed future development and aging of urban trees across the LGA will have an impact in the future.

With increased urban density, and the consequence of climate change on urban forests, Council endeavors to promote a sustainable outcome for tree canopy on public land to provide enjoyable and comfortable public spaces.

Tree planting in public spaces provide environmental quality, mitigate the potential for urban heat island effects, provide habitat, shade and wind protection, enhance visual continuity and unity, and reinforce local identity and character.

Tree canopy is valued by the residents of the Northern Beaches, and the management and enhancement of the tree canopy historically indicates that the outcome is measurable in terms of providing economic, environmental, social and health benefits.

Economic benefits include reducing energy and health costs, and providing a sense of place and demand for a place.

Environmental benefits include storing and sequestration of carbon, and reduction of sun exposure.

Social and health benefits include the creation of comfortable outdoor places, encouragement of outdoor use, social interaction, and improving mental wellbeing. Social and health benefits include minimising over-exposure to UV radiation from the sun.

Tree Species Selection

Appropriate tree selection, location and installation treatment will ensure the healthy growth and long term benefits for the streetscape as well as assisting the mitigation of the urban heat island effect in urban areas.

Whilst there is a strong preference for the use of endemic tree species in the Northern Beaches to enhance remnant forests and native fauna species, other criteria should be considered including:

- existing planting
- frangibility
- RMS requirements and driver sight distances
- conflicts with above and below ground services
- soil conditions
- measures to manage or reduce root damage of paving such as root control barriers
- tree species selection and the proximity of tree planting to carriageways to be mindful of access by maintenance and service vehicles
- all street tree pits require connection to the stormwater network



FRENCHES FOREST//ASPECT STUDIOS

A5.5 SAFER BY DESIGN

Crime prevention through environmental design (CPTED) principles promote and support positive and desirable use of open space and should be applied holistically throughout the Northern Beaches.

CPTED will be considered through 4 key principles;

- natural surveillance
- access Control
- territorial reinforcement
- space/maintenance management

Risks to the community can be reduced through considered and sensible design solutions, lighting and landscaping. Active planning that incorporates safety can lead to reducing opportunities for criminal behavior and improving perceptions of safety in the community.



SOUTH EVELEIGH//ASPECT STUDIOS

A5.6 INCLUSIVE ACCESS

Inclusive access applications are required to comply with the relevant legislation, the Australian Standards, and the Northern Beaches Pedestrian Access and Mobility Action Plan, 2011.

The development of Council's public domain ensures accessibility for all members of the community where practicable. For example, this may include:

- The provision of luminance contrast at stairs
- The provision of bollards and safety railings
- The provision of tactile ground surface indicators and paving treatments
- The provision for pram ramps
- The alignment of path of travel and pram ramps, where possible.

Refer Northern Beaches Pedestrian Access and Mobility Action Plan, 2011.



INCLUSIVE ACCESS//ASPECT STUDIOS

A5.7 PUBLIC ART

Public art most often defines a space and identifies a community, expressing cultural identities, civic pride and community ownership, it contributes to the uniqueness of place.

Public art is an important aspect of major public space design projects. On a large scale, public art has the ability to unify a district with a theme or identify a neighborhood gateway. At a pedestrian scale it can assist in way finding and provide visual interest for those passing by.

Public art can imbue beauty and symbolic meaning as both independent /temporary installations, performative based and into functional objects such as seats, grates, lighting, railings, to create a sense of place and identity.

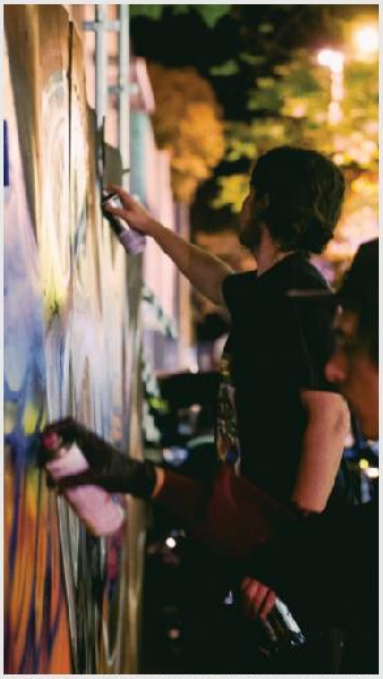
Public art can be broadly separated into 3 types:

1. that which is created by professional artists
2. that which is made by community groups and individuals, facilitated by artists or creative workers
3. that which is commercially made.

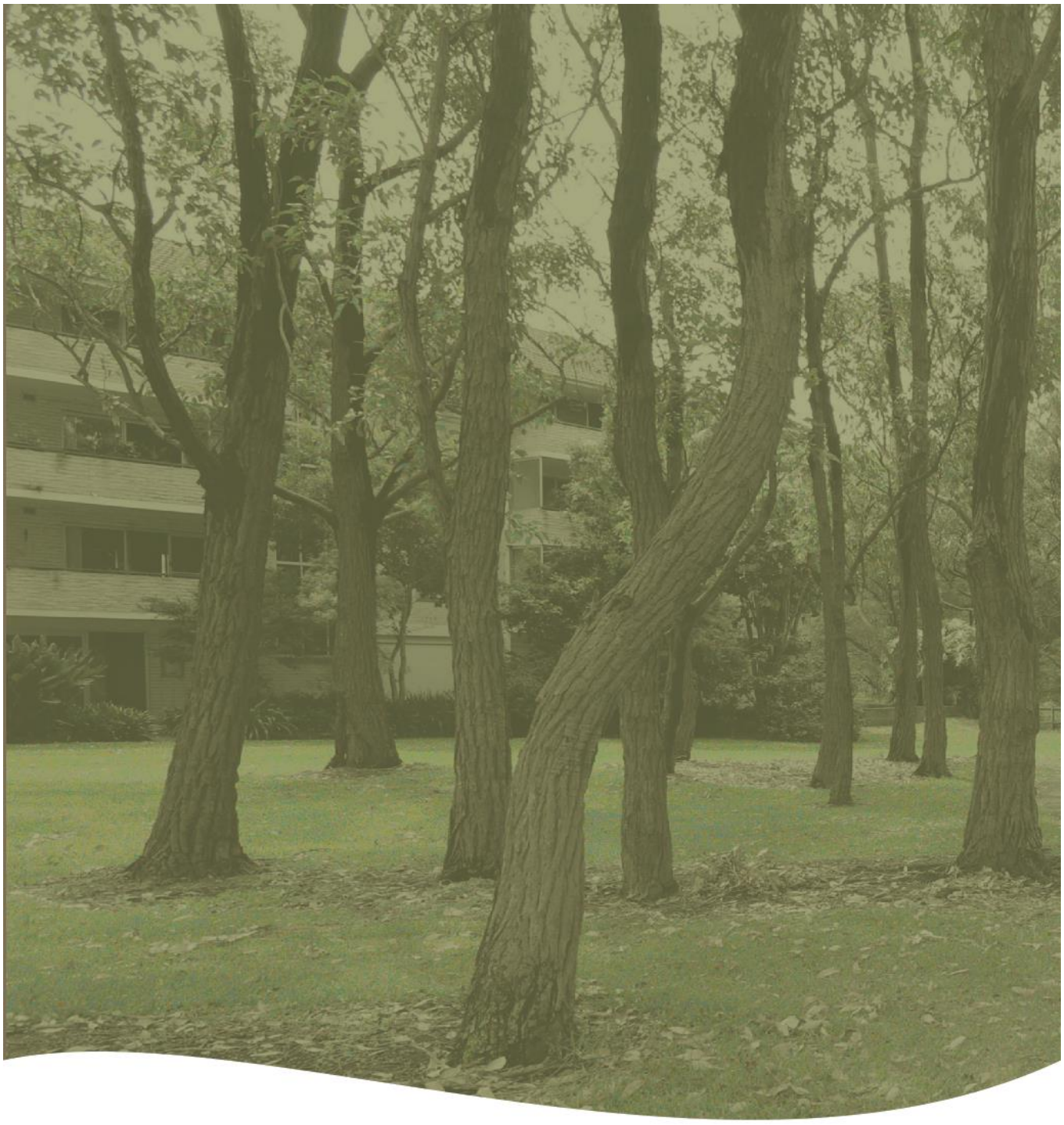
Each 'type' of art has its place within the Northern Beaches public domain. The Northern Beaches Council recognises best practice processes to include creative professionals in planning and developing of the public domain and facilities in early design stages for meaningful integration.

Key considerations for public art include site responsiveness, artistic quality and local meaning. Public art proposals will be subject to Northern Beaches Council approval process.

Refer to the Northern Beaches Public Art Policy and Guidelines, May 2019, Northern Beaches Arts and Creativity 2029, Coast Walk Public Art Strategy.



PUBLIC ART// NORTHERN BEACHES COUNCIL





Northern Beaches Vision

B1 VISION FOR THE NORTHERN BEACHES

The Northern Beaches Public Space Vision & Design Guidelines have been established through the synthesis of community feedback, Council and stakeholder input and to align with Council policies and priorities.

The unique local bush, beach and waterway character intrinsic to the Northern Beaches will be embedded in the fabric of the public realm.

Going forward, we will design streets for people, as much as they are for cars.

Adequate space for trees and water-sensitive urban design initiatives will be at the centre of designs for the public realm; this will help green and blue grids succeed, and build resilience to climate change.

People will feel safe and comfortable using streets, with generous space for cyclists and neighbours to socialise under shady trees.

B2 GUIDING OBJECTIVES





OBJECTIVE 1

Enhance and protect the Bush, Beach & Water character.

Why?

Streets and open spaces account for over 30 percent of land within the LGA. These public spaces are critical to the liveability of their urban contexts and need to represent the character and environmental conditions that is unique to the Northern Beaches.

Materials and elements have a strong focus toward sustainability and climate resilience, mitigation of heat island effects and water sensitive urban design to protect the significant coastal, bush and lake landscapes.

Potential barriers to implementation

- harsh environmental conditions limit opportunity for some materials in certain areas
- a vast LGA means managing material costs is a significant consideration
- consideration toward the existing materials across the LGA, and selecting future materials that will seamlessly integrate as new open spaces are delivered incrementally over time

OBJECTIVE 2

Encourage social activation through street design.

Why?

Streets account for approximately 70 percent of all public open space, with parks and plazas accounting for only 30 percent overall. The primary function of streets is to transport pedestrians, bicycles and vehicles. They are the places we gather and connect with our community.

Balancing the various demands of communities; function, climate, amenity and movement, is key to achieving liveable streets and in turn, functioning neighbourhoods. It is vital that we cater for social interaction, creative and cultural pursuits, and activity in public places.

Potential barriers to implementation

- achieving generous footpath and comfortable streetscape environments for people mean that often parking or carriageway widths need to reduce
- limitation to implementing bike lanes due to lack of available street width





OBJECTIVE 3

Inspiring healthy & active lifestyles through safe and inclusive footpath & cycleway networks.

Why?

The Northern Beaches community is an active community. Over 40% of residents stating they rode a bicycle last year (Northern Beaches Bike Plan), and with 26% cycling for transport purposes.

Walking and cycling have been proven to improve physical and mental health, offer the social benefits of face to face contact with other people, and a better awareness of the local neighborhood.

By choosing to walk or ride over driving also has significant environmental benefits of reducing greenhouse gas emissions and improved air quality.

Potential barriers to implementation

— working with existing street arrangements means that space previously allocated to parking and driving needs to be reallocated to footpaths and cycle lanes to achieve safe, connected, well designed networks

OBJECTIVE 4

Implement traffic calming interventions creating safe environments.

Why?

Traffic calming interventions, such as raised thresholds, KERB extensions and blisters narrow the carriageway which helps to slow vehicles, improves sight lines for drivers and pedestrians, and reduces the distance for pedestrians crossing the street.

Implementation of traffic calming measures may reduce parking numbers on a street. Traffic calming measures should be considered at the very least at intersections and crossing points where high levels of pedestrians are present, and parking is not permitted (3-20m varies depending on location and type).

Traffic calming interventions for cycleways and shared ways are also be implemented

Potential barriers to implementation

— reduction in parking numbers to implement traffic calming measures needs to be considered in local context
— consideration of change of kerb lines on street drainage and stormwater networks
— trees and mass planting within blisters impeding sight lines



OBJECTIVE 5

Integrate water sensitive urban design into streets and open spaces.

Why?

As future development occurs, Northern Beaches stormwater system will see increased demand. Harnessing and treating water where it falls is the best way to alleviate these pressures and reduce stormwater run-off, treat pollutants and protect our waterways

Potential barriers to implementation

- ongoing maintenance costs can vary, and be prohibitively high if not properly considered
- design of WSUD measure to be site specific response, addressed at design and approval stage of works
- challenges of implementation of WSUD into existing streetscape with potential conflicts with existing services



OBJECTIVE 6

Increase tree canopy, green cover and landscaping on streets.

Why?

The Northern Beaches currently performs well compared to many other LGA's in terms of canopy cover.

A significant portion of this number though is attributed to trees on private land, which with increased development and urbanisation is likely to reduce.

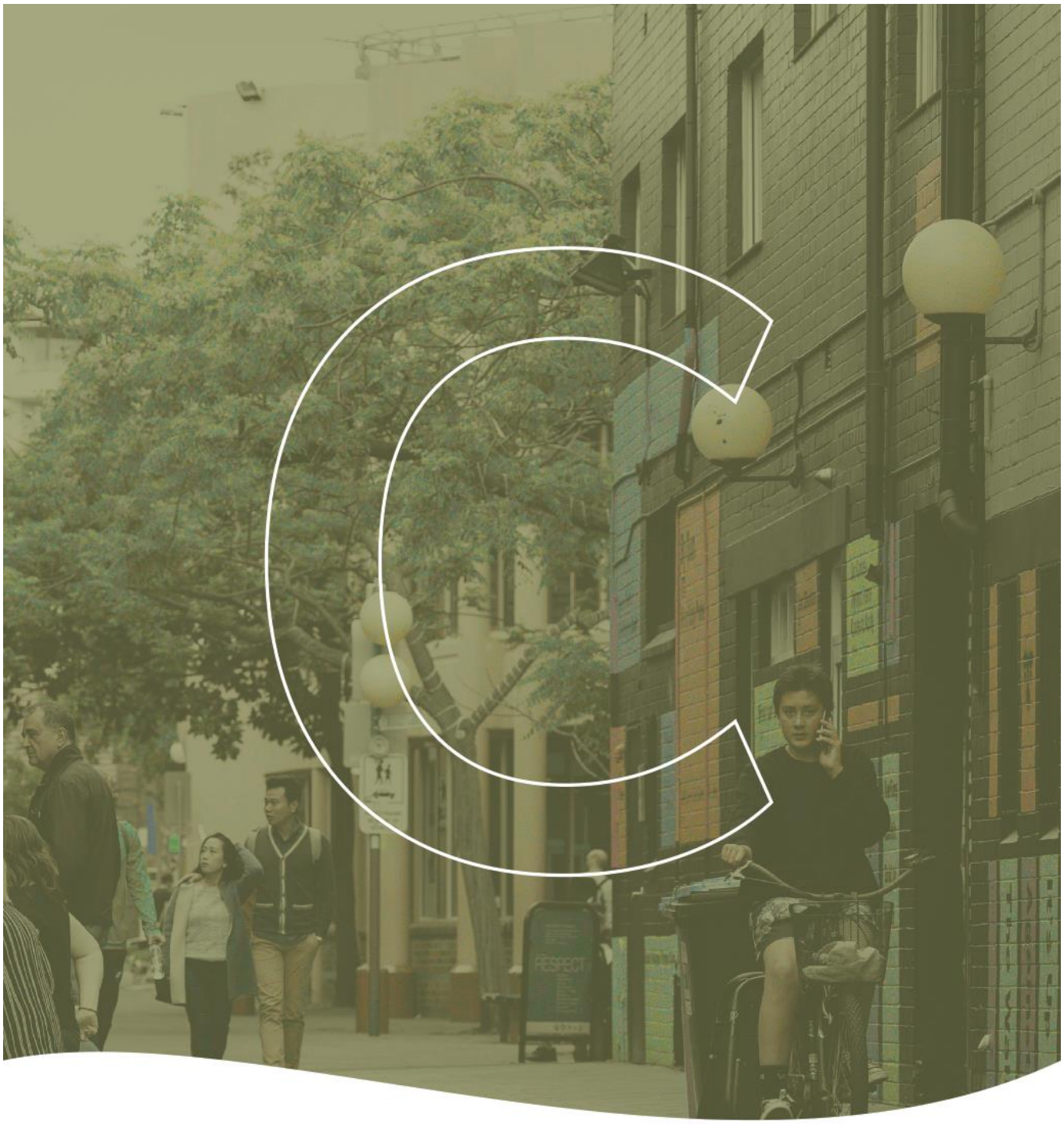
The urban tree canopy and increase of green coverage contributes to environmental benefits of reduced heat island effects, environmental cooling, and increased biodiversity; makes places comfortable to use , provides protection from UV radiation and promotes healthy lifestyles; trees also improve the aesthetics of a place. Trees take a long time to grow, so protecting existing trees, as well as supplementing with new trees is critical.

For those areas constrained by infrastructure (such as arterial roads and industrial areas), other measures will be encouraged to address urban heat, including green verges, green roofs and green walls, water sensitive urban design and improved building design.

Potential barriers to implementation

- consideration needs to be given to certain areas including Bushfire Prone Land
- consideration needs to be given to the width of the verge and the ability for trees to grow to mature sizes.
- potential conflicts with services and awnings
- private land owners not replacing trees that have been removed
- residents not wanting a tree planted outside their property
- off-road cycle paths at 2 to 3 m wide limits treeplanting and Street Gardens


Hot Fondue



Street Design

C1 STREET DESIGN OVERVIEW

C1.1 STREET TYPES

The PSV&DG seeks to balance a variety of conditions within a succinct set of street types;

Local streets

Located within local areas, these account for the majority of streets across the LGA

Local Collectors

Located within local areas, these provide key connections between neighborhoods and to centres

High Streets

Are the main streets in Strategic and Local Centres, and interface to retail and commercial uses.

Laneways

In centres and industrial areas provide servicing functions to commercial/ industrial tenancies. In Centres laneways also provide important pedestrian mid block connections.

Industrial Streets

Are located within industrial and employment lands, and small agricultural areas, typified by wide carriageways and deep setbacks to cater for high heavy vehicle use.

These street types, their design priorities and typical arrangement and details are presented here and illustrated in the following pages.

These streets are in accordance with existing Street Design guidelines, including *Landcom's Street Design Guidelines* and Austroads' *Guide to Road Design.*

Measures for success

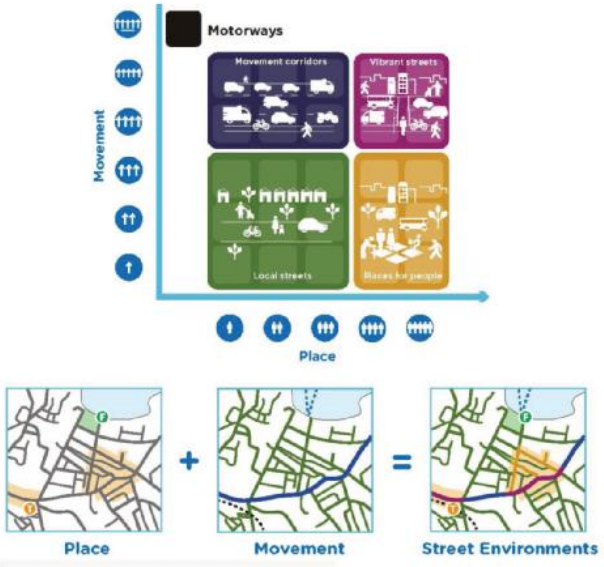
Street types within this section are illustrated with the typical current condition, and proposed adaptions with and without cycleways.

Each scenario illustrates how the inclusion of street trees addresses the NSW Government Architects targets for canopy cover as:

— Business District >15%
— Urban >25%
— Suburban >40%
— Non-urban >50%
(Greener Paces, Urban tree Canopy Guide, GANSW)

Incorporating good street design principles will capture sustainability interventions and climate resilience. Also measured is the potential for increase in permeable surfaces to address water sensitive urban design initiatives and stormwater management.

The street design provide typical scenarios only for a range of conditions. There are a wide variety of different conditions (existing street width, deviations and parking alignment, existing street trees, etc) that need to be incorporated into specific street design. Upgrades to streets should adhere to the objectives as closely as possible.



DIAGRAM//MOVEMENT DIAGRAM
p18, Future Transport Strategy 2056, Transport for NSW

C1.2 THE IMPORTANCE OF STREETS

Successful streets consider urban amenity and enhancement of place, environmental quality, economic performance, societal health and well–being, and overall quality of life for those living, working, and socialising on The Northern Beaches.

Streets are about more than just the movement of cars and the provision of utilities. Accounting for more than 30% of all public open space in urban areas, they are critical to the liveability of their urban contexts for the local population. Streets have the ability to make significant sustainability and climate resilience impact through the intergration of street elements if addressed in early stages of design.

Streets should be designed with regard to CPTED Principles to minimise the opportunity for and incidence of crime. Design principles include:

- maintaining open views throughout the public domain making sure no visual barriers are present
- retaining and installing additional lighting throughout the public domain to ensure facial recognition from a distance and to enhance feeling of safety
- legible and generous pedestrian circulation network that is well connected

Streets are not only places to move through, but also to dwell within—to sit, relax, ponder, and play. They need to be designed for all users of the street.

The Northern Beaches landscape will be measured through performance, including the impact on heat island effect, water quality and biodiversity. The shift away from a car–centric approach that prioritises traffic flow and motorist safety necessitates a holistic approach to street design.

Streets consist of zones that serve a particular use. Consistency across the arrangement of these zones within a certain street type is key in achieving clarity, ease of movement and reduce potential conflicts within the streetscape network.

All street types should consider appropriately placed rubbish bins that are readily identified by users without impacting on visual amenity such as major junctions and crossover/congregation points and away from al fresco eating areas.

Pedestrian Zone

The portion of the street given to pedestrian movement, free from obstructions.

Cycle Zone

Zones of the streetscape that give priority to cycle movement

Planting Zone

The area in the street for street trees/ turf/ mass planting.

Outdoor Dining Zone

Zone adjacent to retail that is appropriate for outdoor dining, with potential canopy cover/ tree planting, tables and chairs, with no conflict to the pedestrian zone.

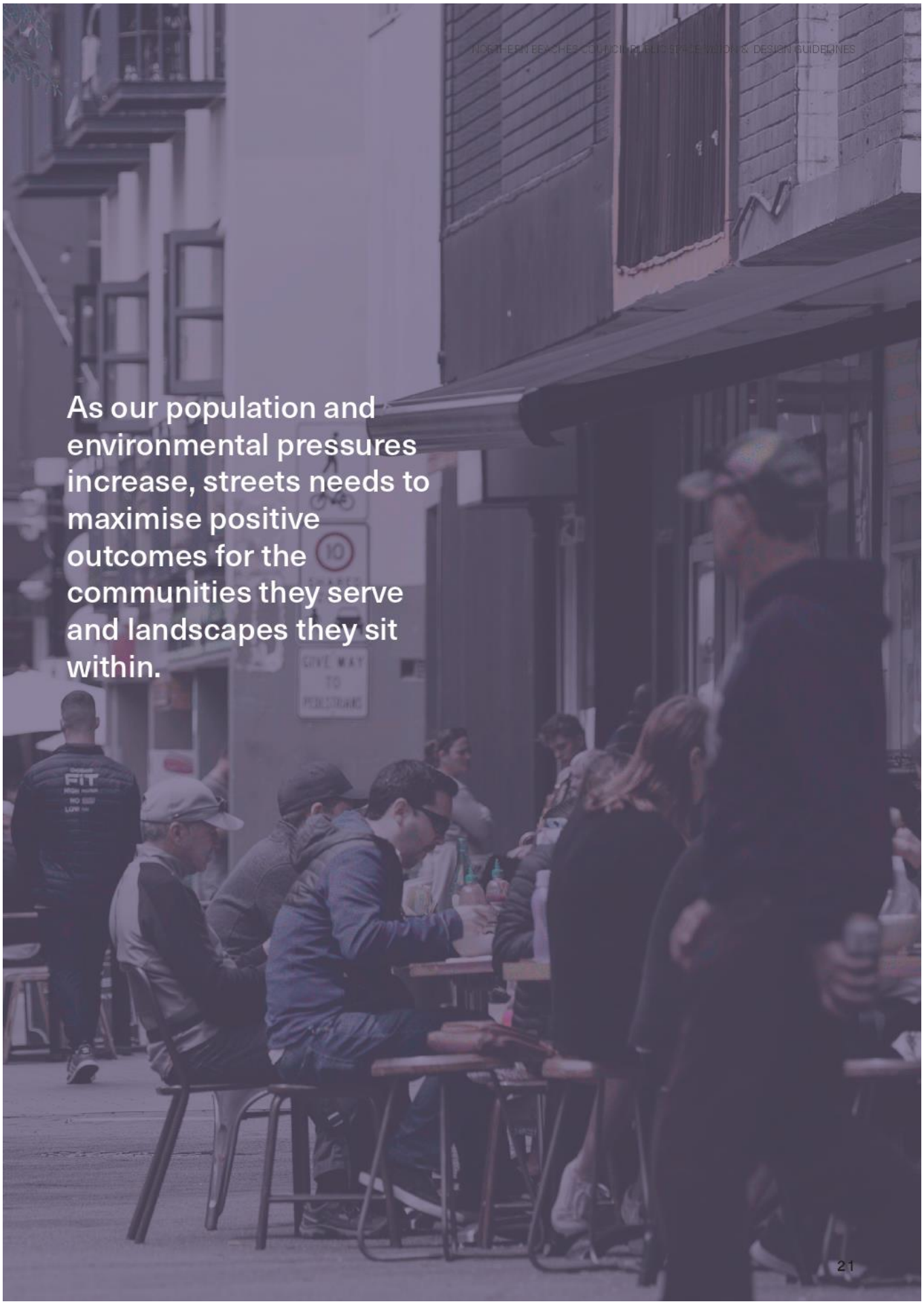
Flexible Zone

The zone within the streetscape that is adaptable to cater for varying needs and opportunities; on-street parking/ additional street tree planting/ WSUD rain gardens and swales/ permeable pavements. The flexible zone on many streets serves for freight delivery and movement or transport corridors, and in this instance, interventions other than for transport is limited. But opportunities to utilise this area of the streetscape within other streets for uses other than traffic lane and parking is encouraged. Uses considered can include 'pop-up' parks or community events and activities to promote socialisation and community interaction.



DIAGRAM//IMPORTANCE OF STREETS
ASPECT Studios


Street design that puts people and environment first transforms average streets into great urban places.
20


NORTHERN BEACHES COUNCIL PUBLIC SPACE VISION & DESIGN GUIDELINES
As our population and environmental pressures increase, streets needs to maximise positive outcomes for the communities they serve and landscapes they sit within.
21

C2 LOCAL STREET

OVERVIEW

Local streets serve neighbourhood communities and are typified by low density residential streets and local centres containing small retail stores, cafes and local businesses. These form the vast majority of street types within the Northern Beaches LGA and offer critical opportunity for supporting climate resilient responses in neighbourhood settings.

Local streets shall be easily identified as an area for public use, are designed to be safe for the public, and are consistent in arrangement of elements across the LGA.

Local Streets identify the neighbourhood character, urban and residential fabric and the landscape setting of an area.

Local streets to utilise the material palette subject to the selected urban area; Urban/ Bush/ Beach/ Waterway (refer plans in Section C of this document). The use of this material palette is to maintain consistency and define local character, and any deviation of this palette is subject to Council approval.

Local streets in difficult/steep terrain may only be able to accommodate landscaping on the road verge.

A Local Street includes

- a highly permeable streetscape environment to reduce loads on stormwater system, and provide passive irrigation to street trees
- a continuous avenue of street trees, maximum 10m regular spacing, in mass planted tree pits/ turf planted behind the kerb
- additional trees in tree pits within parking lane are highly supported to provide a double row canopy
- use of simple, durable, cost effective and easily maintained materials and elements
- installation of predominantly endemic trees and vegetation to re-affirm a sense of place
- arrangement of elements and street designs that are safe for pedestrians, cyclists and drivers
- a minimum 1.5m wide footpath, unobstructed by planting, furniture or other elements
- footpath widening areas for shared bike paths
- WSUD initiatives within parking bays/ carriageways
- cycling is usually on road, with stencil markings (refer



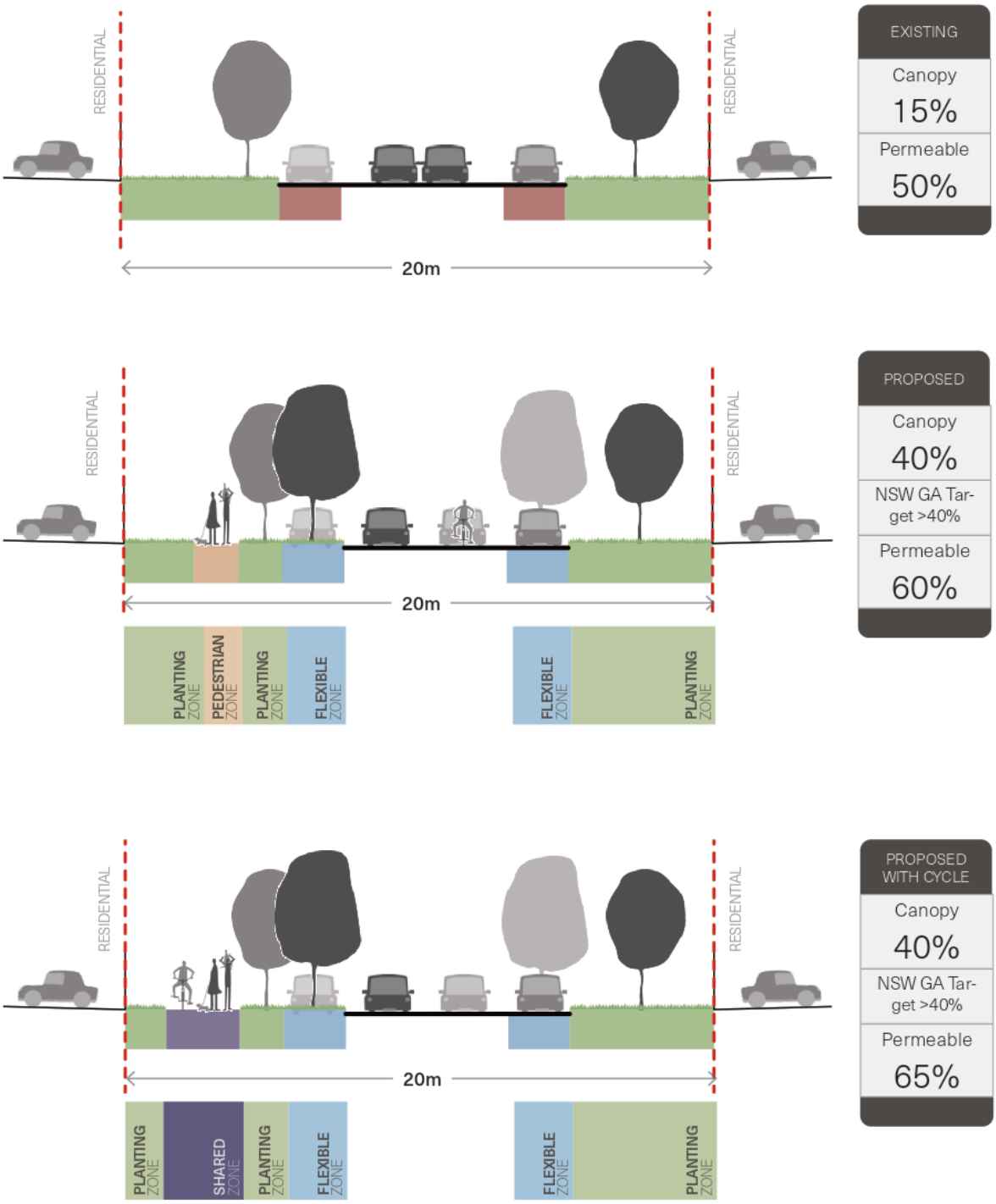
SMITH STREET, MANLY// ASPECT STUDIOS
Permeable paving and trees within carriageway.

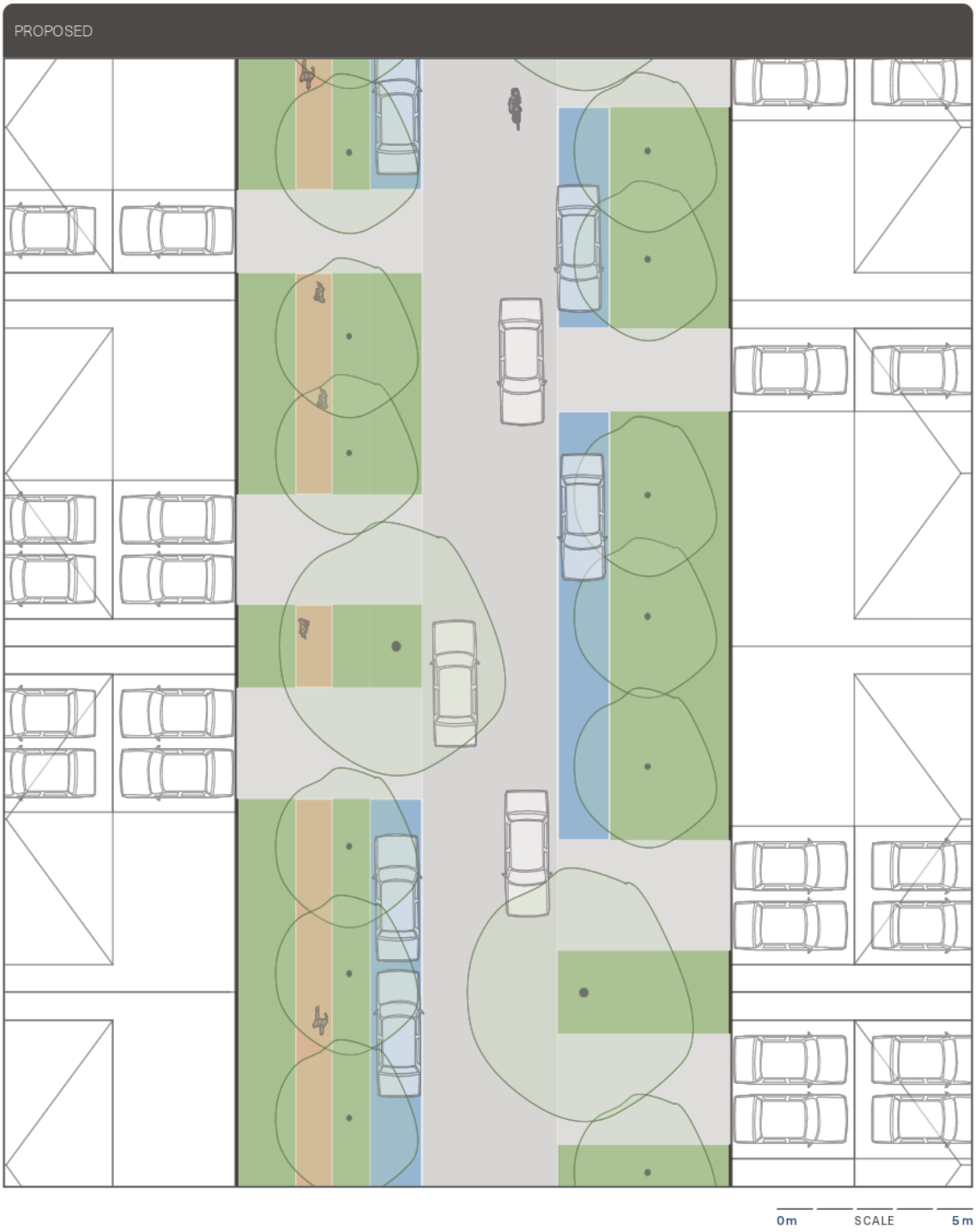


PENNYROYAL BOULEVARD, DENHAM COURT// ASPECT STUDIOS
The Flex Zone allows for a significant increase in tree and understorey planting.

STREET PRIORITIES FOR LOCAL STREETS	
DESIGN OBJECTIVES	WHAT DOES THIS MEAN FOR STREETS?
 **Enhance and protect the Bush, Beach & Water character.**	— Materials respond to character palettes and suitable to street type
 **Encourage social activation through street design.**	— Continuous tree planting frames the streetscape and makes a comfortable place for residents to use
 **Inspiring healthy & active lifestyles through safe and inclusive footpath & cycleway networks.**	— There is at least one footpath on the street — Safe on road cycling
 **Implement traffic calming interventions creating safe environments.**	— Planted blisters — Trees in verge and carriageway between parking bays
 **Integrate water sensitive urban design into streets and open spaces.**	— Tree pits with slotted kerbs for low–flow runoff passive irrigation to street trees and planting — High area of permeable surfaces (turf and mass planting)
 **Increase tree canopy cover on streets.**	— Trees positioned at 10m centres to provide shade to pedestrian path and to reduce heat from road surface

TYPICAL LOCAL STREET





C2 – LOCAL STREET 25

C3 COLLECTOR STREET

OVERVIEW

Typical Collector streets form the primary thoroughfare route into and through residential neighbourhoods, providing important connections within and between neighbourhoods to key local destinations.

Collector Streets often support local bus routes and local and regional cycle networks. As the most actively utilised and hardworking framework of the LGA, Collector streets provide increased opportunities for sustainable responses to future infrastructure assisting in the creation of climate resilient neighbourhoods.

Vehicular calming measures, such as raised crossing, kerb extensions and planted blisters are highly supported within Collector streets to slow traffic, improve pedestrian sightliness, and minimise the distance for pedestrian crossings.

Public furniture, including bike racks and seating should be considered at key intersections and public transport.

Collector Streets are designed to be consistent in material and planting with the Local Street character of a locality.

A Collector Street includes

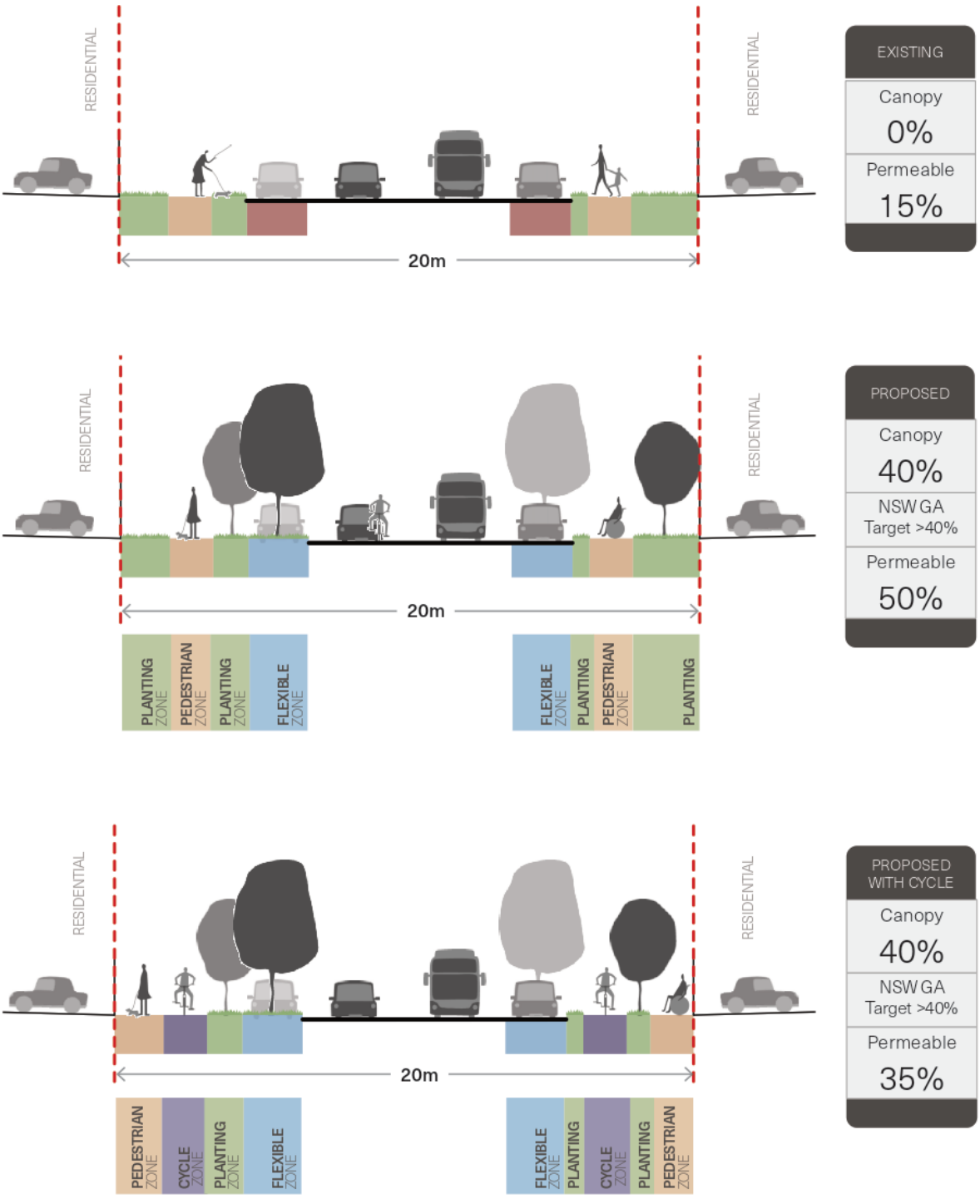
- a minimum 1.5m wide footpath, unobstructed by planting, furniture or other elements, on both sides of the street
- footpath widening areas for shared bike paths
- a continuous avenue of street trees, maximum 10m regular spacing, in mass planted tree pits/ WSUD tree pits/ tree grates planted behind the kerb
- additional trees in tree pits within parking lane are highly supported to provide a double row canopy
- WSUD initiates within parking bays/ carriageways
- planted blister extensions and raised pedestrian crossing thresholds to slow vehicular traffic
- dedicated on/off road cycleways in accordance with Council's Bike Plan

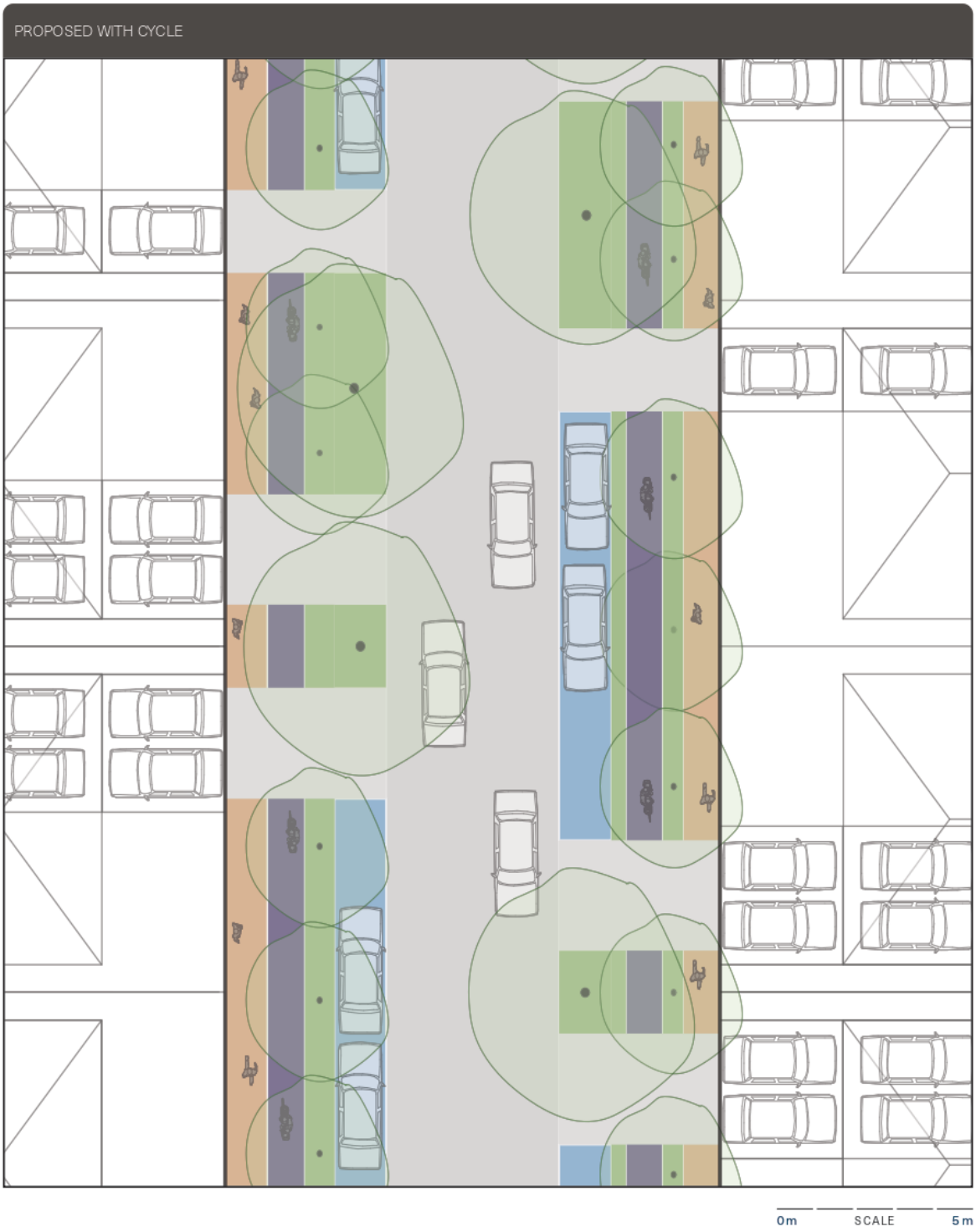


BOURKE STREET, SURRY HILLS// ASPECT STUDIOS
Raised pedestrian crossings, WSUD, canopy coverage and separate two-way bike path contribute to street life.

STREET PRIORITIES FOR COLLECTOR STREETS	
DESIGN OBJECTIVES	WHAT DOES THIS MEAN FOR STREETS?
 **Enhance and protect the Bush, Beach & Water character.**	— Materials respond to character palettes and suitable to street type
 **Encourage social activation through street design.**	— Regular spaced public furniture (bike racks, seats)
 **Inspiring healthy & active lifestyles through safe and inclusive footpath & cycleway networks.**	— There is at least one footpath on the street — Separated on/ off road cycling
 **Implement traffic calming interventions creating safe environments.**	— Kerb extension and planted blisters to slow vehicles, improve site lines and reduce the distance for pedestrians crossing the road — Trees in verge and carriageway between parking bays
 **Integrate water sensitive urban design into streets and open spaces.**	— Tree pits with slotted kerbs for low–flow runoff passive irrigation to street trees and planting — WSUD raingardens and swales incorporated into trees pits, blisters and verges — Permeable surfaces used in parking bays
 **Increase tree canopy cover on streets.**	— Trees positioned at 10m centres to provide shade to pedestrian path and to reduce heat from road surface

TYPICAL COLLECTOR STREET




PROPOSED WITH CYCLE
0m
SCALE
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C4 HIGH STREET

OVERVIEW

High Streets are within Strategic and Local centres, and provide access to services, employment, retail, and entertainment.

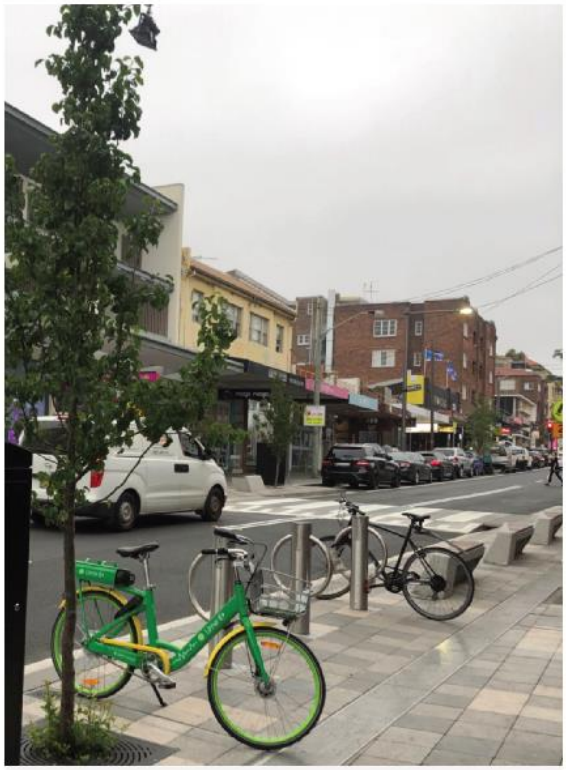
High Streets shall create a high quality urban environment that brings social and economic vitality, that are attractive, sociable, connected, user safe, sustainable, and easily maintained.

High streets present opportunities to actively engage the community in how we are addressing sustainability and climate resilience in our built environment. As places of high activity and engagement with the public realm, an increased emphasis on the provision of green infrastructure through sustainability targets provides a transparent and educational platform for decision that will affect us into the future.

High Streets accommodate a mix of commercial and retail with wider paved footpaths catering for outdoor dining and higher levels of pedestrian activity.

A typical Hight Street includes

- minimum 2.5m wide footpath, unobstructed by planting, furniture or other elements
- high quality unit pavement extending from the building line to the kerb
- footpath widening areas for additional street planting/ wider footpath zones or outdoor dining
- a continuous avenue of street trees, maximum 10m regular spacing, in mass planted tree pits/ WSUD tree pits/ tree grates planted behind the kerb
- additional trees in tree pits within parking lane are highly supported to provide a double row canopy. A Minimum size /height range at planting should be specified to ensure consistency and immediate effect under a pre-order contract
- WSUD infrastructure, planted tree pits/ verge and permeable materials are highly supported
- a high-quality material and furniture palette that responds to high pedestrian use and amenity, clustered adjacent the kerb and outside the path of travel



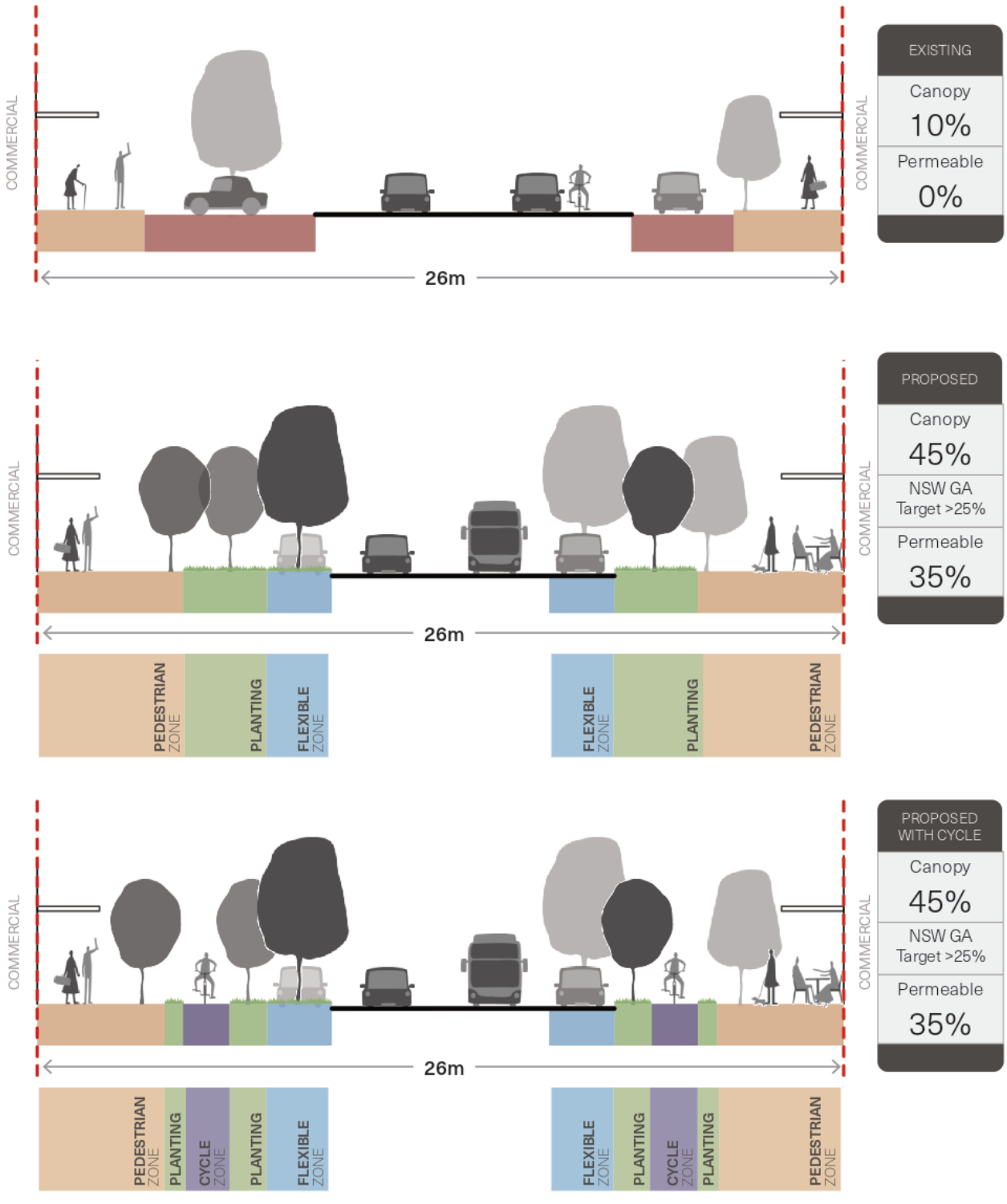
COOGEE BAY ROAD, COOGEE// ASPECT STUDIOS
Street furniture enhances the streetscape.

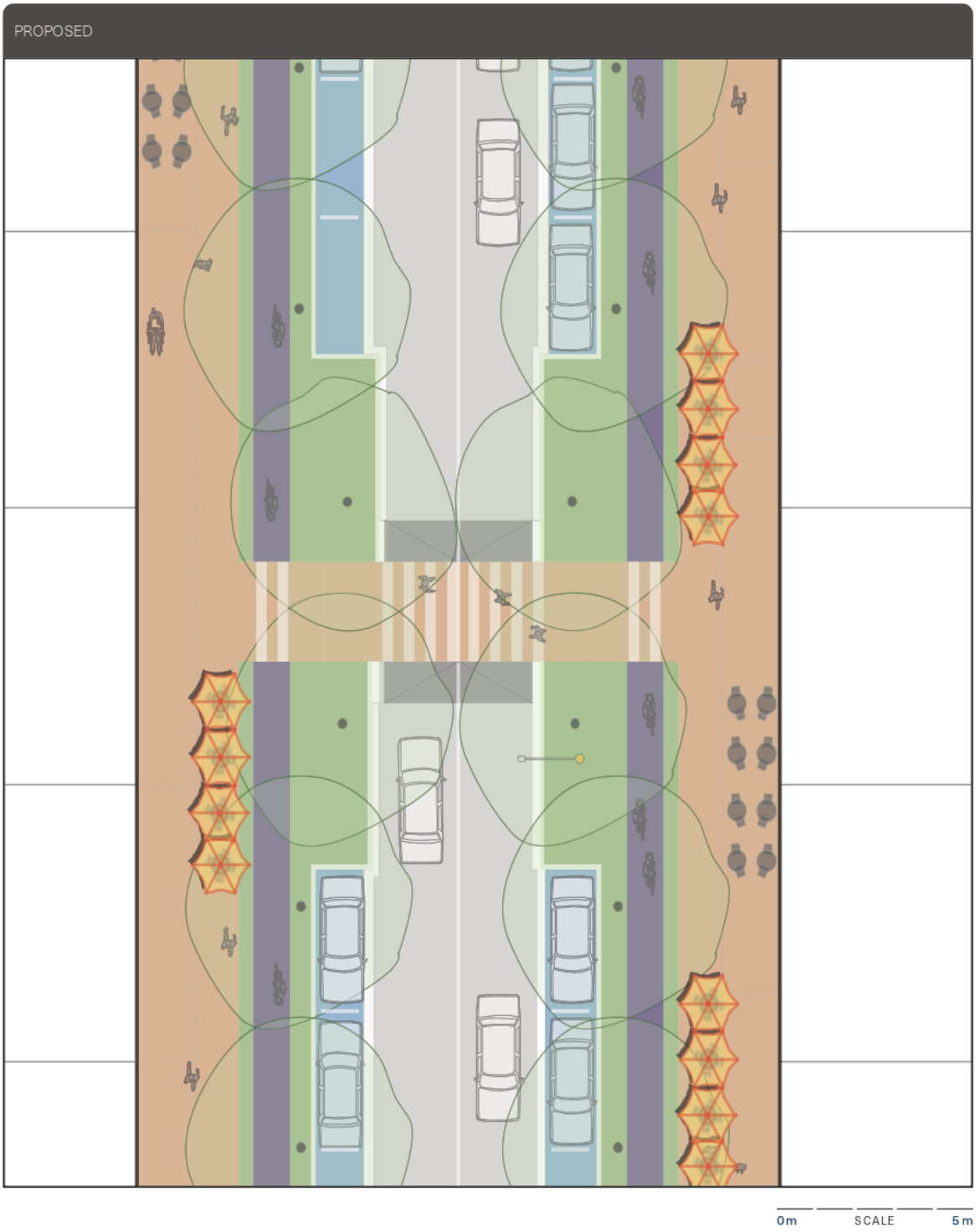


OUTDOOR DINING// ASPECT STUDIOS
Outdoor dining activates the street day and night.

STREET PRIORITIES FOR HIGH STREETS	
DESIGN OBJECTIVES	WHAT DOES THIS MEAN FOR STREETS?
 **Enhance and protect the Bush, Beach & Water character.**	— materials suitable to the location and respond to context and character
 **Encourage social activation through street design.**	— Awnings — Street Furniture — Outdoor dining — Lighting — High quality paving
 **Inspiring healthy & active lifestyles through safe and inclusive footpath & cycleway networks.**	— Connected neighbourhood wide cycle network — Generous footpaths on both sides of the street
 **Implement traffic calming interventions creating safe environments.**	— Kerb extension, raised crossing, and planted blisters to slow vehicles, improve site lines and reduce the distance for pedestrians crossing the road — Trees in carriageway between parking bays
 **Integrate water sensitive urban design into streets and open spaces.**	— Tree pits with slotted kerbs for low–flow runoff passive irrigation to street trees and planting — WSUD measures such as raingardens and swales incorporated into trees pits, blisters and verges — Permeable surfaces used in parking bays
 **Increase tree canopy cover on streets.**	— Trees positioned at 10m centres to provide shade to pedestrian path and to reduce heat from road surface — Additional row of trees within parking bays where possible — Trees positioned to minimise conflict between light poles and shop awnings

TYPICAL HIGH STREET

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C5 INDUSTRIAL STREET

OVERVIEW

Industrial Streets serve commercial and industrial precincts, with a mix of general traffic, buses, and heavy commercial and industrial vehicles with particular design requirements.

Industrial street typically have generous carriageways and pavement materials to cater for large heavy vehicle traffic.

Industrial streets provide a perfect starting point to consider sustainability targets that address climate resilience through building and streetscape with green infrastructure solutions. With these strategies we have the opportunity to address finer grain solutions such as increased tree canopy to help mitigate urban heat island effects and build climate resilience into the future.

Deep setbacks to the road are provided to support large trees to improve the streetscape amenity, be appropriate scale to adjacent built form, and mitigate heat island impacts from large areas of pavement.

A typical Industrial Street includes

- a minimum 1.5m wide footpath, unobstructed by planting, furniture or other elements
- footpath widening areas for shared bike paths
- a continuous avenue of street trees, maximum 10m regular spacing, in mass planted tree pits/ WSUD tree pits/ turf as appropriate
- WSUD planting within parking bays/ verges or deep setback areas
- planted blister extensions and raised pedestrian crossing thresholds to slow vehicular traffic and provide safe pedestrian crossing environments at key intersections
- use of porous and permeable materials, such as porous asphalt, to reduce stormwater run-off is supported



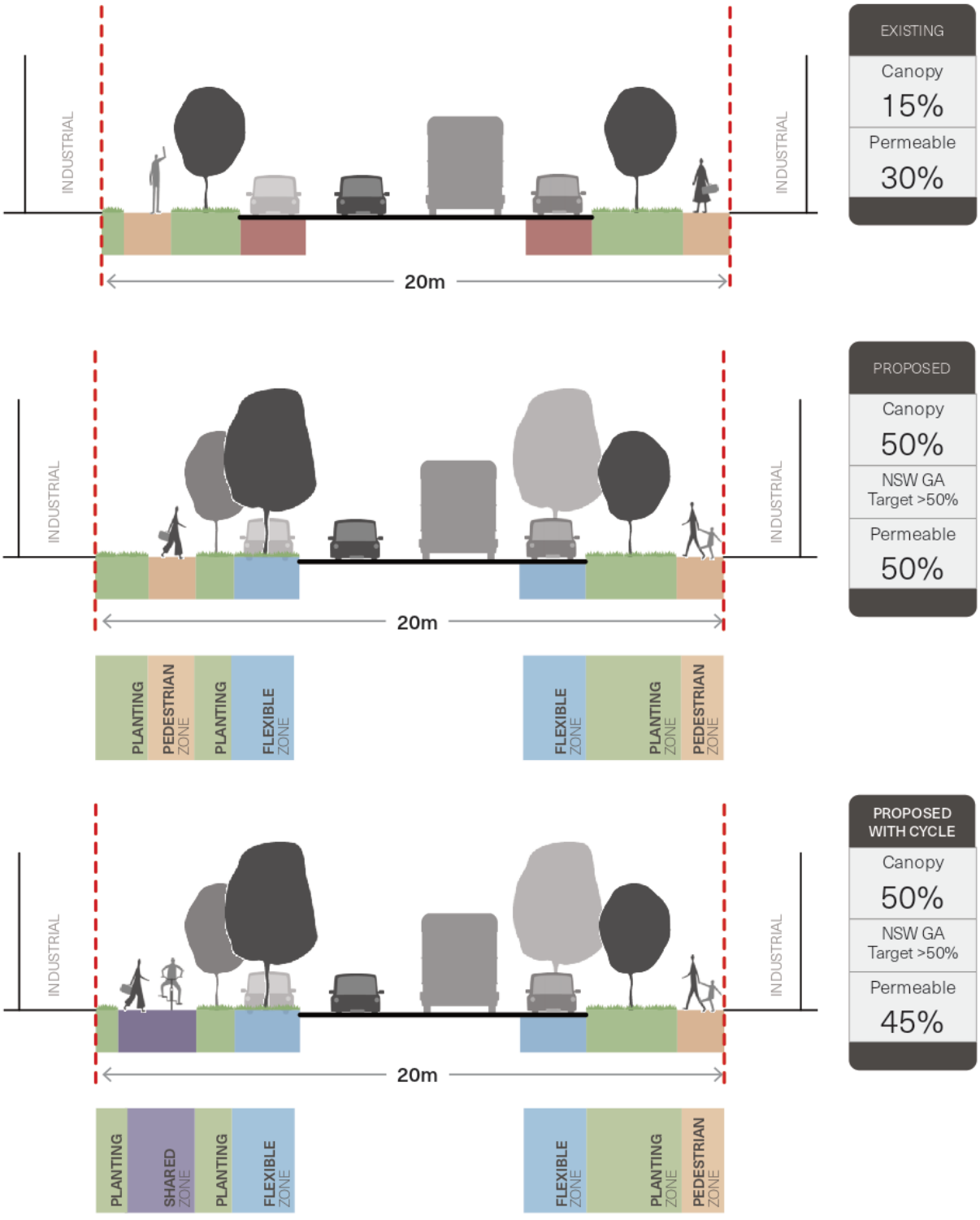
BOURKE ROAD, ALEXANDRIA // ASPECT STUDIOS
Separate cycle path creates a safe, active mode of Transport.

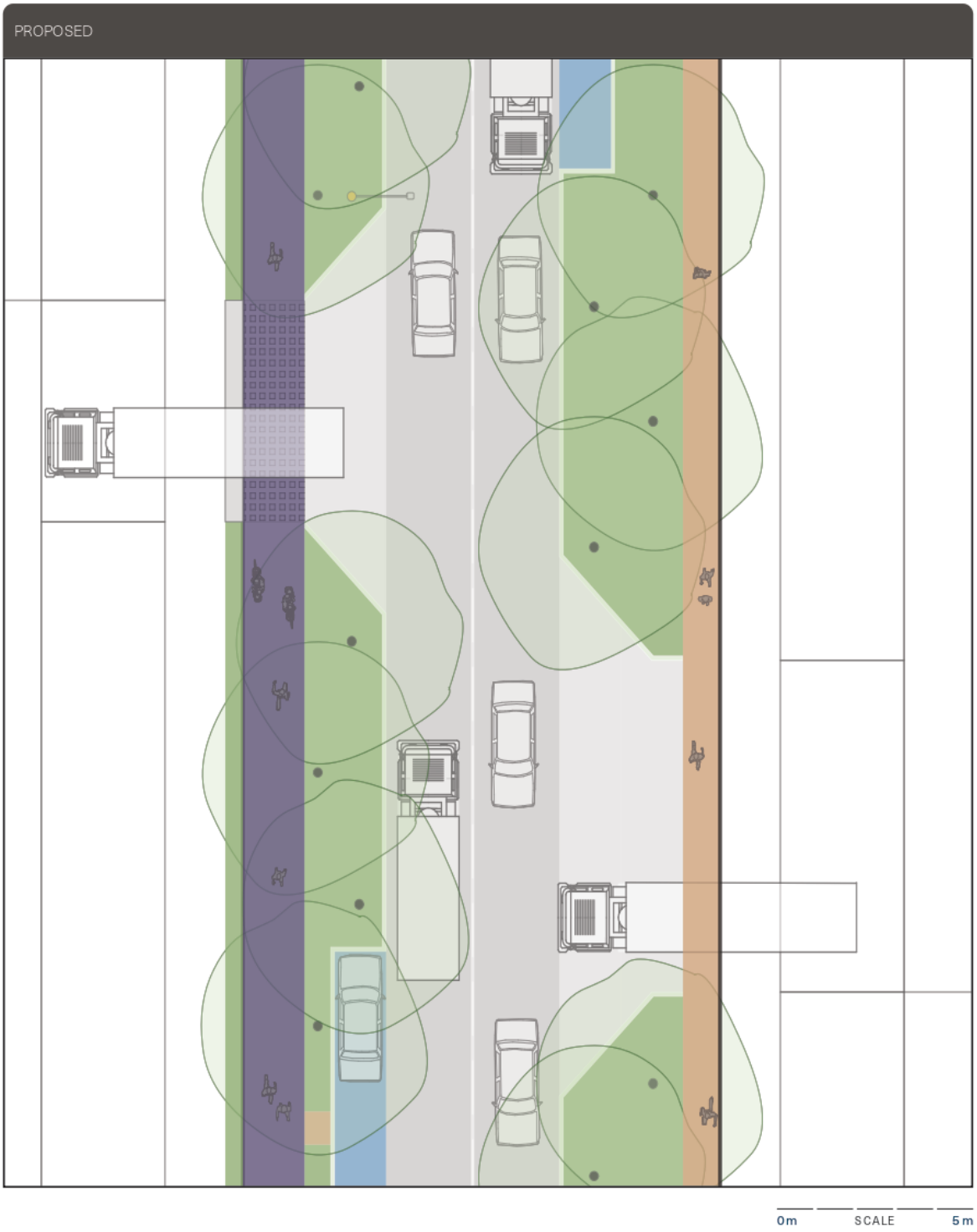


MITCHELL ROAD, BROOKVALE /// ASPECT STUDIOS
Trees play an important role in cooling the urban environment.

STREET PRIORITIES FOR INDUSTRIAL STREETS	
DESIGN OBJECTIVES	WHAT DOES THIS MEAN FOR STREETS?
 **Enhance and protect the Bush, Beach & Water character.**	— Materials suitable to the location and respond to context and character — Wide landscape setbacks
 **Encourage social activation through street design.**	— Continuous tree planting frames the streetscape and makes a comfortable place for people — Utilise building design and structures to provide shade and protection from UV radiation
 **Inspiring healthy & active lifestyles through safe and inclusive footpath & cycleway networks.**	— Connected neighbourhood wide cycle network — Generous footpaths on one or both sides of the street
 **Implement traffic calming interventions creating safe environments.**	— Kerb extension, raised crossing, and planted blisters to slow vehicles, improve site lines and reduce the length for pedestrians crossing the road — Trees in carriageway between parking bays
 **Integrate water sensitive urban design into streets and open spaces.**	— Tree pits with slotted kerbs for low–flow runoff passive irrigation to street trees and planting — WSUD raingardens and swales incorporated into trees pits, blisters and verges — Permeable surfaces used in parking bays
 **Increase tree canopy cover on streets.**	— Trees positioned at 10m centres to provide shade to pedestrian path and to reduce heat from road surface — Additional row of trees within parking bays where possible — Trees positioned to minimise conflict between light poles — Where trees can't be supported, provide landscaping with hedges, grass footpaths and garden beds, green roofs and walls

TYPICAL INDUSTRIAL STREET

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C6 LANEWAY

OVERVIEW

Laneways in Strategic and Town Centres are small scale connections that carry low numbers of vehicles as well as supporting pedestrian connections.

Pedestrian mid-block connections encourage pedestrian permeability throughout public spaces and should be designed with adequate lighting, passive surveillance and low landscaping considerations to create safe and usable links

Opportunities for activation through outdoor dining, weekend markets etc should be considered in the design of laneways.

Laneway's offers a great opportunity for community participation to small scale green infrastructure to help address sustainability and mitigate climate change through small scale interventions and pop up calender events.

A typical Laneway (in Town Centre) includes

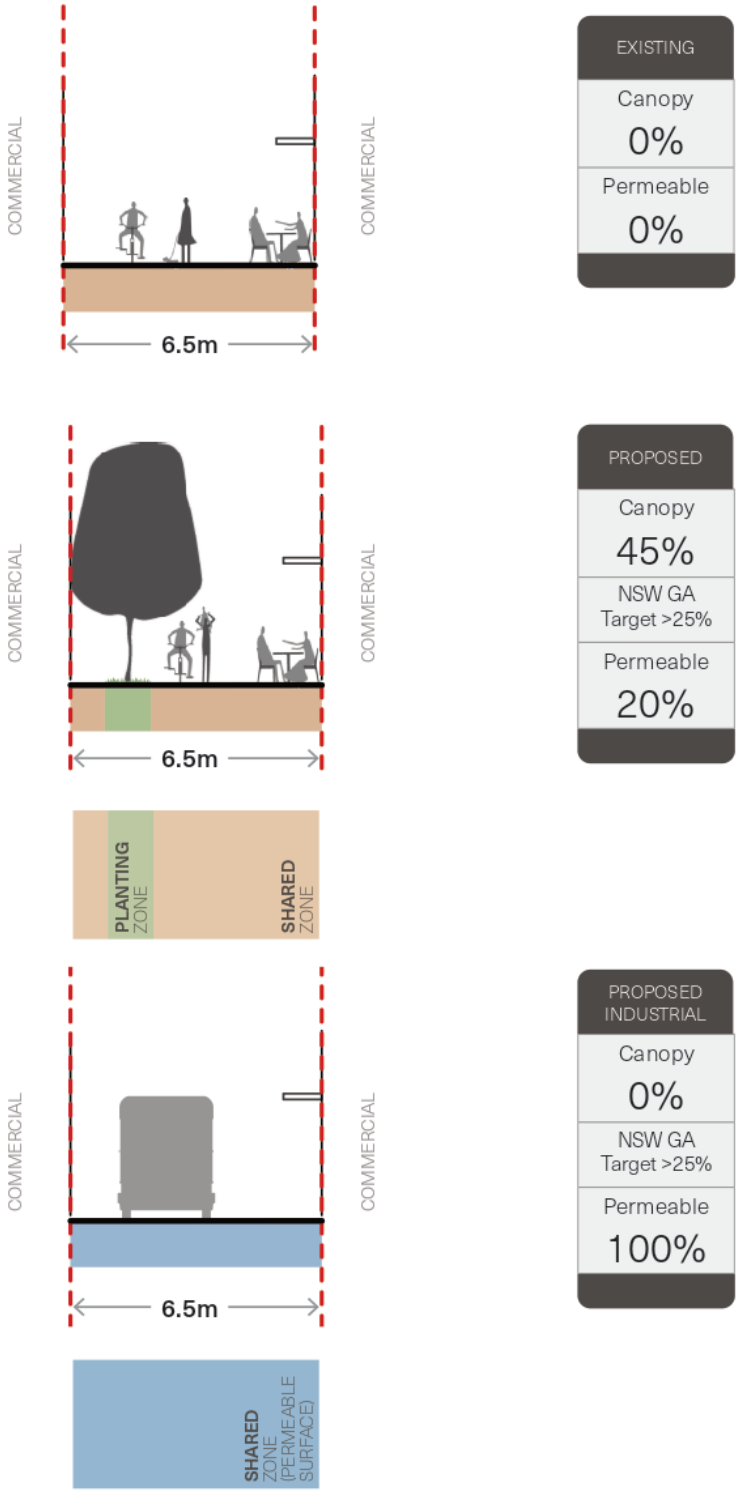
- continuation of the streetscape footpath material on road closures and mid-block connections
- pedestrian priority shared zone environments with raised thresholds and continuation of the footpath material across the full width of the laneway
- planted buffer and regular street tree planting where possible. Use of trees in tree pit are supported for highly pedestrianised areas
- species selection is crucial in such locations to support solar access in winter and shade in summer

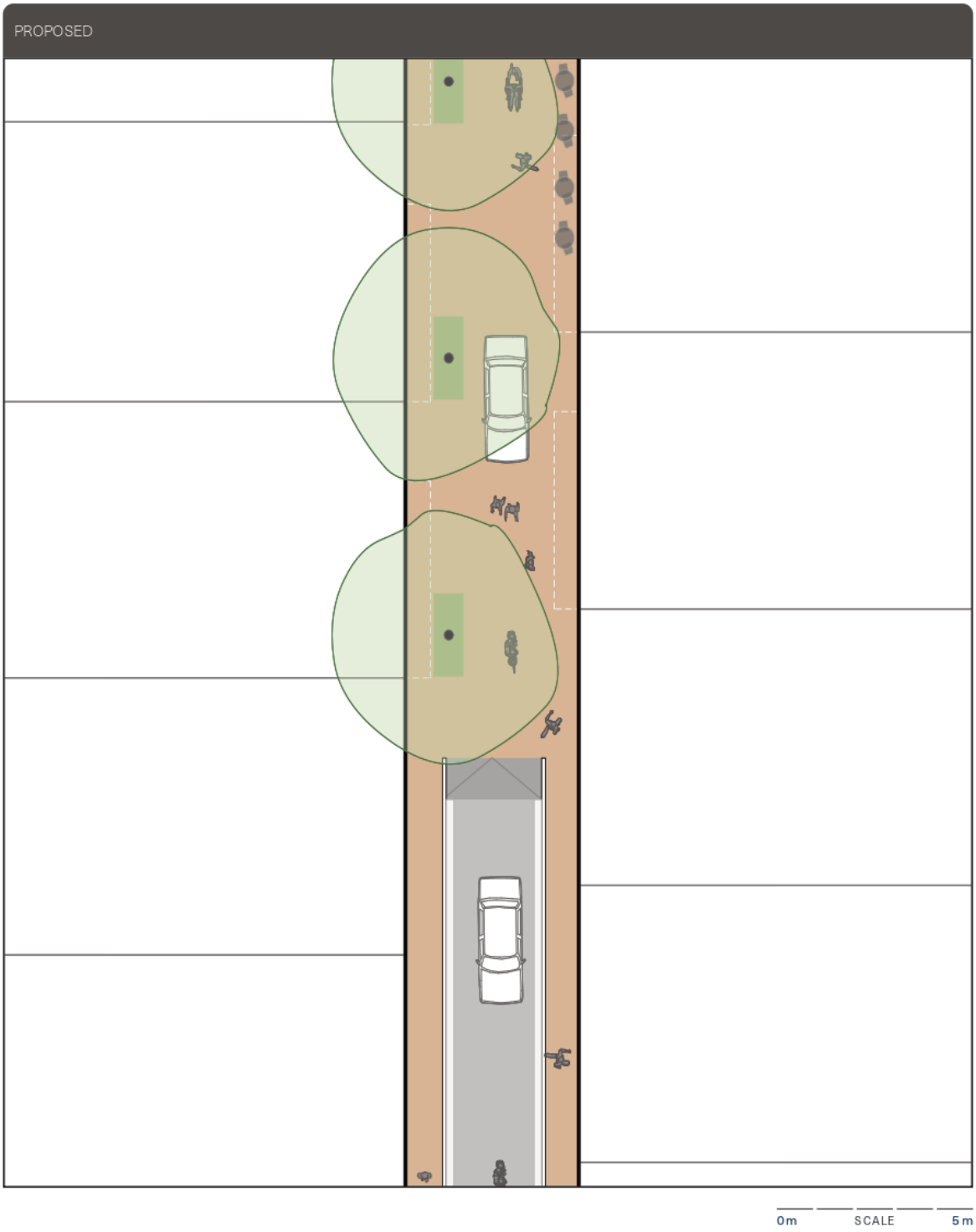


ACTIVE LANEWAY// KAREN WATSON
Laneways can be inviting and safe places for pedestrians and cyclists.

STREET PRIORITIES FOR LANEWAYS	
DESIGN OBJECTIVES	WHAT DOES THIS MEAN FOR STREETS?
 **Enhance and protect the Bush, Beach & Water character.**	— Materials suitable to the location and respond to context and character
 **Encourage social activation through street design.**	— Outdoor dining — Regularly spaced public furniture — High quality pavements extend as shared way across laneway
 **Inspiring healthy & active lifestyles through safe and inclusive footpath & cycleway networks.**	— Shared way that prioritises pedestrians — Makes important mid block connections to expand the pedestrian network
 **Implement traffic calming interventions creating safe environments.**	— Shared way with continuous pavement treatment across entire laneway to prioritise pedestrians — Raised thresholds at intersections
 **Integrate water sensitive urban design into streets and open spaces.**	— Tree pits with slotted kerbs for low–flow runoff passive irrigation to street trees and planting — WSUD raingardens and swales incorporated into trees pits, blisters and verges — Permeable surfaces used in parking bays
 **Increase tree canopy cover on streets.**	— Trees positioned at 10m centres on at least one side of the laneway — Where trees can't be supported, provide landscaping with hedges, grass footpaths and garden beds, green roofs and walls

TYPICAL LANEWAY

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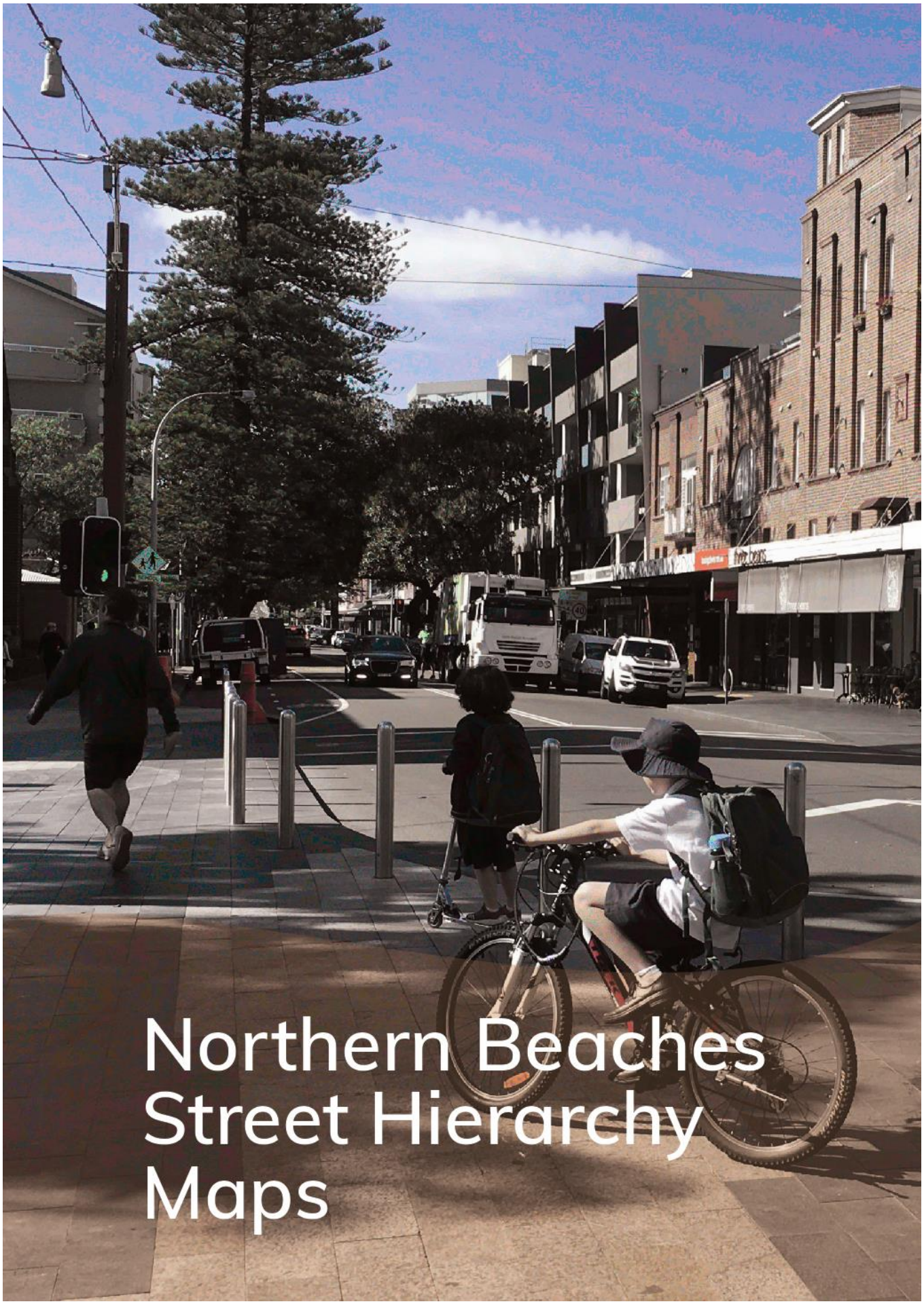

Northern Beaches Street Hierarchy Maps


RE HWATER
QUEENSCLIFF
MANLY
NORTH HARBOUR
FAIRLIGHT
MANLY VALE
BALGOWLAH
SEAFORTH
KEY
LEGEND
Local Street & Collector Street
High Street
Industrial Street
RMS Road
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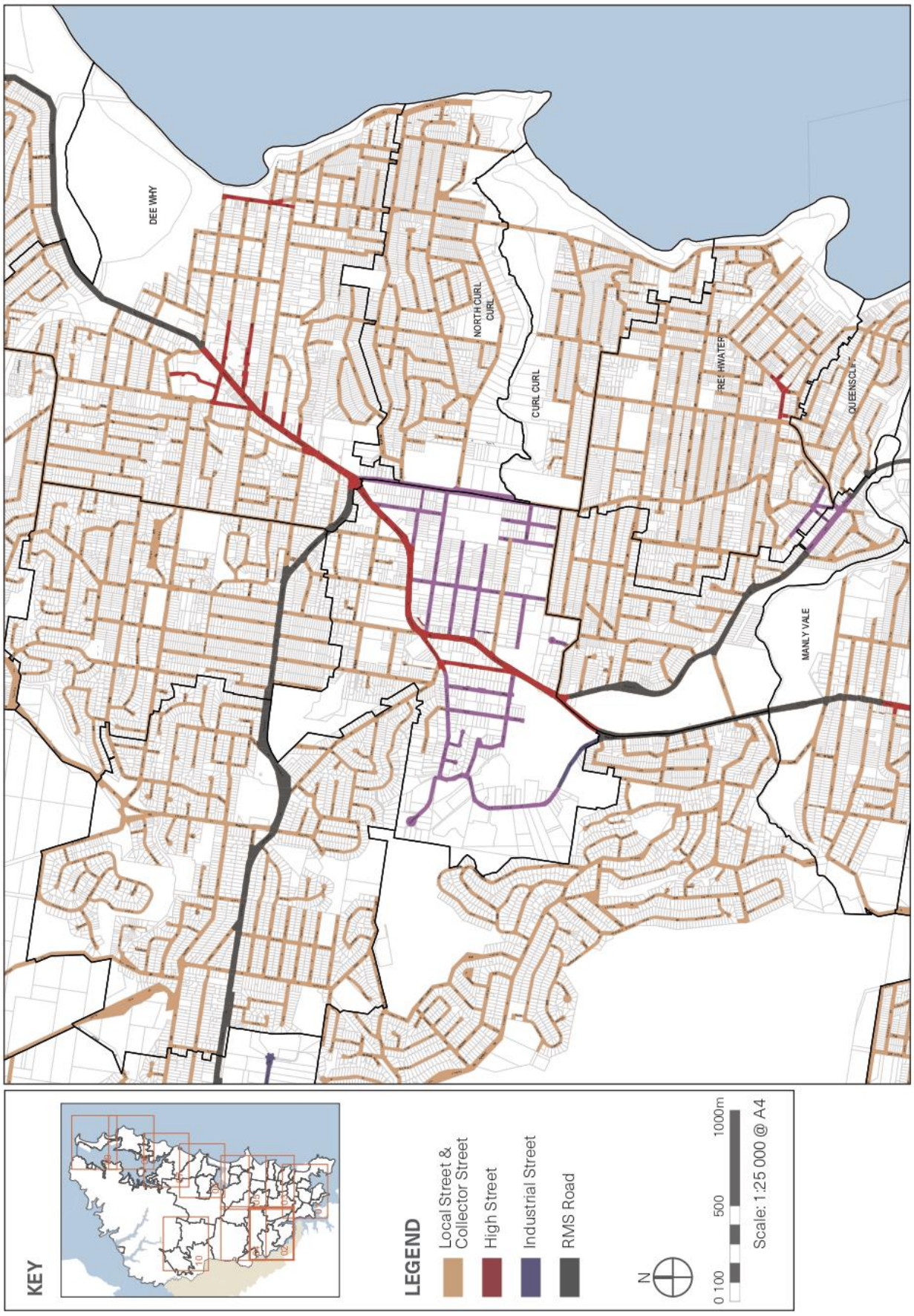
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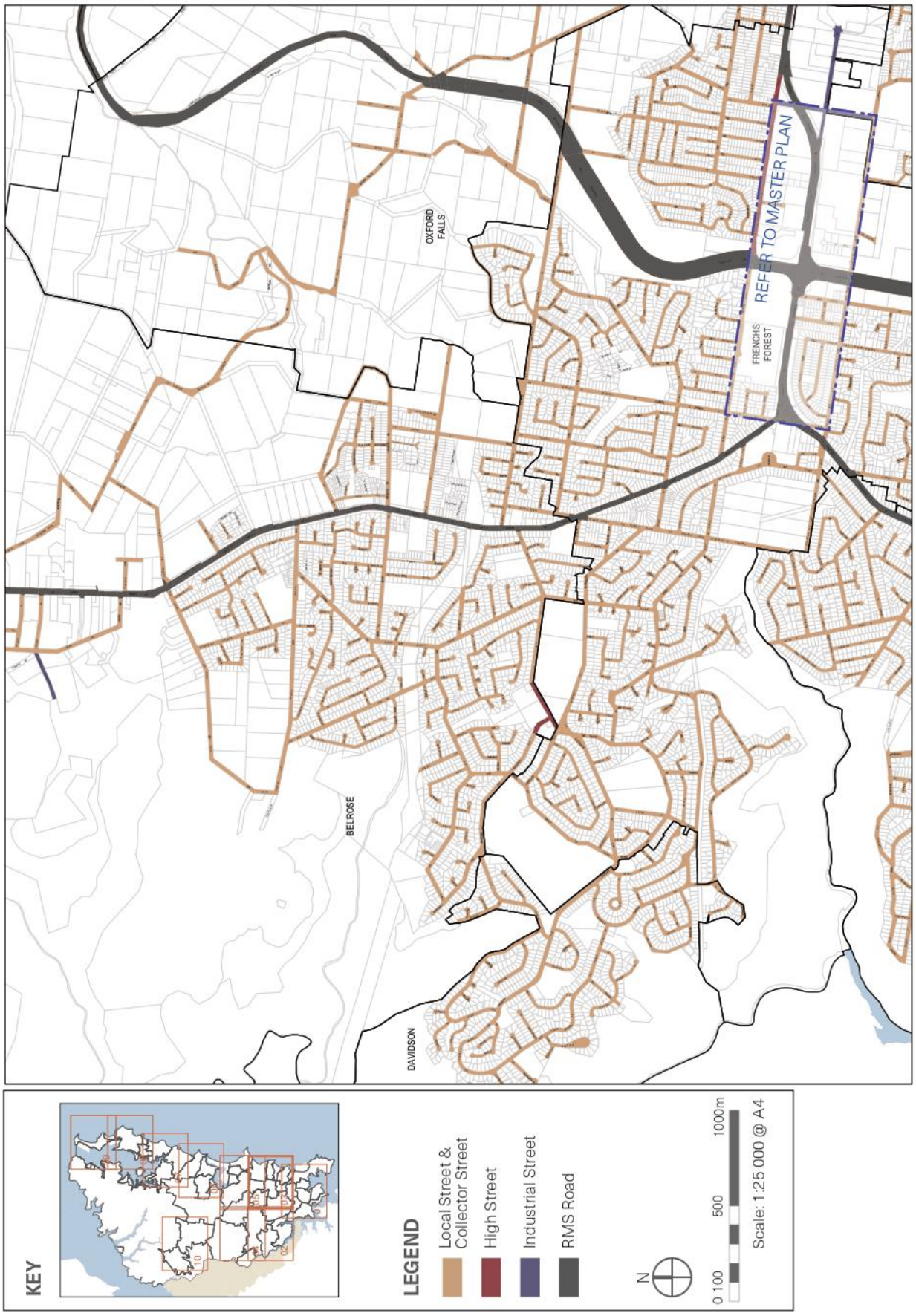
REFER TO MASTER PLAN
FRENCHS FOREST
OXFORD FALLS
BELROSE
DAVIDSON
KEY
LEGEND
Local Street & Collector Street
High Street
Industrial Street
RMS Road
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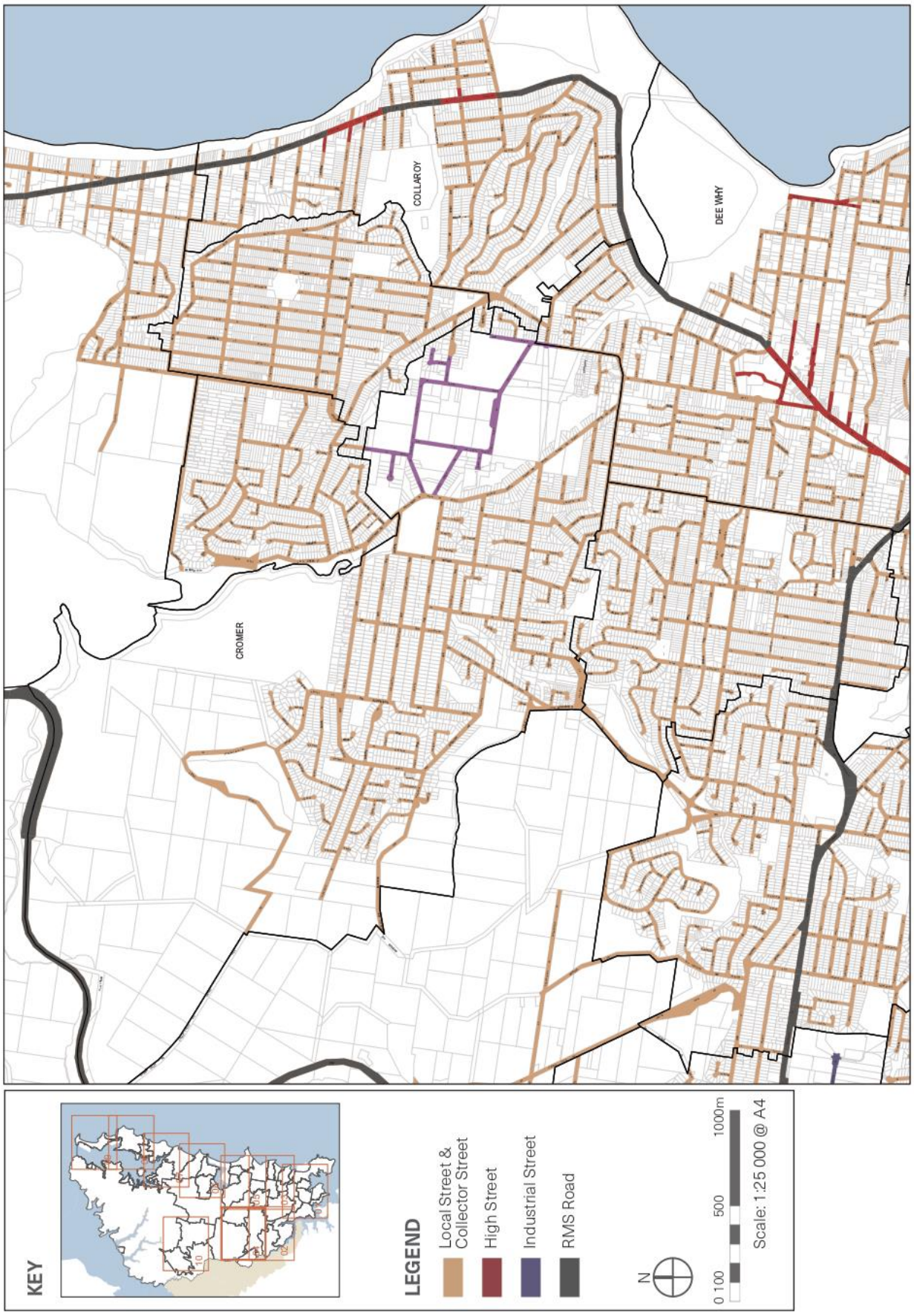
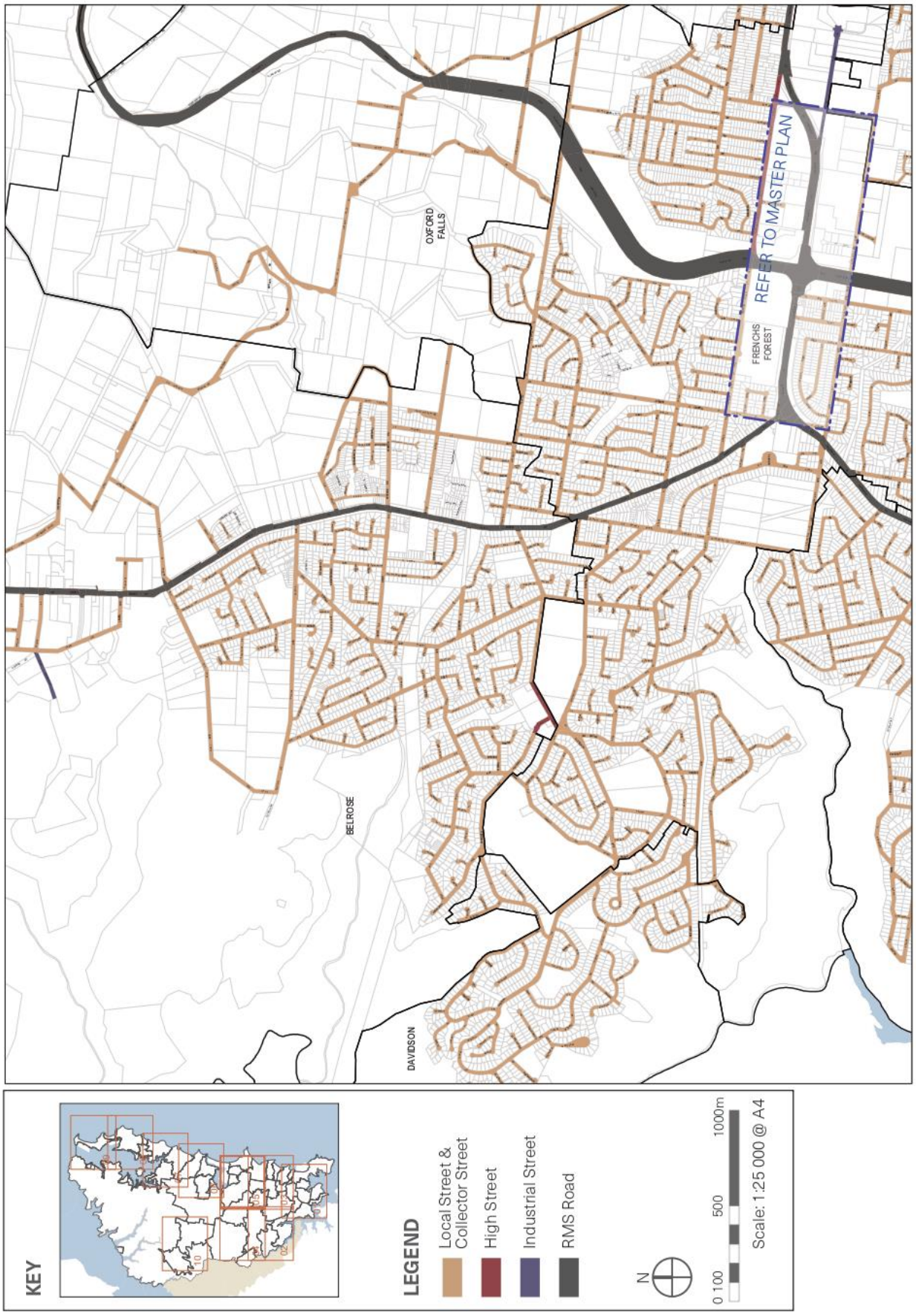


46 C7 – NORTHERN BEACHES STREET HIERARCHY MAPS


REFER TO MASTER PLAN
FRENCHS FOREST
OXFORD FALLS
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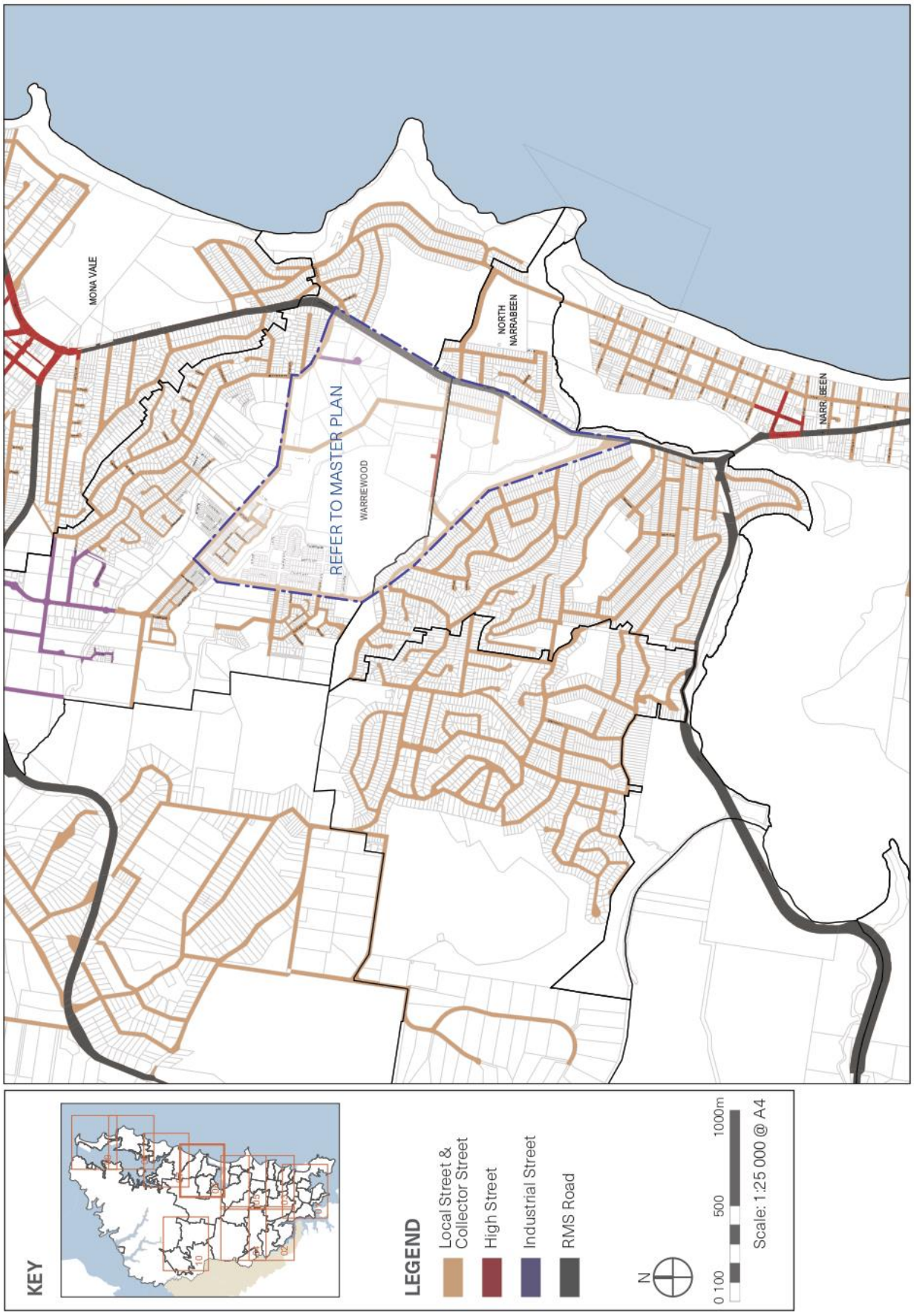
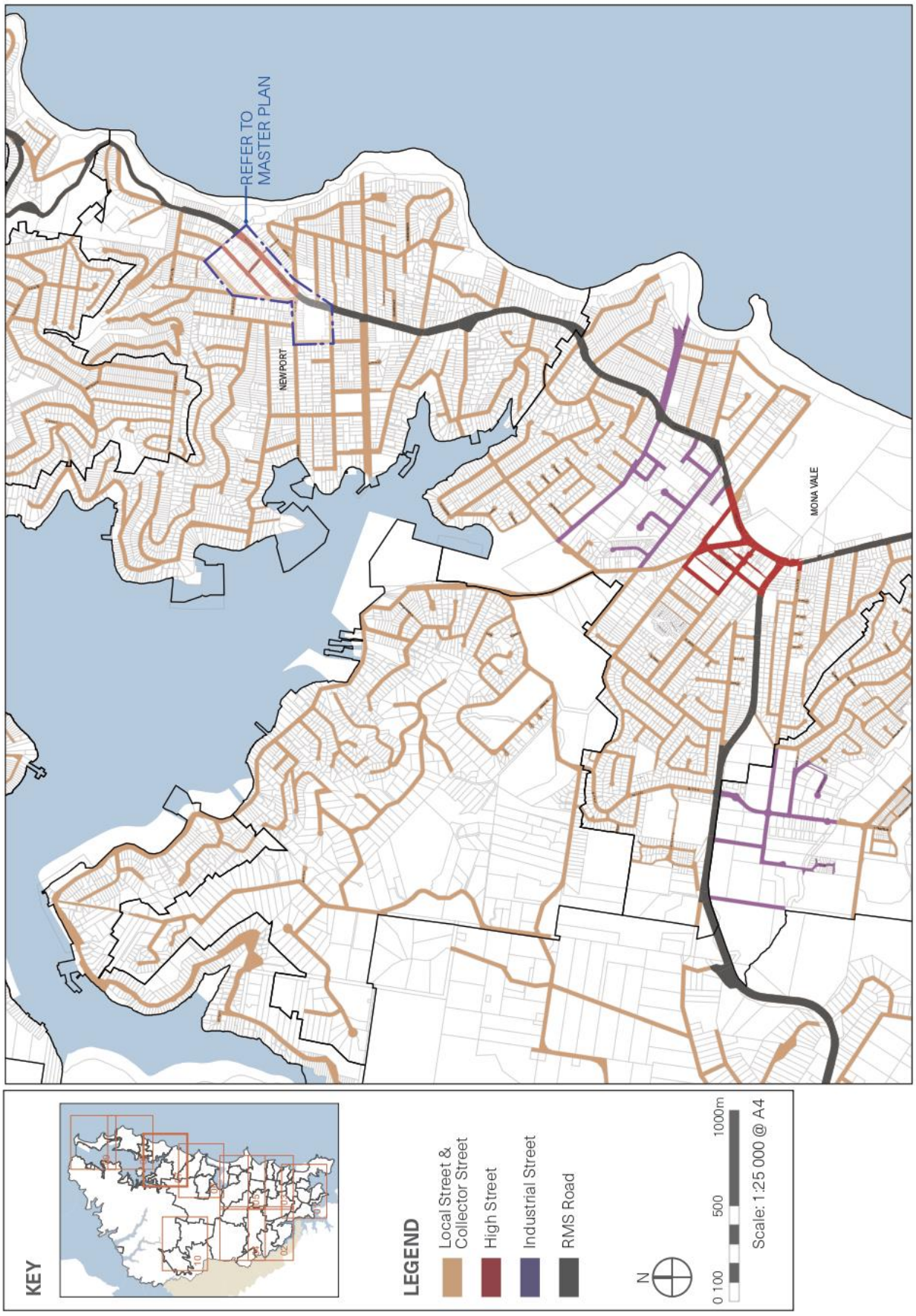


48 C7 – NORTHERN BEACHES STREET HIERARCHY MAPS


REFER TO MASTER PLAN
NEWPORT
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LEGEND
Local Street & Collector Street
High Street
Industrial Street
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AVALON BEACH
PITTWATER
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Local Street & Collector Street
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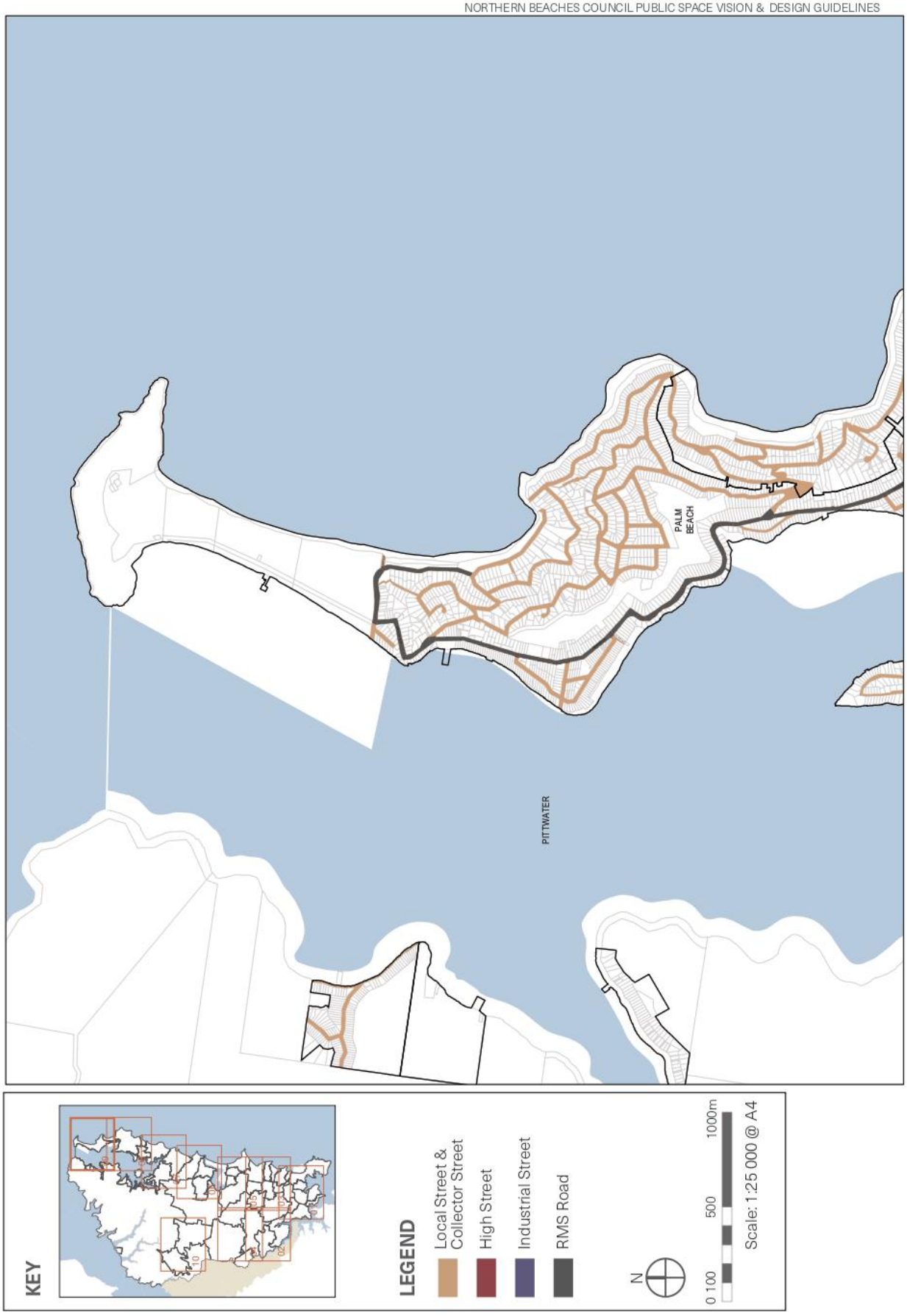
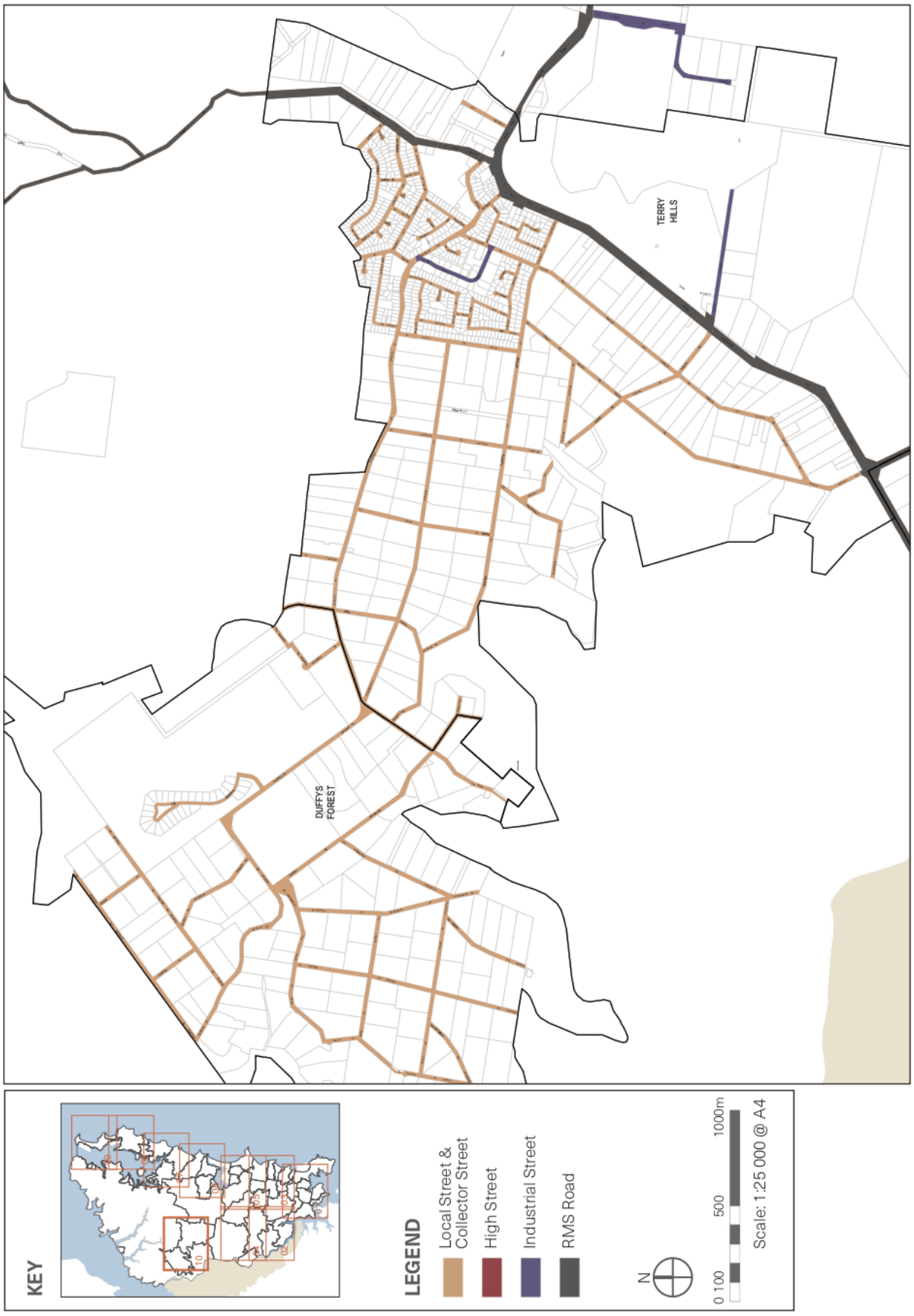
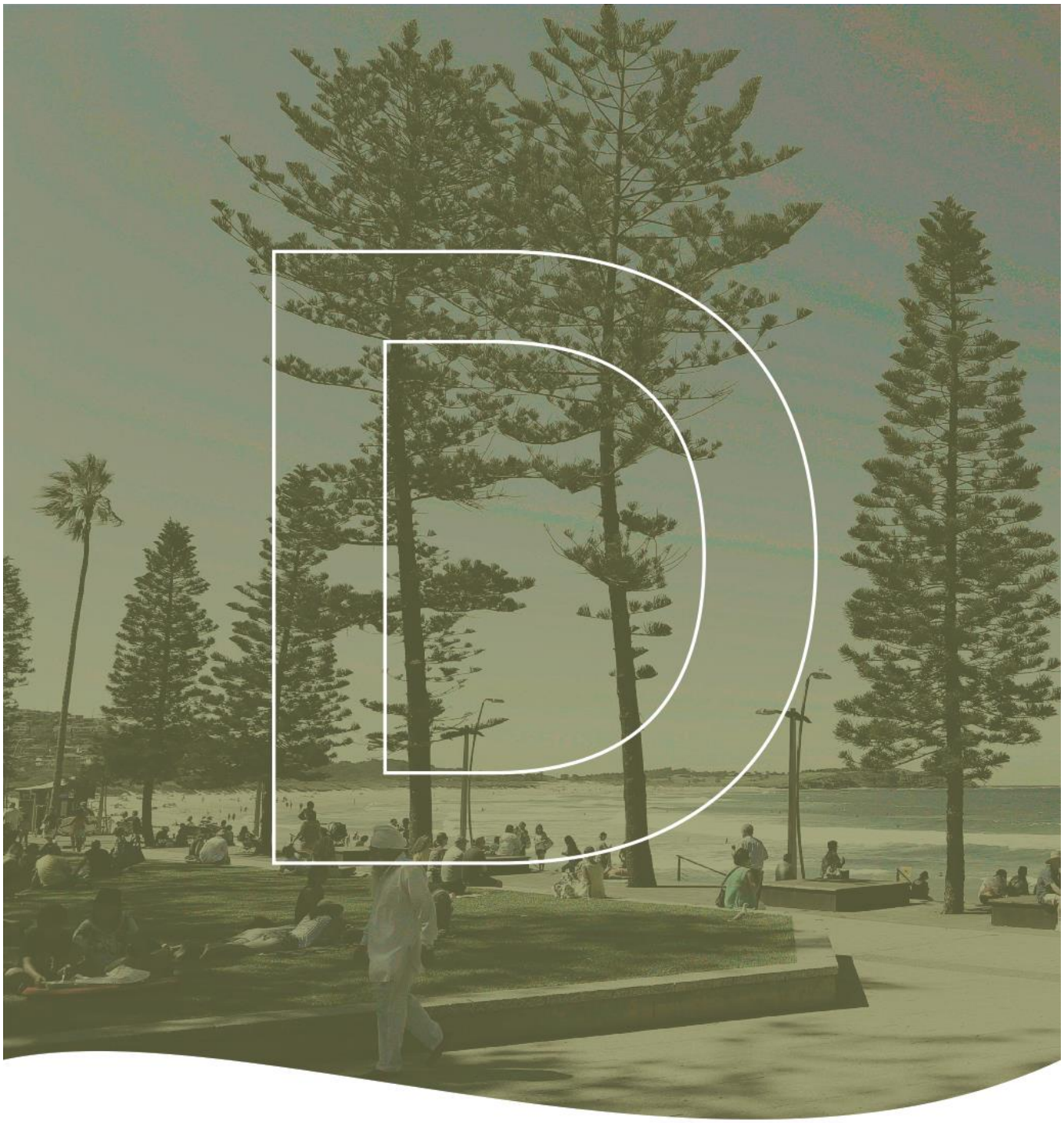


C7 – NORTHERN BEACHES STREET HIERARCHY MAPS 51



52 C7 – NORTHERN BEACHES STREET HIERARCHY MAPS



Street and Open Space Components

D1 INTRODUCTION

Part E of the Guidelines covers the various public domain components that require careful consideration and coordination throughout the planning, design, and implementation of streets and open spaces.

A high quality public domain and considered arrangement of elements will need

- provide a unified public domain style that also considers the unique and individual characteristics of local areas across the LGA
- provide parameters to achieve a seamless integration of fixtures, elements , ground plane, planting and edges
- coordinate the components to avoid potential clashes
- provide guidelines to achieving a safe and legible environment for all users
- outline the design parameters and provide design standards that ensure the Design Objectives of the Guidelines are achieved



LOCAL CENTRE// NORTHERN BEACHES COUNCIL

D2 TRAFFIC CALMING

D2.1 CARRIAGEWAY AND LANE WIDTHS

Overview

Traffic calming measures include the physical design measures such as narrower carriageway widths, tighter kerb radii, or kerb extensions.

These measures reduce the available area for vehicles to encourage slower moving traffic, and a safer, more generous environment for all people using the street including motorists, pedestrians and cyclists.

Purpose

Well designed streets allow for vehicular access and thoroughfare whilst providing a safe pedestrian and cycle environment.

Existing research demonstrates that narrower lane widths provide effective speed management and increase safety for all users of the street.

Narrower travel lanes decrease crossing distances and time within the carriageway for pedestrians.

Strategically placed planting and WSUD device interventions within carriageways compliment and support sustainability and climate resilient street framework for the future.

Guiding Principles

- lane widths should be appropriate for the street context and uses
- lane widths should be narrowed where possible whilst still maintaining access for large vehicles, such as garbage trucks or buses
- wide vehicular traffic lanes should be avoided in urban areas where space is constrained and may be better utilised to improve the pedestrian, cycle or environmental infrastructure (such as water sensitive urban design or urban tree planting) within a street.
- narrow lane widths provide a narrower overall carriageway and shorter distance for pedestrians to cross the street
- safer and more desirable pedestrian and cycle environments can be achieved through separation to the carriageway through kerbs, street trees or planting, and public domain furniture
- coordinate land use and transport to improve amenity and support the safe and efficient movement of people, goods and services
- prioritise pedestrians over cars in centres to create places where people want to spend time.
- provide for the efficient movement of freight and deliveries and protect freight corridors
- ensure safe and efficient loading and unloading facilities in new developments

Design Standards

- lane widths less than or equal to 3m are generally appropriate in residential areas
- lanes greater than 3.5 metres should be avoided as they enable unintended speeding and double parking, and consume valuable space at the expense of other modes and uses
- in commercial and industrial areas, or on bus routes, 3.5m lane widths may be required for the movement of large truck and buses



SOUTH EVELEIGH // ASPECT STUDIOS

D2.2 KERB RADII

Purpose

Well designed intersections are crucial to create safe, efficient intersections.

Reduced kerb radii assists with traffic calming at intersections and establishes priority for pedestrians.

Incorporating climate resilient solutions such as greening of hard surfaces through mass planting and turf will help mitigate urban heat island effects resulting in reduced temperatures in our urban environments and assist in building a climate resilient future for the northern beaches LGA.

Guiding Principles

- tighter kerb radii is used at street intersections to slow turning vehicular traffic, visually narrow the roadway, and shorten pedestrian crossing distances
- reduced kerb radii improves the visibility for both the driver and pedestrian
- narrowing carriageway widths at intersections reduces turning speed, expands the pedestrian area, and creates a safer environment for all users
- limitations that need careful consideration include the turning paths of buses and other heavy vehicles

Design Standards

- intersection geometry must be in accordance with the Australian Standards for Access as defined in AS 1428.1—1428.4 for pedestrian access on footpaths
- adopt the smallest possible corner radii – subject to design vehicle and check vehicle requirements
- use kerb extensions to assist in minimising corner radii, maximising pedestrian sight lines and reducing pedestrian crossing distances



GEORGE STREET, REDFERN// ASPECT STUDIOS

D2.3 KERB EXTENSIONS

Purpose

Kerb extensions are expansions of the footpath and kerb line into the road lane adjacent. Generous kerb extensions allow opportunities for landscaping, seating, outdoor dining, bicycle parking and storm water management.

Kerb extensions enhance pedestrian safety by increasing pedestrian visibility, shortening crossing distances, slowing turning vehicles, and visually narrowing the roadway.

Guiding Principles

- kerb extensions should be included on both sides of the street, at all corners and in mid–block locations to assist with pedestrian crossing safety and traffic calming
- kerb extensions should be considered in streets where awnings extend to the kerb to allow for street tree planting
- ground materials should form a seamless whole, matching existing features and materials of the footpath environment
- the design of the kerb extensions needs to be considered in relation to storm water infrastructure, cleaning, vehicle access and traffic management options during road works
- consider inclusion of mass planting buffer if outdoor dining is intended

Design Standards

- provide kerb extensions at all corners
- provide kerb extensions at mid–block locations and pedestrian crossings to assist with pedestrian safety and traffic calming
- kerb returns should be perpendicular to the kerb
- kerb extensions to use ground materials that integrate with the adjoining footpath materials
- avoid the inclusion of additional elements within kerb extensions that compromise pedestrian circulation, such as railings, bollards and barriers



KERB EXTENSION FOR OUTDOOR DINING, PENRITH// ASPECT STUDIOS

D3 ON STREET PARKING

Overview

On–street parking in residential and commercial areas is typically provided as parallel parking along streets.

On street parking is often one of the most contentious elements of street design, mainly due to the fact that parking demand at peak times usually exceeds supply in commercial areas.

Introducing WSUD strategies such as planted raingardens placed strategically throughout hard surface parking areas assists to reduce heat island effects and supports a climate resilience approach to our streets without impinging on the street function.

Purpose

On–street parking in commercial streets allows visitors and workers to access local centres by car.

On–street parking in residential areas provides for resident and visitor parking. Kerbside space is also typically utilised by residents for storage of additional items such as trailers and boats.

Guiding Principles

— the space that on-street parking occupies needs to be considered against other street design objectives, such as outdoor dining, planting or water sensitive urban design
— on street parking locations on freight corridors will need to be considered to ensure the efficient

Design Standards

— minimise the width of parking bays to maximise street space for alternate uses
— a width of 2.5m should be adopted as a starting point and adjusted for vans/ delivery trucks where appropriate, in accordance with *AS 2890.5-2020 Parking Facilities - On-street parking*
— provide car sharing parking spaces to encourage the use of car sharing to help discourage car ownership



/ON STREET PARKING BETWEEN RAINGARDENS // ASPECT STUDIOS

D4 PAVING AND GROUND MATERIALS

Purpose

To ensure that the paving and ground surface materials form a consistent palette that creates a clear, coherent public domain structure, and provides a unified recognisable character to reinforce open space and streetscape hierarchies.

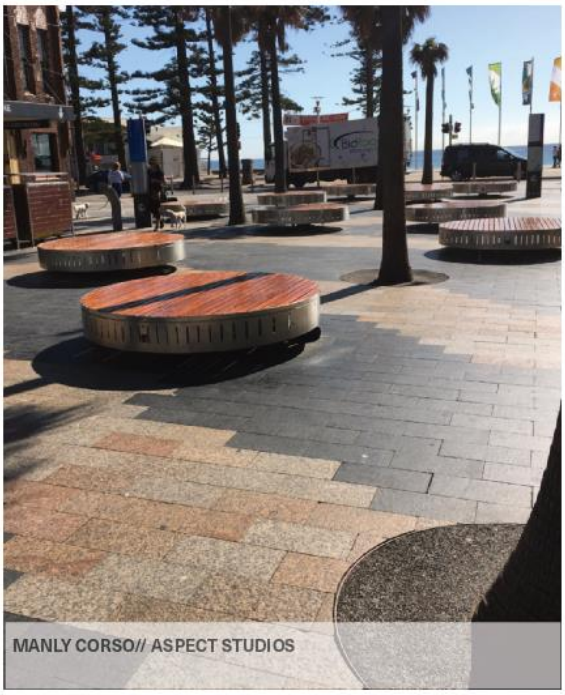
Materials defined as sustainable encompass low embodied energy mass, are considered within a 'whole life' lifespan , are appropriate to its environmental context and are durable. All factors contribute to a holistic sustainability approach and support a climate resilient response to future infrastructural upgrades across our centres

Guiding Principles

- the palette of paving materials across the Northern Beaches LGA will reinforce a clear street and open space hierarchy
- materials are high quality, robust, durable and easy to maintain
- materials should also reflect public space context and existing pavement types, and reflect the Design Guidelines streetscape and open space hierarchies
- within the Northern Beaches LGA custom finishes may be considered for areas of special significance. Any suite of finishes shall still reflect council principles of durability and appropriateness and should be decided in consultation with Council
- the use of permeable materials such as crushed stabilised sandstone, porous asphalt, porous paving should be considered in appropriate areas to reduce storm water run-off and allow water to permeate the ground surface
- reduce paving area where possible to reduce storm water run-off and mitigate heat island effects
- care should also be taken in the choice of colour of light coloured paving, softfall and other manufactured ground surfaces. Although light colours do not store heat as much as dark colours, they increase the reflectivity of UV radiation. A balance needs to be found between reducing dark surfaces/colours (as they store heat yet do not reflect UVR) and light surfaces (which reflect UVR but do not get as hot)

Design Standards

- pavements to be supplied according to the schedules and specification details in Section F: Palettes
- any alternative use of materials to be reviewed and approved by Council prior to installation
- surfaces to adhere to AS 4586-2013 for slip ratings.
- opportunities for use of permeable surface materials should be considered on appropriate areas such as parking bays, roadways, footpaths and parkland paths
- permeable surface treatments are appropriate for areas where grades do not exceed 1:40
- permeable surfaces should be considered within the tree planting zone on streets and in parks to increase passive irrigation to trees. Authentic proven permeable solutions should be considered within the tree planting zone, with short term establishment access points. (ensuring initial establishment watering is permitted by this medium)
- infill pit lids with pavement to match surrounding surface material to be installed where possible



MANLY CORSO// ASPECT STUDIOS

D5 FOOTPATH ELEMENTS

D5.1 FOOTPATH TYPES

Purpose

The pedestrian area of the street is for pedestrian activity, and in some instances, shared use for cyclists.

Footpaths that are safe, accessible, and well–maintained enable connectivity and promote walking. They activate streets from a social and economic perspective, and are the meeting places for the community in residential areas and commercial centres alike.

Material selections for all footpath types address key sustainability principles including assessing 'whole of life' of material, durability and urban heat island effects. Appropriate material selection reflect a sustainable choice that will work to support a climate resilient future.

Ancillary uses such as eating, sitting and socialising can be accommodated in appropriate locations if space and safety issues allow. A unified palette of paving and kerb materials creates a consistent streetscape structure and accentuates the visual continuity of the street.

Guiding Principles

Local Streets

- local streets typically have less pedestrian activity than high streets
- footpaths on Local streets are vital in providing residents viable connections to essential services and destinations (such as schools) for walking pets or fitness, and to connect to public transport
- the Pedestrian Zone typically consists of a footpath to allow for continuous access along the street and connections to parks and open spaces
- amenity and comfort is provided by street trees and planting
- regular spaced furniture, such as seats, and street lighting contributes to making the pedestrian environment more comfortable, desirable and accessible to all

High Street Footpaths

- footpaths on high streets should feature a wider Pedestrian Zone to accommodate high volumes of pedestrian traffic while avoiding conflicts with a variety of other footpath uses
- street tree planting on High Streets is typically located in tree pits to maximise usable footpath space
- public domain furniture, way finding signage and street lighting should be located outside of the main path of travel
- kerb extension and blisters in High Streets can be utilised for outdoor dining, mass planting or additional public seating

Shared Paths

- shared Paths allow both cyclists and pedestrians to use the path
- cycling is generally preferable on dedicated cycling lane. Where the existing street cross section does not allow sufficient width, a shared path can be considered
- the design of shared paths—including minimum dimensions, preferred horizontal and vertical geometry, and safety clearance requirements—are to conform the Austroads Guide to Road Design Part 6A, Paths for Walking and Cycling



THE NORTHERN BEACHES//KAREN WATSON

D5.2 FOOTPATH JUNCTIONS

Purpose

Footpath junctions at street corners and intersections where two different materials meet will emphasise and/or prioritise the streetscape hierarchy.

Guiding Principles

- pavement material of the priority street (main street) should continue around the corner of a block to strengthen the connection across the roadway
- a logical termination of paving types can be the radius transition point or building property line

Design Standards

- where 2 different pavement materials meet at a corner, the pavement material of the higher priority street will be continued around the corner



WOLLONGONG UNIVERSITY// ASPECT STUDIOS

D5.3 DRIVEWAY CROSSOVERS

Purpose

Driveway crossings provide vehicle access to private property from the road carriageway across the footway. Driveways from the property to the road are the responsibility of the property owner for construction, maintenance and replacement. Slight-lines must be maintained.

Driveways to large commercial developments or loading docks shall be construct it in reinforce plain concrete in lieu of segmental paving.

Guiding Principles

- driveway widths should be minimised to increase the provision of landscape planting and street trees within the street
- ensure private vehicle access across the pedestrian path of travel does not compromise the quality of the street experience, including pedestrian movement, comfort and safety
- reinforce pedestrian priority on a street over driveway crossovers. Driveways should not interrupt the pathway of pedestrian movement, while footpath pavement material should be continuous across the driveway to emphasise pedestrian priority
- the pavement material for the driveway crossover is to be appropriate for vehicular loads, and of colour and finish to match the adjacent footpath paver.
- promote shared driveway access and encourage rear access to properties

Design Standards

- minimise the width of driveways on all streets:
- 3m for single car garages
- 4m for double car garages
- paving materials and colours used are consistent with the footpath to identify pedestrian priority and not interrupt the footpath
- footpath levels and cross falls are maintained through the driveway crossover
- driveway crossovers are to match the footpath



WOLLONGONG UNIVERSITY// ASPECT STUDIOS

D6 INTERSECTIONS

D6.1 KERB RAMPS

Purpose

Kerb ramps provide universal access through urban environments.

Guiding Principles

- pedestrian ramps must be installed at all intersections and mid block locations where pedestrian crossings exist
- orientation of ramps must meet accessibility standards to ensure safe passage of persons with visual or physical impairments across the street
- preference is for the kerb ramp material to match the adjoining footpath material, and use of tactile indicators (to achieve luminance contrast requirements as per AS1428 standards) to aid visually impaired people

Design Standards

- kerb ramps on high streets and in town and village centres are to be paved to match adjoining footpath material, and installed with tactile indicators in accordance with the Northern Beaches Pedestrian Mobility and Access Plans (PAMP) and AS1428
- pedestrian ramps on local streets are either coloured dark terracotta concrete, in contrasting colour to adjacent paving (to meet luminance contrast), or installed with tactile indicators in accordance with the PAMP
- installation of tactile ground surface indicators and ramp alignment to meet AS1428 standards
- kerb ramps should be oriented in the direct line of travel at all intersections and pedestrian crossings



BELAMBI, WOLLONGONG // ASPECT STUDIOS

D6.2 RAISED PEDESTRIAN CROSSINGS

Purpose

Raised pedestrian crossings define where pedestrians are prioritised in the roadway, and can safely cross the street.

Guiding Principles

- raised pedestrian crossings may be used on two lane, two way streets in strategic locations to assist in enforcing speed limits (eg. 40kph high pedestrian activity zones)
- raised pedestrian crossings must be differentiated by lighting
- maximise the opportunity to install raised crossings in combination with kerb extensions to reduce the crossing width, and to calm traffic
- maximise opportunities to adopt kerb extensions at pedestrian crossings to reduce the crossing width and calm traffic
- use raised pedestrian crossings to emphasise crossing points, particularly at unsignalised mid–block crossing locations
- use a change in paving unit or colour to enhance the contrast between the carriageway and crossing

Design Standards

- a marked foot crossing requires the approval of Council's Traffic Committee
- sight lines are to be maintained at crossing points to avoid conflicts and allow adequate space for people to use the crossing safely
- use kerb extensions, lighting, street trees and landscaping at raised crossing locations to assist with visually narrowing and compressing the street.
- for crossings at intersections, minimise corner radii to assist with creating appropriate vehicle speeds, reducing crossing distances, and minimising potential conflicts between street users
- for mid–block crossings, provide raised pedestrian crossings where possible, and ensure accessible paths–of–travel and interfaces with adjoining footpaths



CROWN STREET SURRY HILLS // ASPECT STUDIOS

D7 UTILITIES

Purpose

Utilities in the public domain consist of utility poles, overhead wires, surface pits, and electricity kiosks. Streets and open spaces need to be designed to accommodate the requirements for access and installation for all utilities.

Guiding Principles

- utilities should be efficiently located to minimise impacts on other existing or potential streetscape elements, maintain standard access and maintenance requirements
- consideration should be given to the under grounding of overhead services, where feasible, to main streets to reduce visual intrusion and provide optimum conditions for achieving urban tree canopy targets
- prioritise under-grounding within bushfire prone land. Investigate advantages and disadvantages of Aerial Bundled Cables before adopting this method within bushfire prone land
- aerial Bundled Cable (ABC) is also appropriate for other streets to reduce impacts on the local tree canopy
- where practical, pit lids should consist of infill pit lids with paving inserts consistent with the paved footpath finish
- consider adopting energy saving and efficient utilities and green infrastructure such as bioswales, impervious strips and porous pavements, reclaimed water systems, district cooling and heating, and automated waste collection systems.
- ensure upgrades to infrastructure address impacts from climate change, including urban heat, UV radiation exposure, sea-level rise and increased incidence of bush fire, flooding and storm surges
- incorporate public art projects into infrastructure upgrades

Design Standards

- streets are required to provide enough space for utility spacing and depth of cover in accordance with municipality and utility requirements
- services should be parallel or perpendicular to adjoining property boundaries
- locate mains within verge
- avoid planting tree species with invasive roots in proximity to mains
- explore opportunities to divert low–flow rain water to adjacent landscape and street trees
- utilities shall be located in accordance with the corridors identified in the street openings conference specifications
- infill pit lids shall only be used where segmental paving is installed in commercial centres. They are not to be used for plain concrete due to cost
- purpose doesn't mention anything about underground services associated with water sewer gas electricity telecommunications
- utilities shall be located in accordance with the corridors identified in the street openings conference specifications



MACQUARIE UNIVERSITY// ASPECT STUDIOS

D8 PUBLIC DOMAIN FURNITURE

Purpose

Furniture elements form an integral part of the public domain identity, reinforcing the character of Northern Beaches. They provide important amenities for pedestrians and add functionality and vitality to the public realm.

Guiding Principles

- public domain elements are designed as a suite of elements, and establishes a clear hierarchy and coherent character for the LGA
- allowance for unique and bespoke furniture elements to be introduced into character areas where relevant and practical, and subject to Council approval
- furniture needs to be consistent in colour, form and detailing. Refer to Section F for details
- location of furniture of elements needs to allow for access for maintenance vehicles
- street elements should be co–located as often as possible in a way that contributes to street amenity and function. For example, seating should be located under street trees, or rubbish bins located near traffic signals at pedestrian crossings
- furniture selection priorities ergonomic design to enhance performance and all access function
- furniture constructed with 'whole of life' and durability for material selection incorporating climate resilience principles
- Rubbish bins should be situated to be readily identified by users without impacting on visual amenity

Design Standards

- street furniture must be sited within the Furniture Zone or within kerb extensions
- street furniture is to be clear of pedestrian paths of travel and not inhibit desire lines
- all street furniture, including street lighting, should typically be located 600mm from the face of adjacent kerb, except for seating for which it is preferable to locate 1m from the face of kerb
- space seats at regular intervals along footpaths to allow for less able bodied people the opportunity to rest. Seats should have back and arm rests and conform to AS1428 standards. The interval distance between seats may need to be decreased if the footpath is particularly steep, or where there are large populations of elderly or less able bodied people nearby (eg adjacent nursing homes or hospitals)
- provide opportunities for furniture to be multi-function, especially in parks, e.g. encourage play/ climbing for children, exercise or integrated art
- Bins located away from view points
- In shopping strips, design and place rubbish bins in strategic locations to avoid overuse by privately owned shops which generate significant waste volumes
- Avoid rubbish bins being placed in locations which would enable the bin to be used as a recreational structure eg skate ramps



WALTER GORS PARK// ASPECT STUDIOS

D9 LIGHTING

Purpose

Lighting within public spaces helps to define a positive urban character and supports night time activity and safety.

Guiding Principles

- ensure lighting does not have an adverse effect on adjoining residences
- Street lighting, including roadway, pedestrian and cycleway lighting, used in conjunction with street trees as an organising element establishes the rhythm of the streetscapes
- lighting to urban plazas and spaces adjacent to retail and outdoor dining assists in creating opportunities to encourage night activity and promotes safe urban spaces
- consideration should be given to dimmable fittings to provide lower lighting levels during dining hours and increasing to provide a well-lit pedestrian zone after-hours
- energy efficient lighting should be used in all lighting scenarios. Lighting should reference energy efficient options, appropriate colour temperature of the lights for the location and measures including the use of sensor lights were feasible. i.e. where lighting is not required for CPTED purposes
- within the Northern Beaches LGA custom lighting including seasonal lighting may be considered for areas of special significance. Any suite of lighting shall still reflect council principles of durability and appropriateness and should be decided in consultation with Council
- investigate opportunities for smart poles that provide multifunction facilities e.g. Street banners, signs and electric vehicle charging

Design Standards

- street lighting is to be in accordance with Ausgrid and relevant Australian Standards
- lighting to parks and reserves is to comply with Australian Standards and focused on primary pedestrian paths through the space
- options for energy efficient lighting should be investigated where possible
- lighting to comply with Councils Lighting guide



SYDNEY ROAD PLAZA BESPOKE LIGHTING//KAREN WATSON

D10 SMALL BUILDINGS AND SHADE STRUCTURES

Purpose

Small buildings and structures include park amenities and storage facilities, shade structures and umbrellas.

Well designed and correctly positioned structures play an important role in providing amenity, shade and gathering spaces within in the public domain.

Consideration for access for all abilities, surveillance and safety, and shade should be given within the design of the structure and its position within the public domain.

Small buildings and structures could consider green walls/decorative planter boxes/community herb gardens to promote green cover, sustainable messaging and sense of community.

Consideration should be given toward the role of the structure in providing opportunities for shade, and designing it appropriately. Guidelines to Shade - A practical guide for shade development in New South Wales, 2013, provides further information.

Design Standards

- ensure Building Code of Australia / National Construction Code (BCA/NCC) compliance is achieved
- prioritise rainwater collection for water re-use
- ensure natural ventilation is achieved
- improve energy, water and waste efficiencies such as the use of solar panels and other sustainable initiatives are encouraged
- provide amenities that respond directly to demand, both now and in the future
- provide opportunities for adaptability and multi-use
- ensure safety and surveillance in accordance with crime prevention through environmental design (CPTED) principles
- provide equal access, and logical connections from other facilities (such as amenities building, car park or kerb)
- ensure that the structure is aesthetically pleasing, incorporates the use of a variety of materials and finishes where appropriate and ensure design and finishes are of high architectural merit
- ensure the building coexists with any other existing structures in the vicinity and appropriately addresses the character and context of the locality



NARRABEEN LAGOON SHADE STRUCTURE// NORTHERN BEACHES COUNCIL

D11 BUS SHELTERS

Purpose

Bus shelters within the streetscape provide important environmental protection and seating opportunities for public transport commuters.

Guiding Principles

- the location of bus shelters should be outside the main path of pedestrian travel and should minimise clutter on streets and within public spaces
- bus shelters located at high volume bus stops along key arterial roads should reflect the needs of commuters including visual permeability and safety
- bus shelters should be designed to maximise shade opportunities, especially at times of the day and year when the shelters experience their highest use
- bus shelters can be used for art,community information or advertising

Design Standards

- bus shelters shall be designed and allocated to ensure compliance with standards for accessible public transport (DSAPT) and Australian Standards Contact Northern Beaches Council for further information on Bus Shelters and suppliers contract
- provide amenities such as furniture with the opportunity to integrate wifi and charging stations



DEE WHY BUS SHELTER// ASPECT STUDIOS

D12 BUILDING AND STREETSCAPE INTERFACES

D12.1 OUTDOOR DINING

Purpose

Outdoor dining is a key component of delivering lively and engaging urban areas, and assisting with activation of public spaces both during day time and night time hours.

Guiding Principles

- it is recognised that not all public spaces are suitable for outdoor dining and each location shall be treated on its merits to ensure safety of restaurant patrons and access for pedestrians
- within the Northern Beaches LGA outdoor dining opportunities should support inclusive access and design quality
- locate outdoor dining areas so as to not have a negative impact on adjoining footpath areas or cause roadside hazards for passing cyclists and motorists
- maximise street tree planting to provide amenity for outdoor dining areas

Design Standards

- provide a clear, unobstructed footpath zone so pedestrian through movement is maintained
- for further information refer to Northern Beaches Council's 'Outdoor Eating Area Policy,' or contact Council



MANLY LANEWAY// KAREN WATSON

D12.2 STREET AWNINGS

Purpose

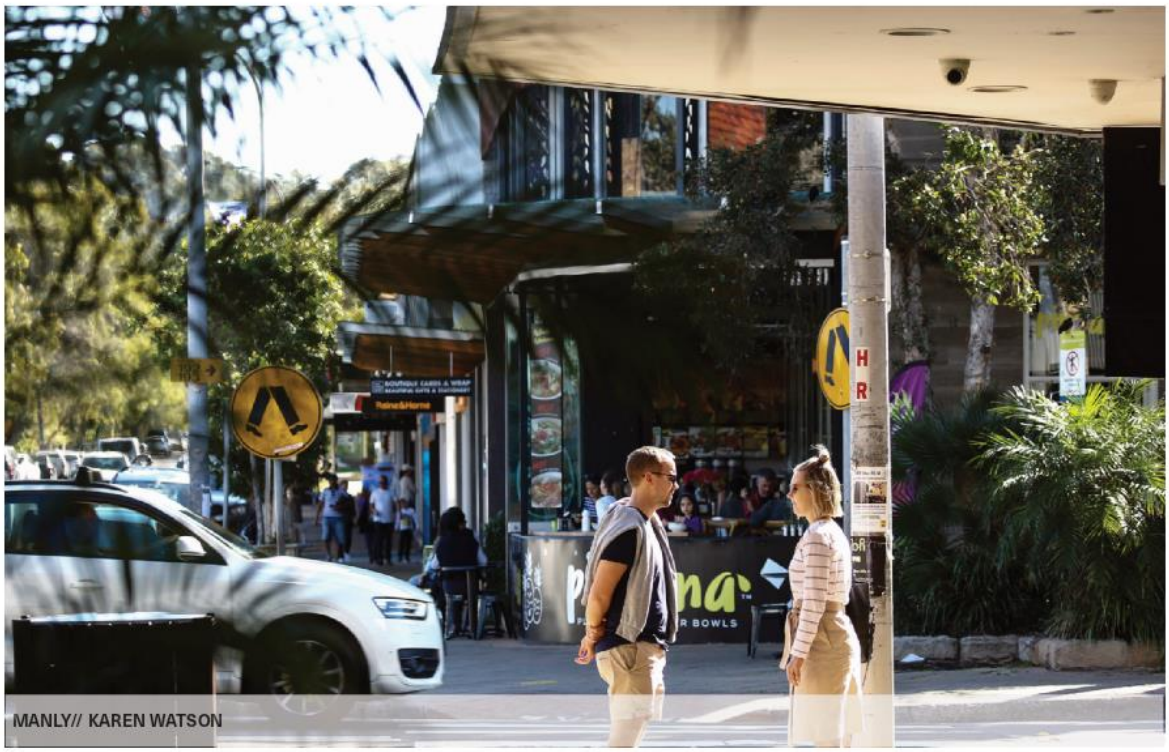
Awnings form an integral part of the streetscape elements, defining character and providing shade and weather protection for active streetscape areas.

Guiding Principles

- awnings must form an integral part of the architecture of the building and be designed as continuous for the building frontage of the development including corners and above vehicle entry points
- awnings should be designed to maximise shade and shelter, especially at times of the day and year when the street experiences its highest use and at times of high UV radiation
- awnings are to be located between the ground and first floors to maximise weather protection, and located at a height that ensures continuity in appearance with adjacent awnings
- awnings should have a relationship to any distinctive features of the building awnings should ensure any lighting fixtures are recessed into the awning and all wiring and conduits are concealed

Design Standards

- awnings are to be setback to provide minimum 1.5 metre from the face of the kerb to accommodate utility poles, street trees and greening, and vehicles in the kerbside lane
- where street trees are limited by awnings, opportunity for planting within the parking lane is encouraged
- be cantilevered and non-trafficable
- slope away from the kerb to conceal gutters and downpipes
- be integrated within the building street address facade
- where solar access is limited consideration to the use of glazed awnings will be assessed on merit
- cut out segments in awnings are not acceptable, unless integral to the structural design and intent of the building it is attached to



MANLY// KAREN WATSON

D13 SIGNAGE AND WAYFINDING AND INTERPRETATION

Purpose

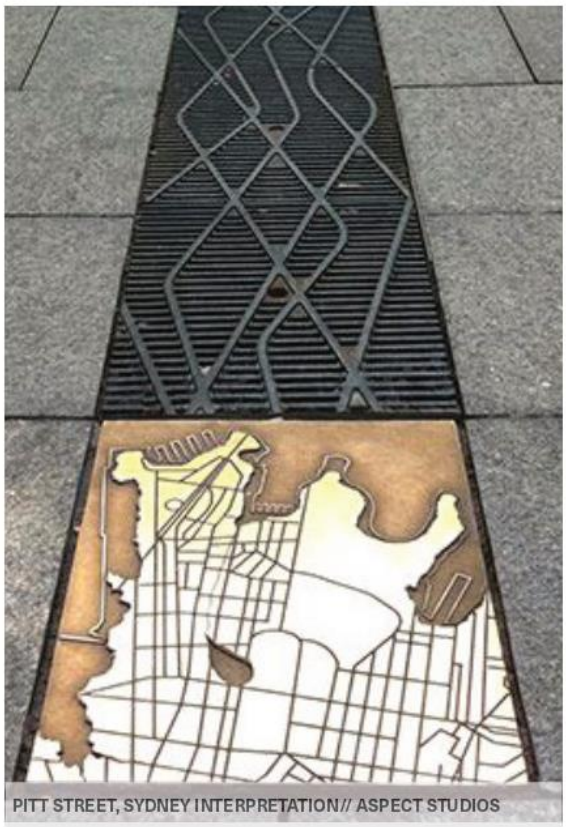
A co-ordinated suite of signage is an important component in achieving legible and quality public open spaces.

Guiding Principles

- where appropriate, signage elements, both wayfinding and interpretative, should be integrated in the public domain and existing site features to minimise clutter in the public domain. (Applications can include paving inlay, signage attached to buildings, attachment to existing poles or fence rails).
- suburb identification signage to be allocated within a vegetated setting where possible, and to be easily legible from a passing car
- incorporate public art projects into infrastructure upgrades
- include electronic signage in some places for real time and just in time messaging

Design Standards

- signage to comply with Council's Style Guide
- signs should be constructed from a durable material that is easy to clean and graffiti resistant, and meets Council's longevity requirements
- all signs to be designed and located in accordance with Australian Standards
- all signage is to be located so as not to obstruct the path of pedestrian or cycle travel
- all signage should be made of sustainably sourced or recycled materials



PITT STREET, SYDNEY INTERPRETATION// ASPECT STUDIOS



INFORMATIVE SIGNAGE // LEA LENNON IMAGE

D14 TREES AND UNDERSTORY PLANTING

D14.1 TREE SPECIES SELECTION

Purpose

Urban trees are essential to the health of our urban villages and are valued for their contribution to improving the quality of life in urban environments through social, environmental, and economic benefits.

Tree planting in public spaces improves environmental quality, reduces the impacts of urban heat island effects, enhances visual continuity, shade and unity, and reinforces local identity and character.

Critical to the creation of a climate resilient community is the need for increased tree canopy and understorey planting across the entire LGA.

Guiding Principles

- urban trees provide temporary relief and comfort in public spaces and reduces urban heat impact
- the density and spread of the tree canopy should be considered when selecting trees that will provide shade. *Guidelines to Shade - A practical guide for shade development in New South Wales, 2013,* provides further information
- street trees improve the visual quality of the streetscape to create an attractive urban setting.
- street trees improve air quality, absorb carbon and collect rainfall
- select trees that are appropriate for the site environmental conditions with regard to soil, wind, solar
- select appropriate trees according to the location and installation treatment to ensure the healthy growth and long term benefits
- selection of tree species should consider adjacencies to existing planting, in particular remnant and endemic stands of vegetation
- tree planting location, and species selection should consider potential conflicts with above and below ground services
- street tree selection is historically dominated by single species. Whilst this results in an attractive urban setting, this does increase the susceptibility of failure due to pests and diseases and failure due to changes to the urban climate. Urban street trees of a diverse range of species improves tree canopy resilience

Design Standards

- refer Section G this document for a range of appropriate street and park trees recommended by Council
- street trees to be planted at 6m to 12m centres, located to avoid utilities
- planting within hardpave areas should utilise structural load bearing modules, such as Stratavault system, to maximise available soil volume for root spread
- select street trees of a diverse range of species to improve tree canopy resilience and biodiversity.
- select tree species endemic to the Northern Beaches to enhance remnant forests and native fauna species where possible
- consider frangibility of trees within streetscapes
- adhere to RMS requirements and driver sight distances
- palms such as Cabbage Tree Palms (indigenous to the northern beaches) shall not be planted in pavements due to palm frond drop and, if considered, must be planted into large garden beds
- port Jackson Fig (indigenous to the northern beaches) shall not be planted in pavements due to root spread and, if considered, must be planted into large garden beds
- tree species selection and the proximity of tree planting to carriageways to not impede access by maintenance and service vehicles
- assess whether measures to manage or reduce root damage of paving such as root control barriers are required
- tree species for streets within bushfire asset protection zones will need careful selection for fire retardant properties. Refer to Council or RFS as required



ASPECT STUDIOS IMAGE

D14.1 TREE SPECIES SELECTION

Indicative Tree Species

The tree list provided below is indicative only, and subject to Northern Beaches Council approval.

This tree list is subject to accordance with the local vegetation associations existing within the locality.

The adopted manly council street tree masterplan remains applicable and is to be read in conjunction with this document.

High streets and RMS roads

Large trees:

— *Livistona australis* - Cabbage Tree Palm
— *Lophostemon confertus* - Brushbox
— *Waterhousia floribunda* - Weeping Lillypilly

Small to medium trees:

— *Buckinghamiana celsissima* - Ivory Curl
— *Elaeocarpus eumundi* - Smoothed Leafed Quandon
— *Lagerstroemia indica* - Crepe Myrtle
— *Syzygium leuhmannii* - Riberry
— *Tristaniopsis laurina* - Water Gum
— *Xanthostemon chrysanthus* - Golden Penda

Where suitable unobstructed ground area and soil volume is available:

— *Acmena smithii* - Lilly Pilly
— *Ficus rubiginosa* - Port Jackson Fig

Residential Streets

Large Trees:

— *Livistona Australis* - Cabbage Tree Palm
— *Lophostemon Confertus* - Brushbox
— *Waterhousia Floribunda* - Weeping Lillypilly

Small To Medium Trees:

— *Buckinghamiana Celsissima* - Ivory Curl
— *Callistemon Viminalis* – Bottlebrush
— *Elaeocarpus Eumundi* - Smoothed Leafed Quandong
— *Elaeocarpus Reticulatus* - Blueberry Ash
— *Hibiscus Tiliaceus* - Native Hibiscus
— *Lagerstroemia Indica* - Crepe Myrtle
— *Syzygium Leuhmannii* - Riberry
— *Stenocarpus Sinuatus* - Firewheel Tree
— *Tristaniopsis Laurina* - Water Gum
— *Xanthostemon Chrysanthus* - Golden Penda







Parks And Open Spaces

Large Trees:

- *Acmena Smithii* - Lilly Pilly
- *Angophora Costata* - Sydney Red Gum
- *Angophora Floribunda* - Rough Barked Apple
- *Banksia Integrifolia* - Coastal Banksia
- *Corymbia Maculata* - Spotted Gum
- *Corymbia Gummifera* - Bloodwood
- *Eucalyptus Botryoides* - Bangalay
- *Eucalyptus Haemastoma* - Scribbly Gum
- *Eucalyptus Pilularis* - Blackbutt
- *Eucalyptus Punctata* - Grey Gum
- *Eucalyptus Paniculata* - Grey Ironbark
- *Eucalyptus Robusta* - Swamp Mahogany
- *Eucalyptus Sieberi* - Silver Top Ash
- *Ficus Macrophylla* - Moreton Bay Fig
- *Glochidion Ferdinandi* - Cheese Tree
- *Livistona Australis* - Cabbage Tree Palm
- *Melaleuca Quinquenervia* - Paperbark
- *Syncarpia Glommulifera* - Turpentine

Small To Medium Trees:

- *Angophora Hispida* - Dwarf Apple
- *Banksia Serrata* - Old Man Banksia
- *Backhousia Myrtifolia* - Grey Myrtle
- *Ceratopetalum Apetalum* - Coachwood
- *Ceratopetalum Gummifera* - NSW Christmas Bush
- *Elaeocarpus Reticulatus* - Blueberry Ash
- *Eucalyptus Haemastoma* - Scribbly Gum
- *Ficus Rubiginosa* - Port Jackson Fig
- *Hymenosporum Flavum* - Native Frangipani
- *Melaleuca Armillaris* - Bracelet Honey Myrtle
- *Melaleuca Linariifolia* - Snow In Summer
- *Syzygium Paniculatum* - Magenta Cherry











D14.2 TREES ON PLANTED/ TURF VERGES

Purpose

Planted or turf verge treatments are promoted to reduce the extent of paved surfaces and provide separation between the footpath and the roadway.

Where footpaths exist or are being constructed, there should be a vegetated separation (verge) to reduce storm water runoff, capture pollutants and reduce the Urban Heat Island effect.

Trees on verges provide continuous canopy cover over the road corridor, including carriageway and verge areas, in addition to providing shade, amenity and comfort for footpaths and cycleways. Trees are located within turf or mass planting, and located behind the kerb, on both sides of the street.

Opportunities exist on low traffic roads to provide planted medians within the road carriageway These can assist in softening hardstand where wide carriageways exist and can contribute to improving pedestrian safety by deterring informal crossing.

Mass planting in verges could include planting of low grasses and shrubs, including herbs. Species selection should be mindful of height of plants, ensuring that plant selection does not obscure view lines within the road reserve.

Verge and median treatments should avoid planting of flowering shrubs that may potentially increase likelihood of bird strike along high speed roads, local streets or blister planting.

Design Standards

- provide a continuous row of street trees, spaced minimum 6m to maximum 10m, on both sides of the street, where space allows
- locate street trees as near as possible to the rear of the kerb to a minimum of 600mm from face of kerb.
- species selection should support endemic vegetation communities
- consideration toward species selection to be given in ensuring pedestrian safety and sightlines are maintained
- verge planting should not impede access for pedestrians entering or leaving vehicles in the curbside lane
- the location of planted verges needs consideration to ensure access to parked cars and utilities is maintained



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D14.3 STREET TREES IN THE CARRIAGEWAY AND KERB EXTENSIONS

Purpose

Tree planting in roadways provides the opportunity to supplement verge side tree planting, increase the tree canopy cover on a street, and calm traffic by narrowing the carriageway.

Tree planting in roadways should also be provided in situations where awnings or overhead wires constrain the establishment of medium to tall trees on the verge.

Design Standards

- maximise the use of trees in kerb extensions as traffic calming measures
- incorporate passive irrigation and water sensitive urban design measures wherever possible for trees in kerb extensions
- for these applications, Northern Beaches Council approval is required for tree surrounds that incorporate WSUD to determine feasibility/ applicability for use
- avoid trees in kerb extensions where conflicts with buses are likely to preclude the provision of local bus routes
- tree Guards should be considered as protection measures for trees in roadways or where vehicular movements have the potential to damage the roots

D14.4 STREET TREES IN TREE PITS

Purpose

Street trees planted in tree pits are in areas where paving extends to the base of the tree, and where soil volumes are provided under adjoining paved surfaces.

Tree pits are trafficable by pedestrians, and are provided in areas where pedestrian traffic is high, areas of outdoor dining, or available paved area for foot traffic is constrained.

Design Standards

- tree pits to be considered for high streets and laneways where space under and around trees can be used for alternate uses
- ensure minimum subsurface soil volumes are provided; refer Street Tree Soil Volume
- maximise use of permeable pavements in paved areas around tree pits to provide water infiltration to subsurface soil
- structural load bearing modules, such as Stratavault system, to be installed to maximise available soil volume for root spread
- incorporating short term access point for initial watering for establishment



PIRRAMA PARK// ASPECT STUDIOS



STRATAVAULT SYSTEM// CITYGREEN

D14.6 SOIL VOLUMES

Purpose

Tree roots typically growth within the top 500–600mm of soil depth, and may occasionally grow to a greater depth. Soil below a depth of 1000mm should not be included within soil volume calculations.

The alignment of service trenches, the space they occupy, and their possible restriction of natural root spread and development shall be considered in the calculation of available soil volumes.

Tree root barriers shall be installed adjacent utilities as far from street trees as possible, noting that in some isolated cases, they may require a closer proximity because of limited space.

Structural load bearing modules, such as Stratavault system, to be installed to maximise available soil volume for root spread.

Design Standards

Minimum soil volume requirements for street trees are as follows.

TREE SIZE	TYPICAL HEIGHT	RECOMMENDED MINIMUM SOIL VOLUME	
		PER TREE IN INDIVIDUAL TREE PIT	PER TREE IN SHARED TRENCH (TYPICALLY UP TO 3 TREES)
Small	To 4m high	8.65 m^3	5.80 m^3
Small/ medium	4–9m high	13.80 m^3	9.20 m^3
Medium	7–10m	21.40 m^3	14.25 m^3
Tall	9–12	32.65 m^3	21.80 m^3
Tall & wide	8m+ canopy 14m+ wide	43.70 m^3	29.15 m^3



STRATAVAULT SYSTEM // CITYGREEN

D15 WSUD

Utilising water sensitive urban design (WSUD) initiatives reduces storm water run-off, treats pollutants and protects our waterways.

WSUD reduces the extent of hard surfaces, assists in the treatment of storm water runoff and can contribute to irrigation of landscape areas, whilst assisting the management and protection of the catchments within the Northern Beaches LGA.

WSUD treatments in the roadway should be implemented wherever it is deemed appropriate to enhance place making, livability, aesthetics, urban heat island mitigation, natural corridors, in addition to improving ecosystem services.

A range of typical WSUD treatments which could be considered within public spaces include swales, raingardens, passive irrigation and permeable paving.

Use of WSUD devices will be assessed by Northern Beaches Council on a case-by-case basis to ensure appropriateness and fit for purpose. In addition to the storm water management role, all of these systems should be designed to be integral, aesthetic parts of the streetscape.

D15.1 PASSIVE IRRIGATION

Purpose

Passive Irrigation refers to the directing of rainwater runoff from sealed or paved surfaces to landscape areas and tree pits. All impervious surfaces within the street should drain to planting areas and tree pits to maximise passive irrigation of landscape elements.

Design Standards

- design slotted kerbs/ flush kerbs into tree pit surrounds to allow run-off to passively enter the tree pit
- divert high flows to larger drainage infrastructure to avoid damage and maintenance issues for WSUD systems



ZETLAND// ASPECT STUDIOS

D15.2 SWALES AND RAINGARDENS

Purpose

Swales and Raingardens allow rainwater and surface run-off to infiltrate and be filtered by growing media before entering subsurface drainage systems.

They are used to replace or supplement traditional storm water pits and pipes

Swales carry water and are designed as shallow, open, planted channels to convey runoff and remove pollutants. Swales slow water flow and trap sediments to improve the water quality.

Raingardens have a special soil filter media that can remove pollutants from road runoff.

Swales and raingardens have capacity to collect water from storms and slowly release them to the downstream environment, thus reducing the impacts of highly erosive flows on waterways.

Design Standards

- swales and raingardens should be provided as an alternative to a piped drainage system where space and grade is available
- ensure subsurface drainage systems can be easily maintained
- ensure inlet zones can accommodate first flush flows and pollutant loads and can be daily maintained
- use endemic native species and introduce habitat and food production plants where possible



WOLLONGONG UNIVERSITY// ASPECT STUDIOS

D15.3 PERMEABLE PAVING

Purpose

Permeable paving enables hard surfaces to perform a water quality improvement, quantity reduction and cooling function.

Subsurface soil structure systems, such as structural vaults or cells, are encouraged for the footpath pavements for tree planting zones, that are conducive to root growth under pavements, and are engineered to structurally support pavements.

Selection should be mindful of maintenance regimes, longevity and aesthetics.

Design Standards

- use permeable paving in lieu of traditional impervious surfaces, such as in kerb extensions, parking bays, cycle lanes, laneways, or driveways
- maximise use of permeable paving adjacent street tree planting to encourage the spread and growth of tree roots
- design permeable pavements to take account of local underlying geology and soil conditions
- locate areas of permeable paving to maximise passive irrigation of tree root zones for street trees in paving, and use subsurface structural soils to support pavements



PERMEABLE PAVEMENT AT SMITH STREET MANLY// ASPECT STUDIOS



PERMEABLE PAVEMENT// ASPECT STUDIOS





Open Space, Parks & Reserves

E1 OVERVIEW

A significant portion of the Northern Beaches LGA is made up of open space.

Consisting of natural bushland, parks, coastal beaches and headlands, harbours, lagoons and waterways, it is an important resource for biodiversity and flora and fauna habitat, as well as for recreation and enabling residents and visitors to connect with nature and each other.

Parks and reserves in urban areas support local recreation, play and sporting needs. With increased population and development, the demands on use of these open spaces will increase. These spaces are critical to the livability of neighborhoods and to the health and wellbeing of the community.

Contingent to this is the protection of the unique environmental conditions across the Northern Beaches and the need to build future resilience to climate change into our infrastructure through sustainability and the effective protection, creation and enhancement of parks and open space.

The design of all open spaces in the Northern Beaches will be guided by the following guidelines.

Refer to the Character Areas Material palette for specific material selection based on type and location.


We aspire to protect the natural and built environment from the risk and impacts of global and local pressures
We aspire to be leaders in managing our resources sustainably and for the long term ensuring that development is balanced with our lifestyle and environment
— Shape 2028 Northern Beaches Community Strategic Plan
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E2 NATURAL AREAS PARKS AND RESERVES

Natural Area Parks and Reserves are those adjacent to National Parks and waterways, including areas of significant remnant bushland.

These consist of

- Coastal headlands and Escarpments;
- Lagoons and Wetlands; and,
- Bushland

These areas generally cater for sustainable recreational use, and allow user interaction with the natural environment.

Included within bushland parks and reserves are playgrounds, barbecue areas, walking trails and boardwalks.

Design Considerations

- development and designs will ensure the protection of flora and fauna
- the palette of materials is durable to potential wet or saline conditions
- consists of a palette of materials that complements the natural bushland character, such as sandstone paving and walling, timber, crushed stabilised sandstone pathways
- provision of ample well designed and appropriately located built and natural shade, to provide comfort and assist in mitigating over-exposure to UV radiation from the sun
- consideration should be given toward the inclusion of wetlands, rain-gardens and other WSUD measures to mange flows and water quality discharging to waterways
- equal access opportunities that allow all users to experience natural areas should be implemented where appropriate and where grades and landform permit. This includes provision for DDA (Disability Discrimination Act) compliant seating, wheelchair accessible materials and grades on footpaths, and disabled parking bays provided
- inclusion of endemic plant species
- opportunities to include signage and interpretation to share specific qualities of the site, indigenous knowledge and history and integrated art overlays are encouraged


WARRIEWOOD VALLEY// NBC


NARRABEEN LAGOON// SIMON WOOD


RYDE RIVERWALK//ASPECT STUDIOS


RYDE RIVERWALK //ASPECT STUDIOS

E3 OCEAN BEACH PARKS AND RESERVES

Ocean Beach Parks and Reserves consist of

- Ocean beach Parks;
- Headland Parks;
- Waterways;
- Tidal Pools and Rock Pools; and,
- Boardwalks (including the Coast Walk)

They include facilities such as playgrounds, picnic and barbecue areas, walking trails and beach access points.

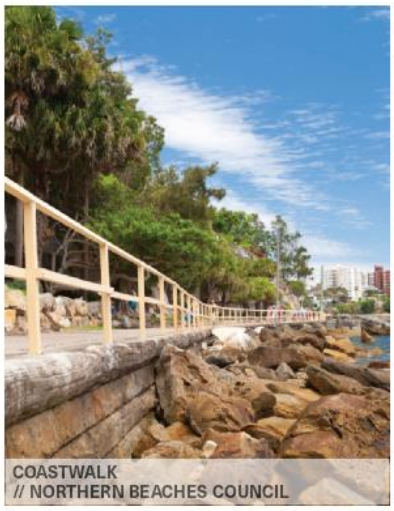
They are places that have a high level of visitation by both residents and tourists, provide recreational opportunities of seasonal variation, as well as including areas of significant natural environment.

Coast Walk

Trail improvements along our breathtaking coastline provide for a unique and memorable walking experience like no other, all the way from Manly to Palm Beach. Alongside the new building work being done to connect sections of existing walkway, we are also identifying opportunities to explore our beach culture, history, the spectacular natural environment and local Aboriginal heritage through public art and interpretive storytelling.

Design Considerations

- provision of high quality palette of materials that is able to withstand highly exposed coastal conditions (wind, salt spray, high sun exposure, and potential inundation)
- well-designed and correctly positioned shade is a priority for outdoor recreation destinations and foreshore parks, particularly in areas such as beach fronts where UV radiation is at its highest at particular times of the year, and where visitors are likely to be wearing less clothing that protects them from UV radiation
- equal access opportunities that allow all users to experience ocean parks and reserves should be implemented where appropriate and where grades and landform permit. This includes provision for DDA compliant seating, wheelchair accessible materials and grades on footpaths, and disabled parking bays provided
- inclusion of endemic plant species
- opportunities to include signage and interpretation to share specific qualities of the site, and integrated art overlays are encouraged



COASTWALK
// NORTHERN BEACHES COUNCIL



PIRRAMA PARK// ASPECT STUDIOS



BONDI TO BRONTE COASTAL WALK// ASPECT



PIRRAMA PARK// ASPECT STUDIOS

E4 FORESHORE PARKS AND RESERVES

Foreshore Parks and Reserves include;

- Harbour Foreshores
- Pittwater waterways
- Lagoons

Open spaces parks and reserves along harbours and waterways consist of parklands, playgrounds, jettys and recreational facilities. They provide public access to the water's edge, and important recreational opportunities such as sailing, pabddleboarding, walking and cycling.

They have a high level of visitation for residents and tourists, particularly on weekends, and provide space for exercise, walking, cycling, recreation, gathering and access to the natural environment.

Design Considerations

- provision of a high quality, low maintenance and robust material palette that is also able to withstand highly exposed conditions to wet or saline conditions, or potential temporary inundation
- provision for shared paths, generous footpaths and off road cycleways to connect to neighborhoods
- consists of a palette of materials that complements the natural foreshore character
- provision of ample well designed and appropriately located built and natural shade, to provide comfort and assist in mitigating over-exposure to UV radiation from the sun
- consideration should be given toward the inclusion of wetlands, rain gardens and other WSUD measures to mange flows and water quality discharging to waterways
- equal access opportunities that allow all users to experience natural areas should be implemented where appropriate and where grades and landform permit. This includes provision for DDA compliant seating, wheelchair accessible materials and grades on footpaths, and disabled parking bays provided
- inclusion of endemic plant species
- opportunities to include signage and interpretation to share specific qualities of the site, and integrated art overlays are encouraged


TIMBER DECKING// NORTHERN BEACHES COUNCIL


FORESHORE//KAREN WATSON


ASPECT STUDIOS


PYRMONT// ASPECT STUDIOS


WESTON STREET// ASPECT STUDIOS

E5 PUBLIC PARKS AND RESERVES

Public Parks and Reserves Includes:

- Regional/ Developed Parks and Village Greens
- Neighborhood and Local Parks
- Sport grounds

Public Parks and Reserves include a wide variety of public park types, including sporting fields, local and regional scaled parks, road reserves and playgrounds.

They are mostly located within close proximity to populated areas, and provide a wide range of recreational activities, both passive and active.

Sporting fields in the Northern Beaches LGA are generally located within urban areas, close to residential communities and other public facilities such as schools. Sporting fields and facilities should be designed in accordance with Council's Sports ground Strategy (2017).

Playgrounds are important places for child health and well-being and bring family and friends together. They encourage active and healthy lifestyles and should be designed to ensure inclusive, safe, and challenging play environments are created.

Design Considerations

- provision of a unified palette to that of the streetscape surrounds.
- ensuring a highly durable palette to cater for high demand of use
- care should also be taken in the choice of colour of light coloured paving, softfall and other manufactured ground surfaces. Although light colours do not store heat as much as dark colours, they increase the reflectivity of UV radiation. A balance needs to be found between reducing dark surfaces/colours (which store heat but which do not reflect UVR) and light surfaces (which reflect UVR but which do not get as hot)
- well-designed and correctly positioned shade is a priority for outdoor recreation destinations, particularly where there is high community use, over playgrounds and picnic areas where people gather for long periods of time
- equal access opportunities that allow all users to experience parks and reserves should be implemented. This includes provision for DDA compliant seating, wheelchair accessible materials and grades on footpaths, and disabled parking bays provided.
- inclusion of endemic plant species, and broad canopy trees
- opportunities to include signage and interpretation to share specific qualities of the site, and integrated art overlays are encouraged


ROPES CROSSING// ASPECT STUDIOS


NORTHERN BEACHES COUNCIL


NORTHERN BEACHES COUNCIL


DARLING QUARTER//ASPECT STUDIOS

E6 DISTINCTIVE AND HIGH PROFILE SPACES

Within the streetscape and public open space arrangements of the Northern Beaches, distinctive areas and areas of high profile and use provide opportunities to create spaces of unique character, with variation from standard materials and fixtures.

Utilised for small events, major community and high-profile events, these spaces create an identity for the Northern Beaches and assist in attracting people locally, as well as from further abroad, into the region.

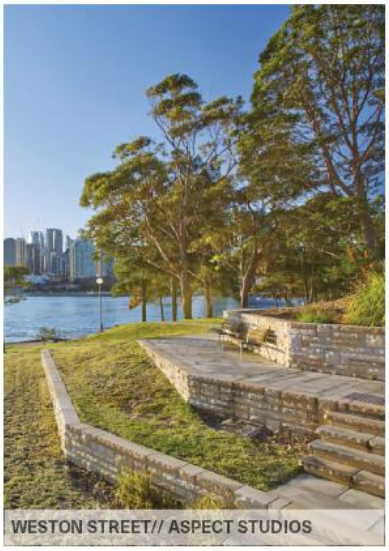
The development of a custom furniture, lighting and paving palette assists in denoting the spaces as iconic. Fixtures and finishes in these zones should reflect the high-use and occupation of these places, as well as maintenance regimes. It is imperative, however, that continuity of some base materials should be maintained to enhance legibility in the public realm.

Examples include: Manly Beach, Corso and Foreshore, Manly Wharf, Shelley Beach, Dee Why and Freshwater.

Within the Northern Beaches LGA custom finishes may be considered for Distinctive Areas and High Profile Spaces. Any suite of finishes shall still reflect council principles of durability and appropriateness and should be decided in consultation with Council.

Design Considerations

- providing a palette of high-quality materials, furniture and fixtures with custom elements that cater for the high level of usage and prominence within the region
- allowance for public art opportunities that respond specifically to the locality, where applicable
- a range of seating edges, low walls, raised decks and turf areas to provide areas for different sized groups to gather
- equal access opportunities that allow all users to experience the site should be implemented. This includes provision for DDA compliant seating, wheelchair accessible materials and grades on footpaths, and disabled parking bays provided.
- interpretive and directional signage, where required, located adjacent to main path of travel
- incorporation of three-phase power supplies into the space to support community activities
- consideration for heavy vehicle access to set up stages, access points for utility services, vehicles and waste
- appropriate placement and access for waste and servicing during and after events
- design considerations given to visitor traffic and event signage, including promotional banners and wayfinding
- access to appropriate site controlled lighting
- ample well designed and appropriately located built and natural shade, to provide comfort and assist in mitigating over-exposure to UV radiation from the sun



WESTON STREET// ASPECT STUDIOS



MONASH NORTHERN PLAZA// ASPECT STUDIOS



SEATING TERRACES// ASPECT STUDIOS

E7 HERITAGE AREAS AND PLACES OF CULTURAL SIGNIFICANCE

Heritage Areas and Areas of Cultural Significance are areas that consist of a strong heritage or cultural context through which built form and landscape character should be expressed with an appropriate design response.

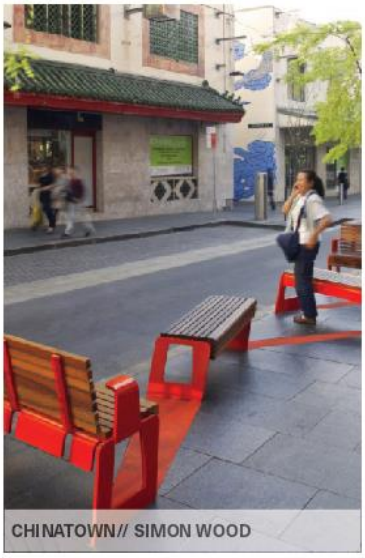
Areas with Heritage or Cultural significance may vary from the standard palette materials and finishes, either to retain and enhance existing materials, or to draw attention to the unique qualities of the site.

Northern Beaches Council will assess the proposed open space selection of heritage context areas on a case by case basis.

Examples of Heritage Areas and Places of Cultural Significance include: North head Quarantine Station, Scotland Island, North Head, Ivanhoe Park and Manly Dam State Park.

Design Considerations

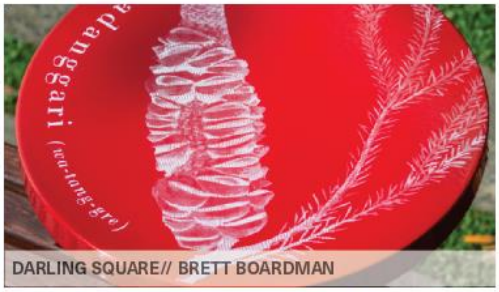
- opportunity for retention of heritage features within the new design. Retention of Heritage Features in streetscapes and open spaces reinforce a sense of place and local identity. These can include stone kerbs and gutters, heritage stone setts or blocks, cast iron service pit lids, stone walling
- heritage elements identified for retention need to be identified and assessed for incorporation as part of the new works
- selection of high quality materials and fixtures that respond to site. For example, Bega Pole top luminaire 77 910 K3 has been used in some areas within Northern beaches Council to date, and may be applicable to other heritage areas
- opportunity for interpretation and public art within the design to tell the unique story of site is encouraged.
- exploring opportunities to protect and enhance the natural beauty and ecological value of our significant cultural areas
- expressly recognising and celebrating first nations relationship to site, both past, present and future
- ample well designed and appropriately located built and natural shade, to provide comfort and assist in mitigating over-exposure to UV radiation from the sun
- equal access opportunities that allow all users to experience the site should be implemented. This includes provision for DDA compliant seating, wheelchair accessible materials and grades on footpaths, and disabled parking bays provided



CHINATOWN// SIMON WOOD



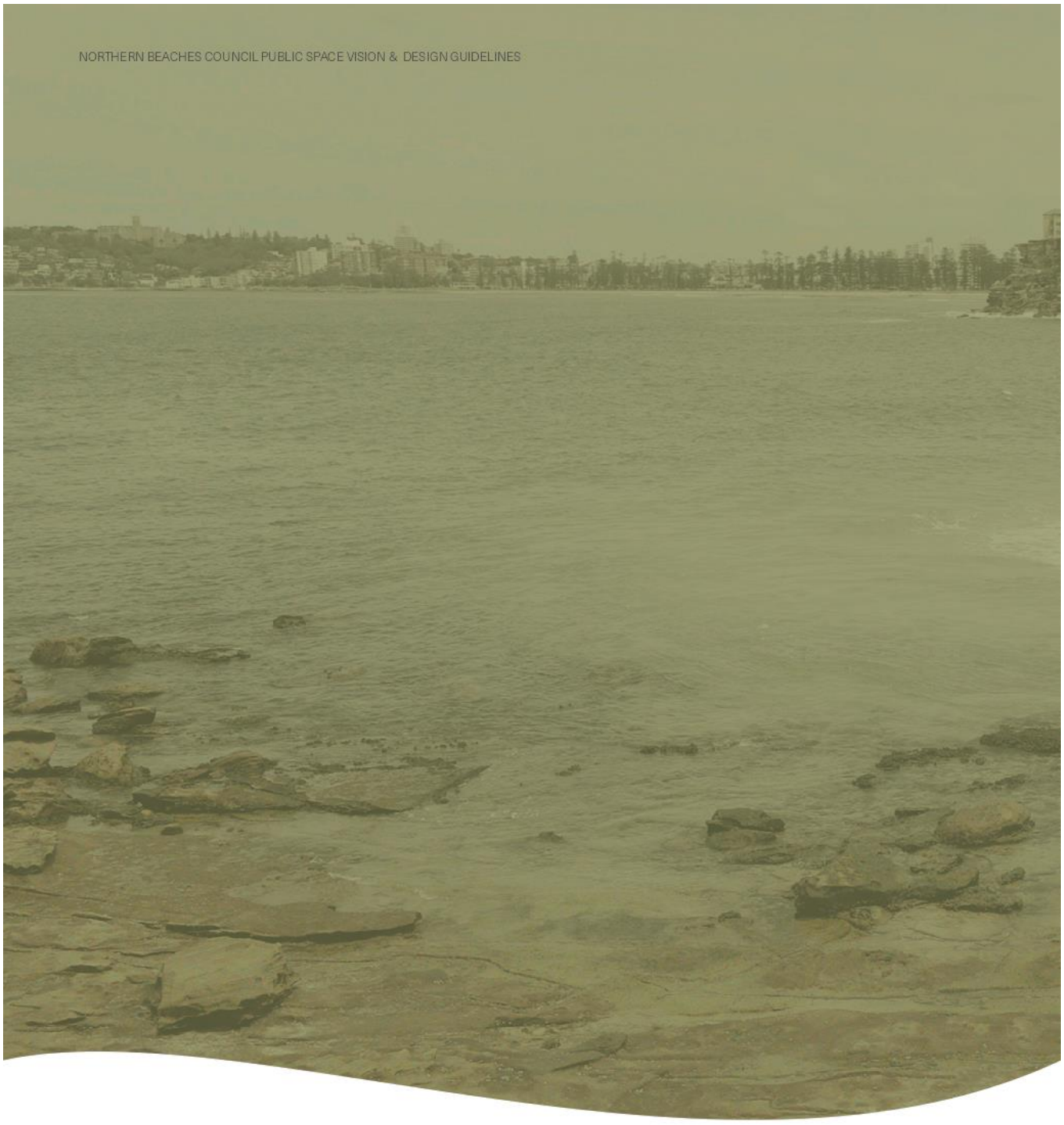
ANGEL PLACE// ASPECT STUDIOS

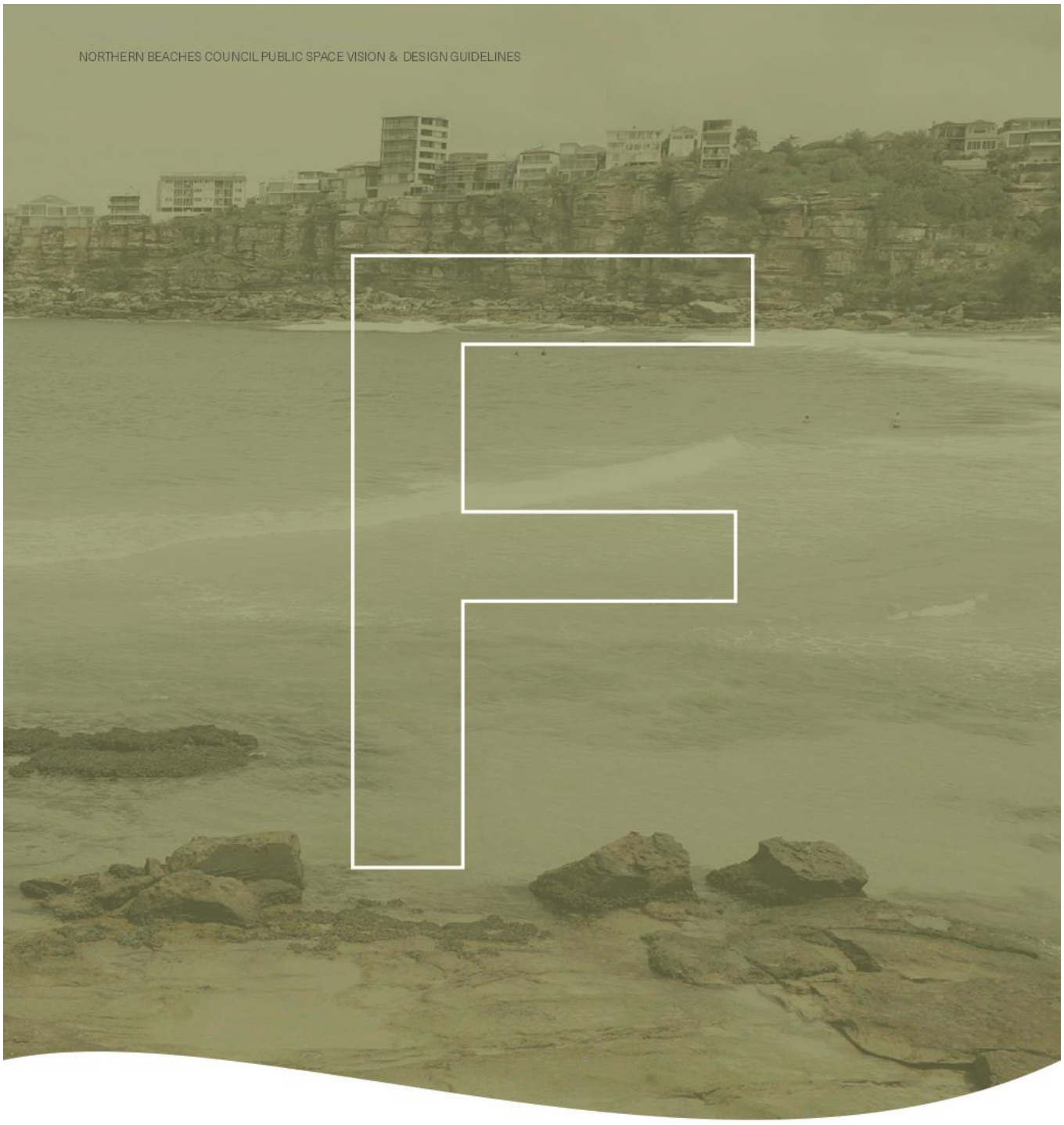


DARLING SQUARE// BRETT BOARDMAN



PIRRAMA PARK// FLORIAN GROEHN


NORTHERN BEACHES COUNCIL PUBLIC SPACE VISION & DESIGN GUIDELINES



Character Areas Material Palettes

F1 OVERVIEW

This section provides principles and objectives for the range of elements and materials used within public spaces.

Through consultation with the Community and Stakeholders, separate palettes of materials were selected for each character area; Bush, Beach, Urban and Waterfront.

The palettes aim to promote a cohesive identity while still recognising the unique character of individual areas throughout the public domain of the Northern Beaches LGA, reflecting the streetscape and open space hierarchies. All four palettes have a hierarchy of materials that are to be implemented according to streetscape hierarchy. The intent is for a similar quality of material across the LGA.

Design that is sustainable and reduces management and environmental costs shall be delivered through the selection of long lasting materials that are renewable and through the selection of design elements that reduce the impact to the natural environment. The acknowledgement of the need to build resilience to future climate change is embedded in the process and determination leading to the selection of materials that constitue the palettes.

The material palettes give broad guidelines to the use of ground surfaces and furniture elements whilst providing opportunity for design variation as a response to community desire for local character acknowledgment and specific sites.

Character Area Design Objectives:

- to unify like-spaces throughout the LGA through a consistent materials and elements palette
- to provide a clear hierarchy of quality to reflect popularity of use and maintenance regimes
- to consider sustainability objectives in materials and elements selection, including embodied energy, life cycle costing and provenance
- to use the palette to unify street and open spaces whist allowing for variations in elements
- to celebrate and reflect unique localities within Northern Beaches.
- to select materials that build on the existing materials used in the LGA to deal with incremental change over time.

CHARACTER AREAS



BEACH

Warm sandy tones to paving complement the coastal context.

Appropriate material selection for harsh exposed coastal environments

High quality materials in prominent areas with high visitation

Street trees and planting that are hardy to coastal environments and reinforce the local coastal character



URBAN

Grey tones to complement existing urban palette

Durable and sustainable materials for these high pedestrian use urban areas.

High quality materials appropriate for main employment and retail zones

Street trees and planting that are appropriate in scale and hardiness for installation within constrained urban conditions (paved footpath areas/adjacent awnings etc)



BUSH

Warm browns and natural textures to complement the bushland environment

Durable and low maintenance material selection for bushland locations

High quality materials for town and retail centres with high visitation

Street trees and planting that are predominantly endemic species, reinforce local bush character and expand biodiversity.



WATERFRONT

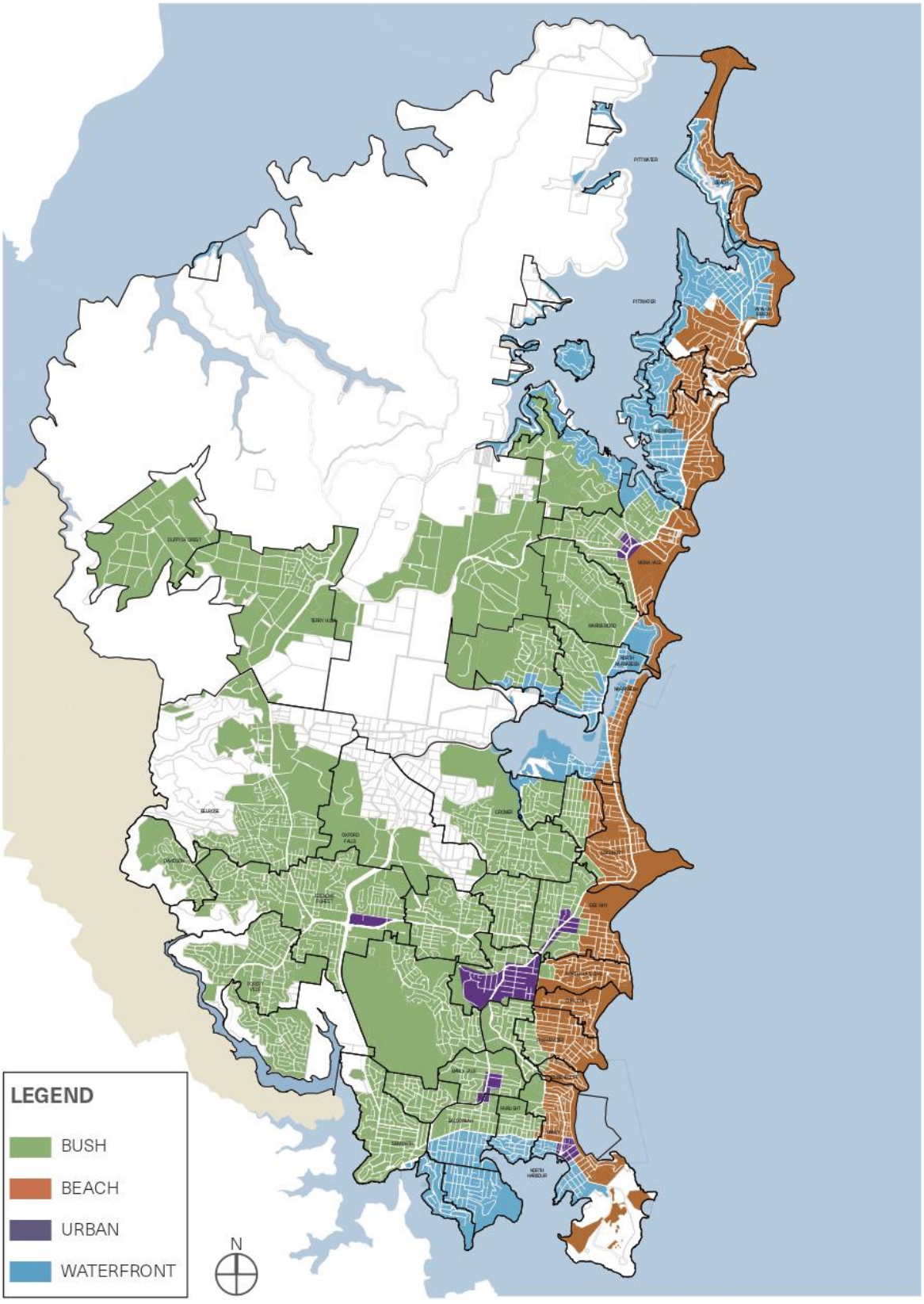
Warm sandy tones to paving complement the coastal context.

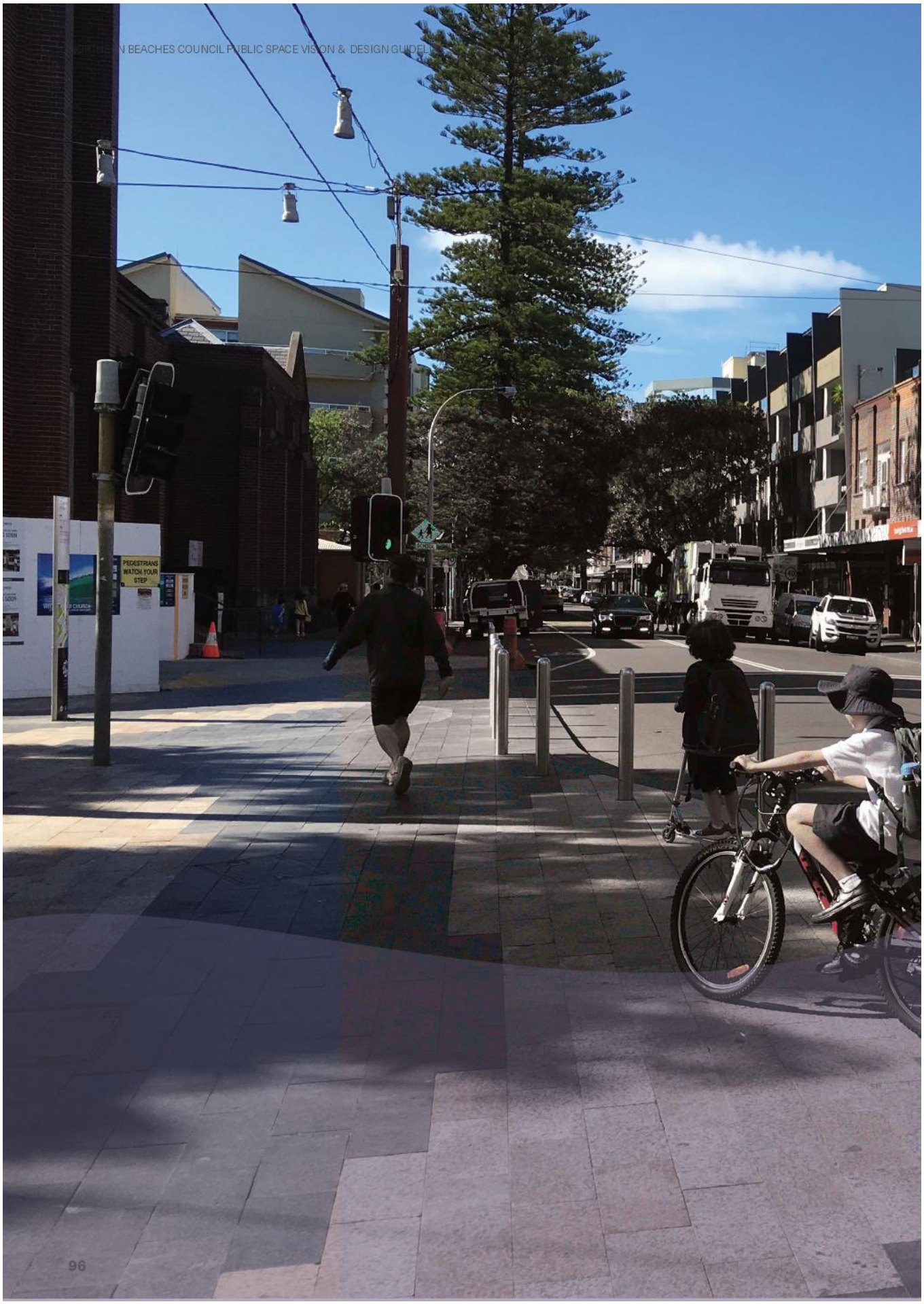
Appropriate material selection for harsh exposed coastal environments

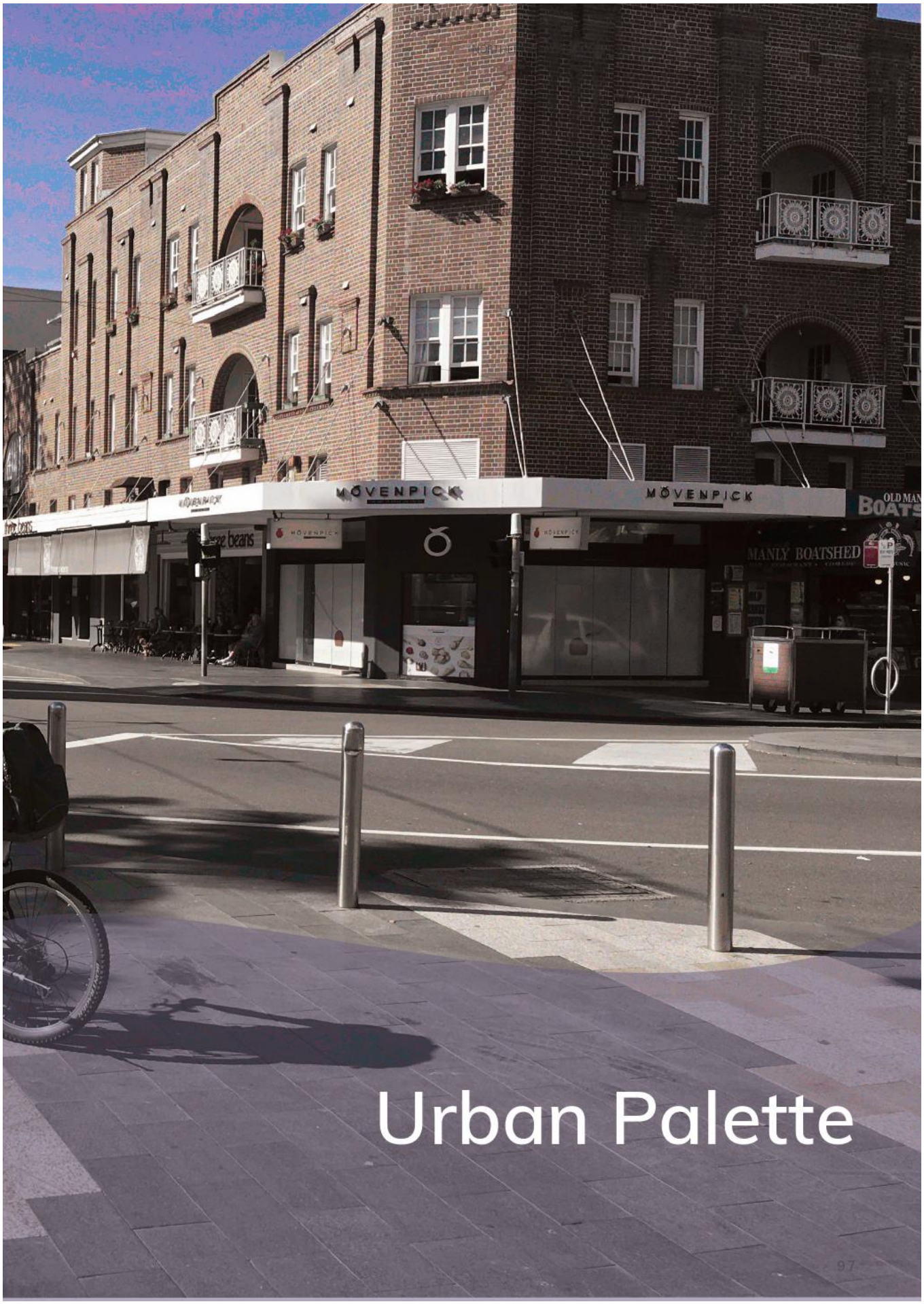
High quality materials in prominent areas with high visitation

Street trees and planting that are hardy to coastal environments and reinforce the local coastal character

NORTHERN BEACHES CHARACTER AREAS MAP




PEDESTRIANS
WATCH YOUR
STEP
96



Urban Palette

URBAN – HARDSCAPE

ELEMENT	SPECIFICATION	LOCATION
STREETS		
	GRANITE PAVERS SESAME GREY AND GREEN FINISH: EXFOLIATED SIZE: 600 X 300 X 40MM PATTERN: STRETCHERBOND BASE: CONCRETE SLAB	HIGH STREETS PLAZAS
	GRANITE COBBLES- SESAME GREY FINISH: EXFOLIATED SIZE: 90 X 90 X 70MM PATTERN: STRETCHER BOND BASE: CONCRETE SLAB	PEDESTRIAN LANES/ SHARED WAYS (VEHICULAR GRADE) RAISED THRESHOLDS (VEHICULAR GRADE) ALTERNATIVE FOR PLAZAS ALTERNATIVE FOR OUTDOOR DINING AREAS ON STREETS
	CONCRETE UNIT PAVING URBANSTONE GOLDEN GUNMETAL* FINISH: HONED, LIGHT SHOTBLAST SIZE: 400 X 400 X 40/50MM PATTERN: STACKBOND PARALLEL TO KERB/ BUILDING ALIGNMENT	HIGH STREETS- DEE WHY ONLY PLAZAS- DEE WHY ONLY
	GRANITE PAVERS RAVEN BLACK	MANLY ONLY HIGH STREETS PLAZAS- (CORSO, WHARF AND ESPLANADE SPECIAL PLACES AND EXCEPTED FROM STANDARD)
	GRANITE COBBLES- SESAME GREY FINISH: EXFOLIATED SIZE: 90 X 90 X 70MM PATTERN: STRETCHER BOND BASE: CONCRETE SLAB	MANLY ONLY PEDESTRIAN LANES/ SHARED WAYS (VEHICULAR GRADE) RAISED THRESHOLDS (VEHICULAR GRADE)
	INSITU CONCRETE OFF-WHITE CEMENT BROOM FINISH	LOCAL STREET FOOTPATH/ SHAREWAYS LOCAL COLLECTOR FOOTPATH/ SHAREWAYS
	POROUS ASPHALT	CYCLE LANE ON STREETS AND OPEN SPACES STREET PARKING LANE- WHERE POSSIBLE PUBLIC PARKING AREAS
	KERB RAMPS SURFACE TO MATCH ADJOINING FOOTPATH MATERIAL	HIGH STREETS AND PLAZAS, HIGH PEDESTRIAN AREAS
	KERB RAMPS CCS HONEYCOMB COLOURED CONCRETE	ALL OTHER APPLICATIONS

URBAN – HARDSCAPE

ELEMENT	SPECIFICATION	LOCATION
PARKS AND RESERVES		
	INSITU CONCRETE- EXPOSED AGGREGATE METROMIX PADDINGTON MIX (OR EQUIV)*	OPEN SPACE FOOTPATHS
	CRUSHED STABILISED SANDSTONE 100MM DEPTH TOP LAYER STABILISED WITH 10% OFF-WHITE CEMENT, <20MM DIA, ROLLED AND COMPACTED 150MM COMPACTED DGB20 BASE INSTALL WITH EDGING NOTE: MUST NOT BE ABLE TO MOBILISE TO WATER-WAYS	OPEN SPACE PATHWAYS AND TRACKS

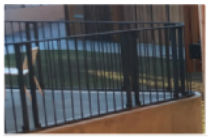
*ALL NOMINATED SUPPLIERS SHOULD BE CONFIRMED WITH COUNCIL'S ASSETS AND ENGINEERING TEAM FOR CLARIFICATION OF EXISTING SUPPLIER CONTRACTS AND WHERE IMAGES USED ARE REPRESENTATIVE OF THE PREFERRED MATERIAL PALETTE USE OF COUNCIL, SHOULD ALTERNATIVES BE PROPOSED, THEY WILL NEED TO MEET THE REQUIRED TECHNICAL SPECIFICATIONS, PROPERTIES AND COLOURS AS THOSE NOMINATED IN THE MATERIAL PALETTES AND REQUIRED TO BE APPROVED BY COUNCIL ON A CASE BY CASE BASIS.

URBAN – FURNITURE

NOTE: FOR URBAN PALETTE, ALL METALWORK FOR FURNITURE ITEMS TO BE POWDERCOATED IN BRONZE PEARL UNLESS OTHERWISE STATED

ELEMENT	SPECIFICATION	LOCATION
	SEAT- CLASSIC PLAZA DDA SEAT CMP5* STREET FURNITURE AUSTRALIA JARRAH HARDWOOD BATTENS POWDERCOAT STEEL LEGS AND ARMREST (BRONZE PEARL) SUBSURFACE FIXED	HIGH STREETS TOWN PLAZAS TOWN PARKS
	PICNIC SETTING- CLASSIC PLAZA SETTING CMP6 + CMP5* STREET FURNITURE AUSTRALIA JARRAH HARDWOOD BATTENS POWDERCOAT STEEL LEGS AND ARMREST (BRONZE PEARL) SUBSURFACED FIXED	TOWN PARKS AND PLAZAS
	BOLLARD- SLIM B5-F FLAT HEAD/ WIDE- B8 FLAT HEAD, NO COLLAR* STREET FURNITURE AUSTRALIA SS316, ANTI-GRAFFITI SURFACE SURFACE FIXED	ALL LOCATIONS-AS REQUIRED BY VEHICULAR LOADS
	DRINKING FOUNTAIN BOTTON & GARDINER* PROSPECT- 316SS.DB.BT WITH DOG BOWL AND BOTTLE TAP SUBSURFACE FIXED	ALL LOCATIONS
	WATER REFILL PLINTH* AQUAFILL STAINLESS STEEL	ALL LOCATIONS
	ESCOLA BIN ENCLOSURE STREET FURNITURE AUSTRALIA * SS316, BRONZE POWDERCOAT	ALL LOCATIONS
	BIKE RACK- BST03* STREET FURNITURE AUSTRALIA SSS316 SURFACE FIXED	ALL LOCATIONS
	TACTILE INDICATORS DTAC STAINLESS STEEL CLASSIC PVD BLACK* (TO ADHERE TO AUS STANDARDS)	KERB RAMPS, PEDESTRIAN CROSSINGS/ RAISED THRESHOLDS WITH BRICK PAVING
	HANDRAIL SS316 HANDRAIL POSTS, POWDERCOATED BRONZE PEARL	STAIRS/ RAMPS WALKWAYS WHERE REQUIRED

URBAN – FURNITURE

ELEMENT	SPECIFICATION	LOCATION
	BBQ- ACCESSIBLE STAINLESS STEEL TOP TBC WITH COUNCIL	PARKS AND RESERVES
	FENCE/ BALUSTRADE HARDWOOD TIMBER/ POWDERCOATED GALVANISED STEEL (BRONZE PEARL) STAINLESS STEEL WHERE REQUIRED	STREETS AND PLAZAS
	EDGES AND WALLS SANDSTONE BLOCK/ HARDWOOD TIMBER/ INSITU CONCRETE	PARKS AND RESERVES
	LIGHTPOLE FITTING WEEF: DARK BRONZE* POLE: DULUX FERREKO NO.3 IN DARK BRONZE POWDERCOAT*	PARKS AND OPEN SPACES
	LIGHTPOLE FITTING BEGA 84402: GOOSENECK &360 & DIRECTIONAL (OR SIMILAR- TBC WITH COUNCIL) * POLE AND FITTING: DULUX FERREKO NO.3 IN DARK BRONZE POWDERCOAT*	PARKS AND OPEN SPACES

*ALL NOMINATED SUPPLIERS SHOULD BE CONFIRMED WITH COUNCIL'S ASSETS AND ENGINEERING TEAM FOR CLARIFICATION OF EXISTING SUPPLIER CONTRACTS AND WHERE IMAGES USED ARE REPRESENTATIVE OF THE PREFERRED MATERIAL PALETTE USE OF COUNCIL, SHOULD ALTERNATIVES BE PROPOSED, THEY WILL NEED TO MEET THE REQUIRED TECHNICAL SPECIFICATIONS, PROPERTIES AND COLOURS AS THOSE NOMINATED IN THE MATERIAL PALETTES AND REQUIRED TO BE APPROVED BY COUNCIL ON A CASE BY CASE BASIS.

URBAN – SOFTWORKS

ELEMENT	SPECIFICATION	LOCATION
	STREET TREE PIT PASSIVE IRRIGATION TREE PIT VIA SLOTTED KERB OR BIOSWALE MEDIUM WITH ROCK MULCH CONNECT TO STORMWATER SYSTEM	ALL STREETS BEHIND THE FOOTPATH KERB AND BETWEEN PARKING BAYS
	BLISTER/ KERB EXTENSION PASSIVE IRRIGATION TREE PIT VIA SLOTTED KERB OR BIOSWALE MEDIUM WITH ROCK MULCH CONNECT TO STORMWATER SYSTEM	HIGH STREETS, LOCAL COLLECTORS STREET CORNERS, JUNCTIONS, CROSSINGS.
	STREET TREES IN PAVING STEEL GRATE	IN AREAS WITH HIGH PEDESTRIAN TRAFFIC - PLAZAS - HIGH STREETS FOOTPATHS - IN ROAD PLANTINGS
	TREE PLANTING IN TURF VERGE	LOCAL COLLECTORS LOCAL STREETS
	TREE PLANTING WITHIN MASS PLANTED VERGE	HIGH STREETS LOCAL COLLECTORS LOCAL STREETS
	VEGETATED SWALE	IN OPEN SPACES PARTICULARLY ADJACENT TO WATER WAYS


NORTHERN BEACHES COUNCIL PUBLIC SPACE VISION & DESIGN GUIDELINES
Bush Palette
F3 – BUSH PALETTE 103

BUSH – HARDSCAPE

ELEMENT	SPECIFICATION	STREET TYPE
STREETS		
	BRICK PAVING- AUSTRAL BRAHMAN BOWRAL* FINISH: DRY PRESSED SIZE: 230 X 115 X65MM PATTERN: STRETCHER-BOND HEADER: BRAHMAN SINGLE ROW PERPENDICULAR TO KERB	HIGH STREETS PLAZAS
	PORPHYRY COBBLES- SESAME GREY FINISH: EXFOLIATED SIZE: 90 X 90 X 70MM PATTERN: STRETCHER BOND BASE: CONCRETE SLAB	AVALON, NEWPORT, COLLAROY, WARRIEWOOD, NARRABEEN, FRESHWATER, MANLY VALE, SEAFORTH SHARED WAYS RAISED THRESHOLDS
	INSITU CONCRETE OFF-WHITE CEMENT BROOM FINISH TBC WITH COUNCIL	LOCAL STREETS
	POROUS ASPHALT	CYCLE LANE ON STREETS AND OPEN SPACES STREET PARKING LANE- WHERE POSSIBLE PUBLIC PARKING AREAS
	KERB RAMPS SURFACE TO MATCH ADJOINING FOOTPATH MATERIAL	HIGH STREETS AND PLAZAS, HIGH PEDESTRIAN AREAS
	KERB RAMPS CCS HONEYCOMB COLOURED CONCRETE*	ALL OTHER APPLICATIONS
OPEN SPACES		
	INSITU CONCRETE- EXPOSED AGGREGATE METROMIX PADDINGTON MIX (OR EQUIV)	OPEN SPACE FOOTPATHS
	CRUSHED STABILISED SANDSTONE 100MM DEPTH TOP LAYER STABILISED WITH 10% OFF-WHITE CEMENT, <20MM DIA, ROLLED AND COMPACTED 150MM COMPACTED DGB20 BASE INSTALL WITH EDGING	OPEN SPACE PATHWAYS AND TRACKS
	BOARDWALK- TIMBER BATTENS DECKING AND SUBSTRUCTURE SUBJECT TO LOCATION	ELEVATED PATHWAYS AND BRIDGES IN OPEN SPACE AND BUSHLAND AREAS
	BOARDWALK FRP (FIBRE REINFORCED PLASTIC) MESH CHARCOAL COLOUR	ELEVATED PATHWAYS AND BRIDGES IN OPEN SPACE AND BUSHLAND AREAS

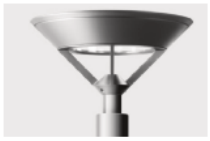
BUSH – FURNITURE

NOTE: FOR URBAN PALETTE, ALL METALWORK FOR FURNITURE ITEMS TO BE POWDERCOATED IN BRONZE PEARL UNLESS OTHERWISE STATED

ELEMENT	SPECIFICATION	STREET TYPE
	SEAT- CLASSIC PLAZA DDA SEAT CMP5* STREET FURNITURE AUSTRALIA JARRAH HARDWOOD BATTENS POWDERCOAT STEEL LEGS AND ARMREST (BRONZE PEARL) SUBSURFACE FIXED	HIGH STREETS TOWN PLAZAS TOWN PARKS
	PICNIC SETTING- CLASSIC PLAZA SETTING CMP6 + CMP5* STREET FURNITURE AUSTRALIA JARRAH HARDWOOD BATTENS POWDERCOAT STEEL LEGS AND ARMREST (BRONZE PEARL) SUBSURFACED FIXED	TOWN PARKS AND PLAZAS
	TIMBER BENCH STREET FURNITURE AUSTRALIA CLASSIC PLAZA SEAT WITH ARMREST AND BACKREST* MODWOOD BATTENS* POWDERCOAT STEEL (BRONZE PEARL)	LOCAL STREETS LOCAL PARKS
	TIMBER BENCH STREET FURNITURE AUSTRALIA CLASSIC PLAZA SEAT PICNIC SETTING* MODWOOD BATTENS * POWDERCOAT STEEL (BRONZE PEARL)	LOCAL PARKS
	BOLLARD- TIMBER CLAD STEEL BOLLARD	ALL LOCATIONS
	BOLLARD- SLIM B5-F FLAT HEAD/ WIDE- B8 FLAT HEAD, NO COLLAR* STREET FURNITURE AUSTRALIA SS316, ANTI-GRAFFITI SURFACE SURFACE FIXED	ALL LOCATIONS-AS REQUIRED BY VEHICULAR LOADS
	DRINKING FOUNTAIN BOTTON & GARDINER* PROSPECT- 316SS.DB.BT WITH DOG BOWL AND BOTTLE TAP SUBSURFACE FIXED	ALL LOCATIONS
	WATER REFILL PLINTH* AQUAFILL STAINLESS STEEL	ALL LOCATIONS
	ESCOLA BIN ENCLOSURE* STREET FURNITURE AUSTRALIA SS316, BRONZE POWDERCOAT	ALL LOCATIONS

*ALL NOMINATED SUPPLIERS SHOULD BE CONFIRMED WITH COUNCIL'S ASSETS AND ENGINEERING TEAM FOR CLARIFICATION OF EXISTING SUPPLIER CONTRACTS AND WHERE IMAGES USED ARE REPRESENTATIVE OF THE PREFERRED MATERIAL PALETTE USE OF COUNCIL, SHOULD ALTERNATIVES BE PROPOSED, THEY WILL NEED TO MEET THE REQUIRED TECHNICAL SPECIFICATIONS, PROPERTIES AND COLOURS AS THOSE NOMINATED IN THE MATERIAL PALETTES AND REQUIRED TO BE APPROVED BY COUNCIL ON A CASE BY CASE BASIS.

BUSH – FURNITURE

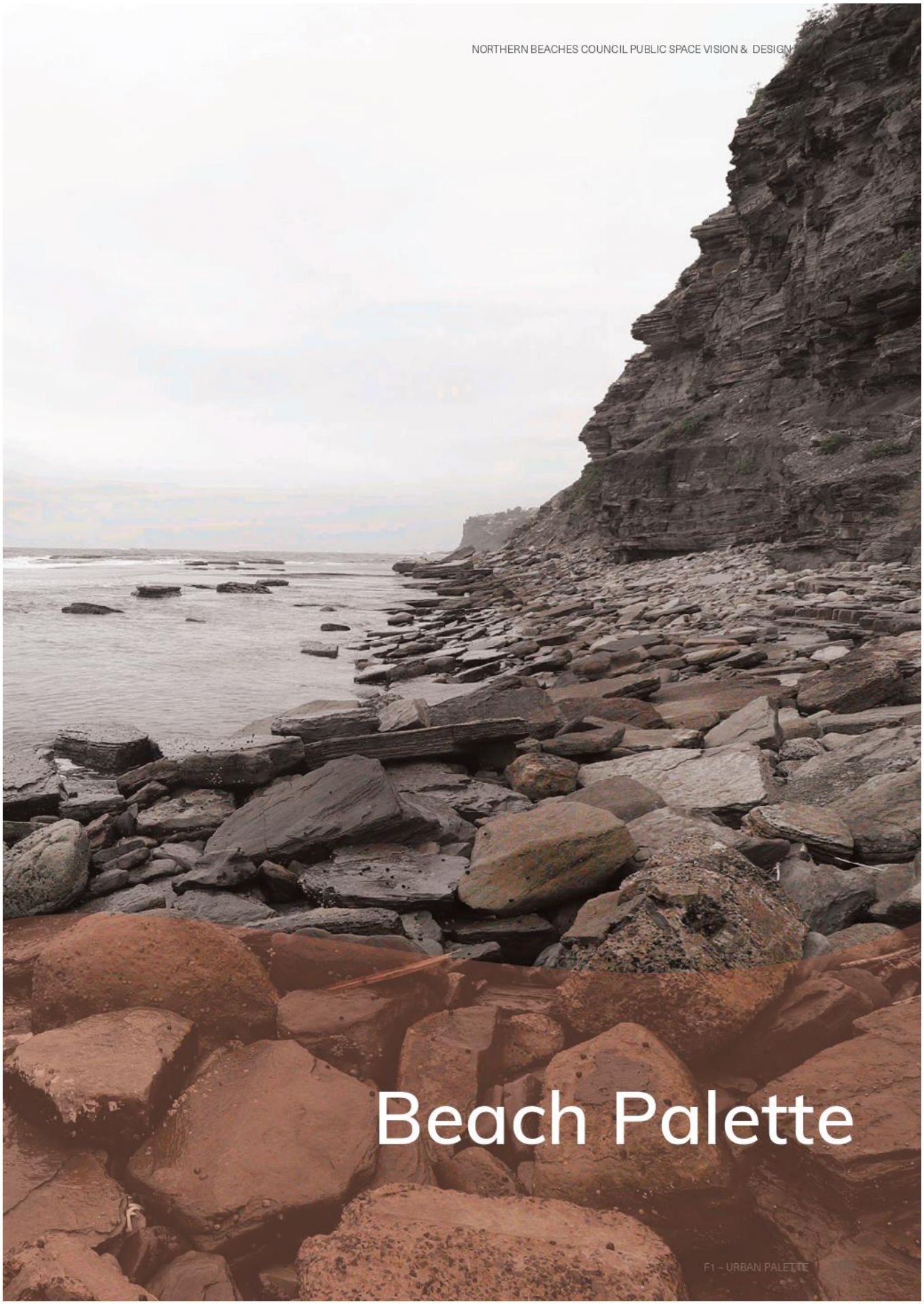
ELEMENT	SPECIFICATION	STREET TYPE
	BIKE RACK- BST03* STREET FURNITURE AUSTRALIA SSS316 SURFACE FIXED	ALL LOCATIONS
	TACTILE INDICATORS DTAC STAINLESS STEEL CLASSIC PVD* BLACK (TO ADHERE TO AUS STANDARDS)	KERB RAMPS PEDESTRIAN CROSSINGS/ RAISED THRESHOLDS
	BBQ STAINLESS STEEL TOP TBC WITH COUNCIL	
	HANDRAIL SS316 HANDRAIL + POSTS, POWDERCOATED BRONZE PEARL	STAIRS/ RAMPS WALKWAYS WHERE REQUIRED
	FENCE/ BALUSTRADE HARDWOOD TIMBER/ POWDERCOATED GALVANISED STEEL (BRONZE PEARL)	STREETS AND PLAZAS
	FENCE/ BALUSTRADE MARINE GRADE STAINLESS STEEL IN EXPOSED ENVIRONMENTS	PARKS AND RESERVES
	EDGES AND WALLS SANDSTONE BLOCK/ HARDWOOD TIMBER/ KOPPERS LOG	PARKS AND RESERVES
	LIGHTPOLE FITTING WEEF: DARK BRONZE* POLE: DULUX FERREKO NO.3 IN BRONZE PEARL POWDERCOAT	PARKS AND OPEN SPACES
	LIGHTPOLE FITTING BEGA 84402: GOOSENECK &360 & DIRECTIONAL* (OR SIMILAR- TBC WITH COUNCIL) POLE AND FITTING: DULUX FERREKO NO.3 IN BRONZE PEARL POWDERCOAT	PARKS AND OPEN SPACES

BUSH – SOFTWORKS

ELEMENT	SPECIFICATION	STREET TYPE
	STREET TREE PIT PASSIVE IRRIGATION TREE PIT VIA SLOTTED KERB OR BIOSWALE MEDIUM WITH ROCK MULCH CONNECT TO STORMWATER SYSTEM	ALL STREETS BEHIND THE FOOTPATH KERB AND BETWEEN PARKING BAYS
	BLISTER/ KERB EXTENSION PASSIVE IRRIGATION TREE PIT VIA SLOTTED KERB OR BIOSWALE MEDIUM WITH ROCK MULCH CONNECT TO STORMWATER SYSTEM	HIGH STREETS, LOCAL COLLECTORS STREET CORNERS, JUNCTIONS, CROSSINGS.
	STREET TREES IN PAVING PERMEABLE BOUND GRAVEL (TO ALLOW WATER PENE-TRATION) COLOUR-GLANDSANDA (STONESET)* INCLUDING PERFORATED GRATE FOR PERMEABLE BOUND GRAVEL BASE	IN AREAS WITH HIGH PEDESTRIAN TRAFFIC - PLAZAS - HIGH STREETS FOOTPATHS - IN ROAD PLANTINGS
	TREE PLANTING IN TURF VERGE	LOCAL COLLECTORS LOCAL STREETS
	TREE PLANTING WITHIN MASS PLANTED VERGE	HIGH STREETS LOCAL COLLECTORS LOCAL STREETS
	VEGETATED SWALE	IN OPEN SPACES PARTICULARLY ADJACENT TO WATER WAYS

*ALL NOMINATED SUPPLIERS SHOULD BE CONFIRMED WITH COUNCIL'S ASSETS AND ENGINEERING TEAM FOR CLARIFICATION OF EXISTING SUPPLIER CONTRACTS AND WHERE IMAGES USED ARE REPRESENTATIVE OF THE PREFERRED MATERIAL PALETTE USE OF COUNCIL, SHOULD ALTERNATIVES BE PROPOSED, THEY WILL NEED TO MEET THE REQUIRED TECHNICAL SPECIFICATIONS, PROPERTIES AND COLOURS AS THOSE NOMINATED IN THE MATERIAL PALETTES AND REQUIRED TO BE APPROVED BY COUNCIL ON A CASE BY CASE BASIS.




NORTHERN BEACHES COUNCIL PUBLIC SPACE VISION &
Beach Palette
F1 – URBAN PALETTE

BEACH – HARDSCAPE

ELEMENT	SPECIFICATION	STREET TYPE
STREETS		
	BRICK PAVING AUSTRAL BRICKS- SEPIA * STRETCHER BOND	HIGH STREETS PEDESTRIAN LANES
	PORPHYRY COBBLES- SESAME GREY FINISH: EXFOLIATED SIZE: 90 X 90 X 70MM PATTERN: STRETCHER BOND BASE: CONCRETE SLAB	SHARED WAYS RAISED THRESHOLDS
	INSITU CONCRETE OFF-WHITE CEMENT BROOM FINISH TBC WITH COUNCIL	LOCAL STREETS
	POROUS ASPHALT	CYCLE LANE ON STREETS AND OPEN SPACES STREET PARKING LANE- WHERE POSSIBLE PUBLIC PARKING AREAS
	KERB RAMPS SURFACE TO MATCH ADJOINING FOOTPATH MATERIAL	HIGH STREETS AND PLAZAS, HIGH PEDESTRIAN AREAS
	KERB RAMPS CCS HONEYCOMB COLOURED CONCRETE	ALL OTHER APPLICATIONS

BEACH – HARDSCAPE

ELEMENT	SPECIFICATION	STREET TYPE
PARKS AND RESERVES		
	INSITU CONCRETE COLOURED 'CANVAS'	OPEN SPACE FOOTPATHS
	CRUSHED STABILISED SANDSTONE 100MM DEPTH TOP LAYER STABILISED WITH 10% OFF-WHITE CEMENT, <20MM DIA, ROLLED AND COMPACTED 150MM COMPACTED DGB20 BASE INSTALL WITH EDGING NOTE: MUST NOT BE ABLE TO MOBILISE TO WATERWAYS	OPEN SPACE PATHWAYS AND TRACKS
	BOARDWALK- TIMBER BATTENS DECKING AND SUBSTRUCTURE SUBJECT TO LOCATION	ELEVATED PATHWAYS AND BRIDGES IN OPEN SPACE AND FORESHORE AREAS
	BOARDWALK FRP (FIBRE REINFORCED PLASTIC) MESH CHARCOAL COLOUR	ELEVATED PATHWAYS AND BRIDGES IN OPEN SPACE AND FORESHORE AREAS

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BEACH – FURNITURE

NOTE: FOR URBAN PALETTE, ALL METALWORK FOR FURNITURE ITEMS TO BE STAINLESS STEEL UNLESS OTHERWISE STATED

ELEMENT	SPECIFICATION	STREET TYPE
	SEAT- CLASSIC PLAZA DDA SEAT CMP5* STREET FURNITURE AUSTRALIA JARRAH HARDWOOD BATTENS STAINLESS STEEL LEGS AND ARMREST SUBSURFACE FIXED	HIGH STREETS TOWN PLAZAS TOWN PARKS
	PICNIC SETTING- CLASSIC PLAZA SETTING CMP6 + CMP5* STREET FURNITURE AUSTRALIA JARRAH HARDWOOD BATTENS STAINLESS STEEL LEGS AND ARMREST SUBSURFACED FIXED	TOWN PARKS AND PLAZAS
	BOLLARD- SLIM B5-F FLAT HEAD/ WIDE- B8 FLAT HEAD, NO *COLLAR STREET FURNITURE AUSTRALIA SS316, ANTI-GRAFFITI SURFACE SURFACE FIXED	ALL LOCATIONS-AS REQUIRED BY VEHICULAR LOADS
	BOLLARD- TIMBER CLAD STEEL BOLLARD	OPEN SPACES
	DRINKING FOUNTAIN BOTTON & GARDINER* PROSPECT- 316SS.DB.BT WITH DOG BOWL AND BOTTLE TAP SUBSURFACE FIXED	ALL LOCATIONS
	WATER REFILL PLINTH* AQUAFILL STAINLESS STEEL-TBC ACCESSIBLE WITH DOGBOWL OPTION	ALL LOCATIONS
	ESCOLA BIN ENCLOSURE* STREET FURNITURE AUSTRALIA SS316	ALL LOCATIONS
	BIKE RACK- BST03 STREET FURNITURE AUSTRALIA SSS316* SURFACE FIXED	ALL LOCATIONS
	TACTILE INDICATORS DTAC STAINLESS STEEL CLASSIC PVD BLACK* (TO ADHERE TO AUS STANDARDS)	KERB RAMPS, PEDESTRIAN CROSSINGS/ RAISED THRESHOLDS

BEACH – FURNITURE

ELEMENT	SPECIFICATION	STREET TYPE
	HANDRAIL STAINLESS STEEL MARINE GRADE	STAIRS/ RAMPS WALKWAYS WHERE REQUIRED
	BBQ- ACCESSIBLE STAINLESS STEEL TOP TBC WITH COUNCIL	PARKS AND RESERVES
	FENCE/ BALUSTRADE MARINE GRADE STAINLESS STEEL IN EXPOSED ENVIRONMENTS	STREETS AND PLAZAS
	FENCE/ BALUSTRADE HARDWOOD TIMBER	PARKS AND RESERVES
	EDGES AND WALLS SANDSTONE BLOCK/ HARDWOOD TIMBER/ INSITU/ PRECAST CONCRETE	PARKS AND RESERVES
	LIGHTPOLE FITTING WEEF: DARK BRONZE* POLE: DULUX FERREKO NO.3 IN NATURAL GREY POWDERCOAT	PARKS AND OPEN SPACES
	LIGHTPOLE FITTING BEGA 84402: GOOSENECK &360 & DIRECTIONAL (OR SIMILAR- TBC WITH COUNCIL) * POLE AND FITTING: DULUX FERREKO NO.3 IN NATURAL GREY POWDERCOAT	PARKS AND OPEN SPACES

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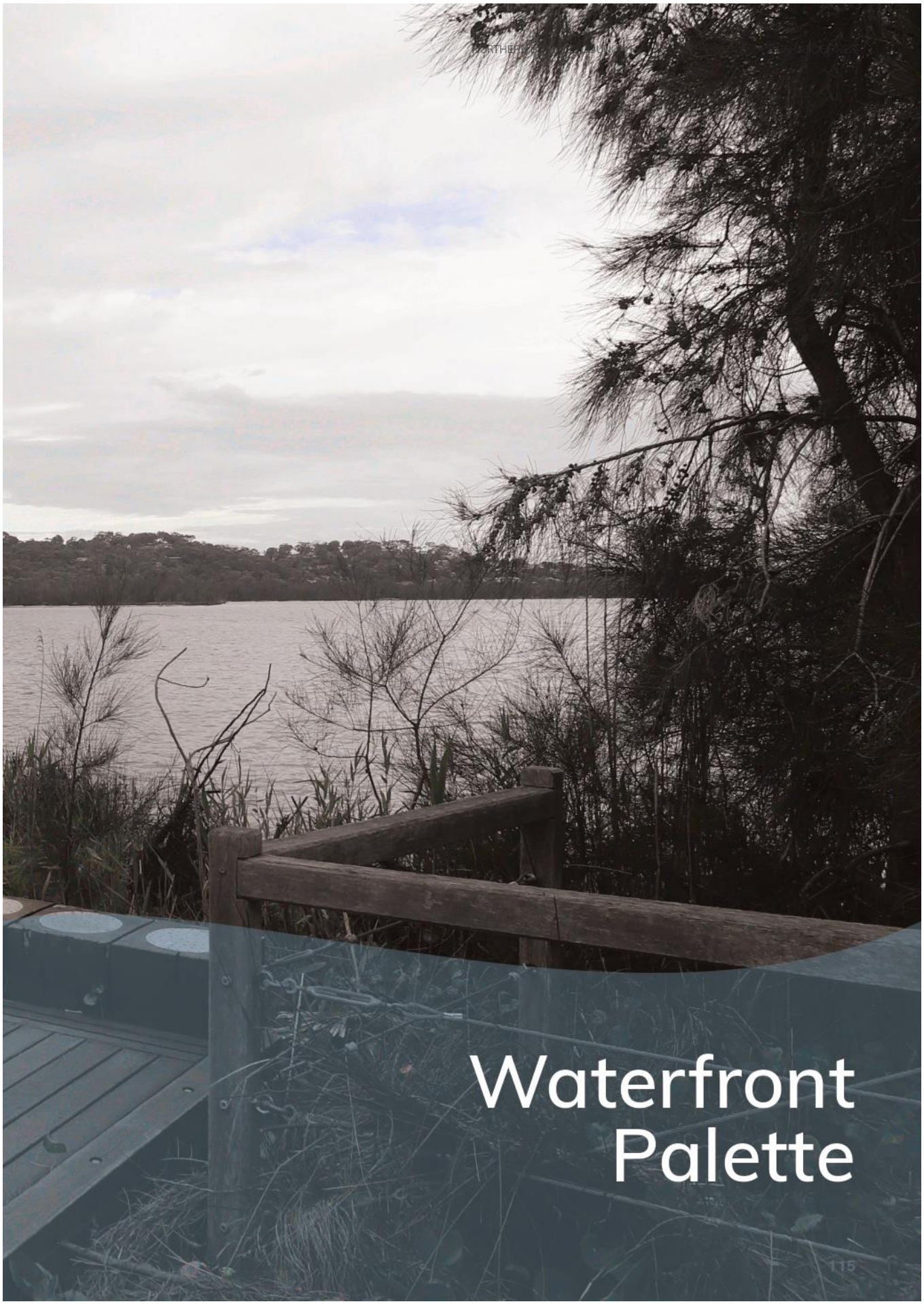
BEACH – SOFTWORKS

ELEMENT	SPECIFICATION	STREET TYPE
	STREET TREE PIT PASSIVE IRRIGATION TREE PIT VIA SLOTTED KERB OR BIOSWALE MEDIUM WITH ROCK MULCH CONNECT TO STORMWATER SYSTEM	ALL STREETS BEHIND THE FOOTPATH KERB AND BETWEEN PARKING BAYS
	BLISTER/ KERB EXTENSION PASSIVE IRRIGATION TREE PIT VIA SLOTTED KERB OR BIOSWALE MEDIUM WITH ROCK MULCH CONNECT TO STORMWATER SYSTEM	HIGH STREETS, LOCAL COLLECTORS STREET CORNERS, JUNCTIONS, CROSSINGS.
	STREET TREES IN PAVING PERMEABLE BOUND GRAVEL (TO ALLOW WATER PENETRATION) COLOUR-CUDGEE BEACH (STONESET)* NOTE: MUST NOT BE ABLE TO MOBILISE TO WATERWAYS	IN AREAS WITH HIGH PEDESTRIAN TRAFFIC - PLAZAS - HIGH STREETS FOOTPATHS - IN ROAD PLANTINGS
	STREET TREES IN PAVING PERMEABLE BOUND GRAVEL, COLOUR-CHARCOAL STRATAVAULT AND PERFORATED GRATE TO SUPPORT GRAVEL INCLUDED	MANLY ONLY IN AREAS WITH HIGH PEDESTRIAN TRAFFIC - PLAZAS - HIGH STREETS FOOTPATHS
	TREE PLANTING IN TURF VERGE	LOCAL COLLECTORS LOCAL STREETS
	TREE PLANTING WITHIN MASS PLANTED VERGE	HIGH STREETS LOCAL COLLECTORS LOCAL STREETS
	VEGETATED SWALE	IN OPEN SPACES PARTICULARLY ADJACENT TO WATER WAYS


Waterfront
Palette

WATERFRONT – HARDSCAPE

ELEMENT	SPECIFICATION	STREET TYPE
STREETS		
	BRICK PAVING AUSTRAL BRICKS- SEPIA * STRETCHER BOND	HIGH STREETS PEDESTRIAN LANES
	PORPHYRY COBBLES- SESAME GREY FINISH: EXFOLIATED SIZE: 90 X 90 X 70MM PATTERN: STRETCHER BOND BASE: CONCRETE SLAB	SHARED WAYS RAISED THRESHOLDS
	INSITU CONCRETE OFF-WHITE CEMENT BROOM FINISH TBC WITH COUNCIL	LOCAL STREETS
	POROUS ASPHALT	CYCLE LANE ON STREETS AND OPEN SPACES STREET PARKING LANE- WHERE POSSIBLE PUBLIC PARKING AREAS
	KERB RAMPS SURFACE TO MATCH ADJOINING FOOTPATH MATERIAL	HIGH STREETS AND PLAZAS, HIGH PEDESTRIAN AREAS
	KERB RAMPS CCS HONEYCOMB COLOURED CONCRETE*	ALL OTHER APPLICATIONS

WATERFRONT – HARDSCAPE

ELEMENT	SPECIFICATION	STREET TYPE
PARKS AND RESERVES		
	INSITU CONCRETE COLOURED 'CANVAS'	OPEN SPACE FOOTPATHS
	CRUSHED STABILISED SANDSTONE 100MM DEPTH TOP LAYER STABILISED WITH 10% OFF-WHITE CEMENT, <20MM DIA, ROLLED AND COMPACTED 150MM COMPACTED DGB20 BASE INSTALL WITH EDGING NOTE: MUST NOT BE ABLE TO MOBILISE TO WATERWAYS	OPEN SPACE PATHWAYS AND TRACKS
	BOARDWALK AND DECKED AREAS- TIMBER BATTENS DECKING AND SUBSTRUCTURE SUBJECT TO LOCATION	ELEVATED PATHWAYS AND BRIDGES IN OPEN SPACE AND FORESHORE AREAS FOR MATURE TREE PROTECTION
	BOARDWALK FRP (FIBRE REINFORCED PLASTIC) MESH CHARCOAL COLOUR	ELEVATED PATHWAYS AND BRIDGES IN OPEN SPACE AND FORESHORE AREAS

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WATERFRONT – FURNITURE

NOTE: FOR URBAN PALETTE, ALL METALWORK FOR FURNITURE ITEMS TO BE CHARCOAL POWDERCOAT UNLESS OTHERWISE STATED

ELEMENT	SPECIFICATION	STREET TYPE
	SEAT- CLASSIC PLAZA DDA SEAT CMP5 STREET FURNITURE AUSTRALIA* JARRAH HARDWOOD BATTENS POWDERCOAT STEEL LEGS AND ARMREST (CHARCOAL) SUBSURFACE FIXED	HIGH STREETS TOWN PLAZAS TOWN PARKS
	PICNIC SETTING- CLASSIC PLAZA SETTING CMP6 + CMP5* STREET FURNITURE AUSTRALIA JARRAH HARDWOOD BATTENS POWDERCOAT STEEL LEGS AND ARMREST (CHARCOAL) SUBSURFACED FIXED	TOWN PARKS AND PLAZAS
	BOLLARD- SLIM B5-F FLAT HEAD/ WIDE- B8 FLAT HEAD, NO COLLAR* STREET FURNITURE AUSTRALIA SS316, ANTI-GRAFFITI SURFACE SURFACE FIXED	ALL LOCATIONS-AS REQUIRED BY VEHICULAR LOADS
	BOLLARD- TIMBER CLAD STEEL BOLLARD	OPEN SPACES
	DRINKING FOUNTAIN BOTTON & GARDINER* PROSPECT- 316SS.DB.BT WITH DOG BOWL AND BOTTLE TAP SUBSURFACE FIXED	ALL LOCATIONS
	WATER REFILL PLINTH* AQUAFILL STAINLESS STEEL-TBC ACCESSIBLE WITH DOGBOWL OPTION	ALL LOCATIONS
	ESCOLA BIN ENCLOSURE* STREET FURNITURE AUSTRALIA SS316, CHARCOAL POWDERCOAT	ALL LOCATIONS

WATERFRONT – FURNITURE

ELEMENT	SPECIFICATION	STREET TYPE
	BIKE RACK- BST03 STREET FURNITURE AUSTRALIA* SSS316 SURFACE FIXED	ALL LOCATIONS
	TACTILE INDICATORS DTAC STAINLESS STEEL CLASSIC PVD BLACK* (TO ADHERE TO AUS STANDARDS)	KERB RAMPS, PEDESTRIAN CROSSINGS/ RAISED THRESHOLDS
	BBQ- ACCESSIBLE STAINLESS STEEL TOP WITH SANDSTONE BLOCK SURROUND	PARKS AND RESERVES
	HANDRAIL STAINLESS STEEL MARINE GRADE POSTS POWDERCOATED CHARCOAL	PARKS AND RESERVES
	FENCE/ BALUSTRADE HARDWOOD TIMBER/ POWDERCOATED GALVANISED STEEL (CHARCOAL)	PARKS AND RESERVES
	FENCE/ BALUSTRADE MARINE GRADE STAINLESS STEEL HANDRAIL POSTS POWDERCOATED CHARCOAL	PARKS AND RESERVES
	EDGES AND WALLS SANDSTONE BLOCK/ HARDWOOD TIMBER/ KOPPERS LOG	PARKS AND RESERVES
	LIGHTPOLE FITTING WEEF: DARK BRONZE* POLE: DULUX FERREKO NO.3 IN CHARCOAL GREY POWDER-COAT	PARKS AND OPEN SPACES
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WATERFRONT – SOFTWORKS

ELEMENT	SPECIFICATION	STREET TYPE
	STREET TREE PIT PASSIVE IRRIGATION TREE PIT VIA SLOTTED KERB OR BIOSWALE MEDIUM WITH ROCK MULCH CONNECT TO STORMWATER SYSTEM	ALL STREETS BEHIND THE FOOTPATH KERB AND BETWEEN PARKING BAYS
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	TREE PLANTING IN TURF VERGE	LOCAL COLLECTORS LOCAL STREETS
	TREE PLANTING WITHIN MASS PLANTED VERGE	HIGH STREETS LOCAL COLLECTORS LOCAL STREETS
	VEGETATED SWALE	IN OPEN SPACES PARTICULARLY ADJACENT TO WATER WAYS

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NORTHERN BEACHES COUNCIL PUBLIC SPACE VISION & DESIGN GUIDELINES
G

Appendix

G1 INDEX OF ENGINEER DRAWINGS

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0300	ELSHOLZ kerb details and notes Wheel stop details Integrated kerb and gutter for rigid pavement details Concrete dish drain, pram ramp details & notes	<Hyperlink>
0400	Rigid pavement joint details Weakened plane joint notes Standard joint notes	<Hyperlink>
0500	Slab replacement for medium to high traffic volumes Slab replacement for low traffic volumes Heavy duty concrete slab replacement jointing details General slab replacement and construction notes	<Hyperlink>
0600	Concrete footpath joining plans and elevations Jointing system for footpaths near trees plan and detail Standard concrete footpath notes and schedule Transverse displacement joint notes	<Hyperlink>
0700	Shared pedestrian path in concrete detail Shared pedestrian path in asphalt detail Preferred kerb ramp (pram ramp) locations	<Hyperlink>
0800	Concrete steps with landing typical detail Concrete steps with bicycle ramp – typical detail Handrails installed on concrete steps – typical detail Concrete steps reinforcement detail	<Hyperlink>
1000	Blockwork retaining wall – Type 1 footing Blockwork retaining wall – Type 2 footing Blockwork wall footing configurations Vertical control joint details	<Hyperlink>

SERIES	DRAWING DETAILS	HYPERLINK
1100	Brick retaining wall detail Concrete retaining wall detail Rock wall retaining wall detail Design charts and notes	<Hyperlink>
1200	Timber log retaining wall detail Concrete high edge (retaining) wall detail Concrete thickened edge beam detail Notes	<Hyperlink>
1300	Tree pit details Plan and sections	<Hyperlink>
1400	Driveway profile – normal Driveway profile – normal high Driveway profile – extra high Driveway profile – maximum high	<Hyperlink>
1500	Driveway profile – normal low Driveway profile – extra low Driveway profile – maximum low Driveway notes	<Hyperlink>
1600	Driveway profile – maximum high level skew (MHLS) Driveway profile – maximum low level skew (MLLS) Driveway plan and elevation 1500 Driveway notes	<Hyperlink>
1700	Installation of bus stop shelter signs Installation of bus stop seating details Bus stop slab and tactile paver details Standard notes	<Hyperlink>
1800	Steel bollard in road pavement detail Steel bollard in flexible pavement detail Asphalt compaction around power poles detail Sign post fixture details Raised pedestrian crossing	<Hyperlink>

SERIES	DRAWING DETAILS	HYPERLINK
1900	Raised threshold constructed in concrete Sections and details	<Hyperlink>
2000	Road speed hump constructed in flexible pavement Car park speed hump constructed in flexible pavement Pedestrian refuge island standard details Modified pedestrian refuge island details	<Hyperlink>
2100	Raised pedestrian crossing Plan and sections For 10m to 11m wide road carriageway with no central island	<Hyperlink>
2200	Raised pedestrian crossing plan and sections for 12m to 13m wide carriageway with central island	<Hyperlink>
2300	0 Level pedestrian crossing plan and sections for 11m to 12m wide carriageway with central road	<Hyperlink>
2400	Level pedestrian crossing plan and sections for 12m to 13m wide carriageway with central island	<Hyperlink>
2500	Raised pedestrian crossing special crossing details Sign posting and linemarking standard signs	<Hyperlink>
2600	Stormwater drainage Bulkhead details Trench details Notes	<Hyperlink>
2700	Stormwater damage Pit types 1 and 2 Kerb inlet pit on grade for pipe sizes up to 600-DIA Kerb inlet pit on grade sizes 675-DIA to 1200-DIA	<Hyperlink>

SERIES	DRAWING DETAILS	HYPERLINK
2800	Stormwater drainage Pit type 3 Kerb inlet pit in a sac for pipe sizes up to 600 – DIA Kerb inlet pit in a sac for pipe sizes 675-DIA to 1200-DIA	<Hyperlink>
2900	Stormwater drainage Pit types 4 and 5 Grated inlet/junction pit for pipe sizes up to 600-DIA Letter box type pit in landscaped areas	<Hyperlink>
3000	Stormwater drainage Pit type 6 Grated inlet pit in dish drain for pipe sizes up to 1200-DIA Concrete headwall details for single pipe outlet	<Hyperlink>
3100	Stormwater drainage Pipe connection details Step iron details Private pipe outlet to kerb and miscellaneous details	<Hyperlink>
3200	Drawing standards legend Commonly used scales	<Hyperlink>

Voluntary Planning Agreement

between

Warringah Road Developments Pty Ltd
ACN 602 140 634
(Developer)

and

Northern Beaches Council
ABN 57 284 295 198
(Council)

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This Planning Agreement is made on 2020.

Parties

Warringah Road Developments Pty Ltd
of Level 2, 39 Hume Street, Crows Nest NSW 2065
(**Developer**)

Northern Beaches Council
of 725 Pittwater Road, Dee Why NSW 2099
(**Council**)

Background

A The Developer owns the Land which is located within the Council's local government area.

B On 2 May 2018 the Developer caused a development application to be made to Council in respect of the Development.

C On 3 May 2019 the Developer offered to enter into a Planning Agreement to dedicate by way of Development Contribution, the Road Dedication Area to Council as the relevant Roads Authority if the Development Consent was granted to carry out the Development. The Developer and Council reached agreement under s34(3)(b) of the Land and Environment Court Act, 1979 to give effect to the said Developer's offer.

D The Road Dedication Area is necessary for the road widening of Warringah Road, which is the Public Purpose under this Agreement. The parties have agreed to enter into this Agreement so as to give effect to the proposal in recital "C".

Operative provisions

1. Planning agreement under the Act

The Parties agree that this Agreement is a planning agreement governed by Subdivision 2 of Division 7.1 of Part 7 of the Act.

2. Application of the planning agreement

The planning agreement constituted by this Agreement applies to the Land, including the Road Dedication Area.

3. Operation of this planning agreement

3.1 The Parties agree that the terms of this Agreement will take effect and bind the parties from the Commencement Date and will remain in force and effect until the Dedication of the Road Dedication Area is completed by the Developer and dedicated to the Council as the relevant Roads Authority at no

cost and free from all encumbrances in accordance with the terms of this Agreement and all obligations by the Developer herein have been satisfied.

4. Definitions and interpretation

4.1. Definitions

"Act" means the *Environmental Planning and Assessment Act 1979*.

"Agreement" means this planning agreement under the Act.

"Application" means an application for any Development Consent.

"Assignment and Dealing Terms" means the obligations imposed on the relevant Parties under, and by virtue of, clause 14.

"Authorised Officer" means, in the case of any Party, a director or secretary or an officer whose title contains the word "manager" or a person performing the functions of any of them, or any other person appointed by that Party to act as an Authorised Officer for the purpose of this Agreement.

"Authority" means any governmental, semi-governmental, administrative, fiscal or judicial body, department, commission, authority, tribunal, agency or entity and includes an accredited certifier accredited under section 6 of the *Building Professionals Act 2005*.

"Bank Guarantee" means a written guarantee or an undertaking by a trading bank or another financial institution acceptable to the Council whereby that bank or institution unconditionally and irrevocably agrees to pay the Council on written demand the sum of $70,000.00, and must include an expiry date which is not less than 5 years from the issue date and includes any renewed bank guarantee as referred to in Schedule 6.

"Business Day" means any day except for Saturday or Sunday or a day which is a public holiday in Sydney.

"Certificate of Title" means the certificate of title issued by LRS NSW in respect of the Road Dedication Area.

"Commencement Date" means the date of this Agreement.

"Control" or "Controlled" means in respect of an entity the possession, directly, or indirectly, of the power, whether or not having statutory, legal or equitable force, and whether or not based on statutory, legal or equitable rights, directly or indirectly, to control the membership of the board of directors of the entity or to otherwise, directly or indirectly, direct or influence the direction of the management and/ or policies of that entity, whether by means of trusts, agreements, arrangements, understandings, practices, the ownership of any interest in shares or stock or units or other interests of that entity or otherwise.

"Cost(s)" includes costs, charges and expenses, including those incurred in connection with advisers.

"Council" means Northern Beaches Council.

"Dealing" in relation to the Land, means, without limitation, selling, transferring, assigning, mortgaging, charging, encumbering or otherwise dealing with the Land.

"Dedication" means the dedication of the Road Dedication Area, to the Council as Relevant Roads Authority for the purposes of future road widening of Warringah Road, including the carrying out of the RMS Works and Requirements for no consideration, free of encumbrances and at no cost to Council.

"Development" means the proposal to redevelop the Land by construction of a centre based childcare facility for a maximum of 146 children.

"Development Application" has the meaning given to that term in the Act.

"Development Contribution Date" means the date by which the Development Contribution must be delivered to Council (by way of registration in the name of Council as Relevant Roads Authority of the Road Dedication Area and is to be prior to any Occupation Certificate issuing in respect to the Development).

"Development Consent" has the meaning given to that term in the Act and means the consent issued by the Land and Environment Court on 3 May 2019.

"Development Contribution" means the provision of the Dedication as a public road.

"Development Contribution Schedule" means Schedule 2 of this Agreement.

"Development Procedures" means the terms and conditions imposed on the relevant Parties under, and by virtue of, Schedule 3 of this Agreement.

"Development Program" means the timetable and milestones for each Development Contribution described in Schedule 4 of this Agreement.

"Dispute Resolution Procedures" means the procedures imposed on the relevant Parties under clause 10.

"Encumbrances" means all claims, limitation on, liability against land and includes but is not limited to, liens, restrictions, easements, encroachments interests, whether or not registered.

"Explanatory Note" means the explanatory note relating to this Agreement, as required by clause 25E of the Regulation, and attached as Exhibit A to this Agreement.

"GST" has the meaning it has in the GST Act.

"GST Act" means the *A New Tax System (Goods and Services Tax) Act 1999* (Cth).

"Land" means Lot 3 in DP25050, Lot 2 in DP25050 and Lot 1 in DP25050 known as 723-727 Warringah Road, Forestville.

"Law" means:

(a) the common law including principles of equity; and
(b) the requirements of all statutes, rules, ordinances, codes, regulations, proclamations, by-laws or consents by an Authority.

"LEP" means *Warringah Local Environmental Plan 2011*.

"LGA" means the *Local Government Act 1993*, as amended.

"LRS NSW" means Land Registry Services New South Wales.

"Modification Application" means an application to modify, or that has the effect of modifying, the Development so as to include the provision of a 3m wide cycle/footpath running the length of the street frontage of the Land.

"Party" means a party to this Agreement, including their respective successors and assigns.

"Plan of Road Dedication" means a plan in registerable form to be lodged and registered with LRS for the purposes of the Dedication in lieu of the provision of a Transfer to Council of the Road Dedication Area.

"Public Purpose" has the same meaning as under the Act and means for the purposes of this Agreement, the widening of Warringah Road Forestville.

"Real Property Act" means the *Real Property Act 1900*.

"Regulation" means the *Environmental Planning and Assessment Regulation 2000*.

"Related Entity" has the meaning "related entity" has in the *Corporations Act 2001* (Cth).

"Register" means the Torrens title register maintained under the Real Property Act.

"Release and Discharge Terms" means the obligations imposed on the relevant Parties under, and by virtue of, Schedule 5.

"Review Procedures" means the procedures set out in clause 9.

"RMS" means the Roads and Maritime Services.

"RMS Works and Requirements" means those works and requirements of RMS referred to in the RMS letter to Council dated 5 June 2018 as varied by the email correspondence from RMS to Council dated 25 September 2019 (which is attached hereto) including the provision of a 3m wide cycle/footpath running the length of the street frontage of the Land as shown in plan attached and marked "B".

"Road Dedication Area" means the strip of land of at least 3.5m wide along and from the northern boundary of the Land shown hatched in the attached plan marked "A" and in which the 3m wide cycle/footpath running the length of the street frontage of the Land is to be constructed.

"Roads Authority" has the same meaning as under the *Roads Act*.

"Security Arrangements" means those security arrangements set out in clause 11 and Schedule 6.

"Subdivision Application" means an application to subdivide the Land to enable the Dedication to occur.

"Transfer" means the transfer (free from any stamp duty and Encumbrances) of the Road Dedication Area from the Developer to the Council (if in paper in registerable form and stamped by Revenue NSW).

4.2. General

In this Agreement unless the contrary intention appears:

(a) a reference to a document or another instrument includes any variation or replacement of any of them;

(b) a reference to a statute, ordinance, code or other law includes regulations and other instruments under it and consolidations, amendments, re-enactments or replacements of any of them;

(c) the singular includes the plural and vice versa;

(d) the word "person" includes a firm, a body corporate, an unincorporated association or an authority;

(e) a reference to a person includes a reference to the person's executors, administrators, successors, substitutes (including, without limitation, persons taking by novation) and assigns;

(f) an agreement, representation or warranty in favour of two or more persons is for the benefit of them jointly and severally;

(g) an agreement, representation or warranty on the part of two or more persons binds them jointly and severally;

(h) a reference to any thing (including, without limitation, any amount) is a reference to the whole and each part of it and a reference to a group of persons is a reference to all of them collectively, to any two or more of them collectively and to each of them individually;

(i) "include" or "including" when introducing a list of items does not limit the meaning of the words to which the list relates to those items or to items of a similar kind;

(j) if a Party is prohibited from doing anything, it is also prohibited from:

(i) allowing or causing it to be done; and

(ii) doing or omitting to do anything which results in it happening;

(k) a reference to a statute, ordinance, code or law includes a statute, ordinance code or law of the Commonwealth of Australia;

(l) a reference to a body, whether statutory or not which ceases to exist or whose powers or functions are transferred to another body is a reference to the body which replaces it or which substantially succeeds to its power or functions;

(m) no rule of construction applies to the disadvantage of a Party because that Party was responsible for the preparation of this Agreement;

(n) any capitalised term used, but not defined in this Agreement, will have the meaning ascribed to it under, and by virtue of, the Act; and

(o) the Schedules and Exhibits form part of this Agreement.

5. Development Contribution to be made under this Agreement

The Developer will provide, or procure the provision of, the Development Contribution (in Schedule 2) (following the Developer having undertaken/complied with the RMS Works and Requirements) by following the Development Procedures (in Schedule 3) in accordance with the Development Program (in Schedule 4).

6. Application of the Development Contribution

The Developer will provide, or procure the provision of, the Development Contribution (in Schedule 2) at the time or times and in accordance with and in the manner set out in the Development Contribution Schedule (in Schedule 2) by following the Development Procedures (in Schedule 3) in accordance with the Development Program (in Schedule 4).

7. Application of s7.11, s7.12 and s7.24 of the Act to the Proposed Development

The application of sections 7.11, 7.12 and 7.24 of the Act are not excluded.

8. Registration of this Agreement

This Agreement is proposed to be registered in accordance with s7.6 of the Act as soon as possible after the date of this Agreement.

9. Review of Agreement

The Parties may agree to review this Agreement. Any review or modification will be conducted in the circumstances and in the manner determined by the Parties, subject to the provisions of the Act. Any agreed amendment of this Agreement will:

(a) be evidenced in writing; and

(b) accurately record the agreement of the parties.

10. Dispute resolution

10.1 Notice of Dispute
If a party claims that a dispute has arisen under this Agreement (Claimant), it must give written notice to the other party (Respondent) stating the matters in dispute and designating as its representative a person to negotiate the dispute (Claim Notice). No party may start court proceedings (except for proceedings seeking interlocutory relief) in respect of a dispute unless it has first complied with this clause 10.

10.2 Response to Notice
Within 10 business days of receiving the Claim Notice, the Respondent must notify the Claimant of its representative to negotiate the dispute.

10.3 Negotiation
The nominated representative must:

(1) meet to discuss the matter in good faith within 5 business days after service by the Respondent of notice of its representative;

(2) use reasonable endeavours to settle or resolve the dispute within 15 business days after they have met.

10.4 Further Notice if Not Settled
If the dispute is not resolved within 15 business days after the nominated representatives have met, either party may give to the other a written notice calling for determination of the dispute (Dispute Notice) by mediation under clause 10.5 or by expert determination under clause 10.6.

10.5 Mediation
If a party gives a Dispute Notice calling for the dispute to be mediated:

(1) the parties must agree to the terms of reference of the mediation within 5 business days of the receipt of the Dispute Notice (the terms shall

include a requirement that the mediation rules of the Institute of Arbitrators and Mediators Australia (NSW Chapter) apply);

(2) the Mediator will be agreed between the parties, or failing agreement within 5 business days of receipt of the Dispute Notice, either party may request the President of the Institute of Arbitrators and Mediators Australia (NSW Chapter) to appoint a mediator;

(3) the Mediator appointed pursuant to this clause 10.5 must:

(a) have reasonable qualifications and practical experience in the area of the dispute; and

(b) have no interest or duty which conflicts or may conflict with his function as mediator, he being required to fully disclose any such interest or duty before his appointment;

(4) the Mediator shall be required to undertake to keep confidential all matters coming to his knowledge by reason of his appointment and performance of his duties;

(5) the parties must within 5 business days of receipt of the Dispute Notice notify each other of their representatives who will be involved in the mediation;

(6) the parties agree to be bound by a mediation settlement and may only initiate judicial proceedings in respect of a dispute which is the subject of a mediation settlement for the purpose of enforcing that mediation settlement;

(7) in relation to costs and expenses:

(a) each party will bear their own professional and expert costs incurred in connection with the mediation; and

(b) the costs of the Mediator will be shared equally by the parties unless the Mediator determines a party has engaged in vexatious or unconscionable behaviour in which case the Mediator may require the full costs of the mediation to be borne by that party.

10.6 Expert Determination

If the dispute is not resolved under clause 10.3 or 10.5, the dispute may, by agreement between the parties, both acting reasonably having regard to the nature of the dispute, be resolved by expert determination, in which event:

(1) the dispute must be determined by an independent expert in the relevant field:

(a) agreed upon and appointed jointly by Council and the Developer; or

(b) in the event that no agreement is reached or appointment made within 30 business days, appointed on application of a party by the then current President of the Law Society of New South Wales;

(2) the expert must be appointed in writing and the terms of appointment must not be inconsistent with this clause;

(3) the determination of the dispute by such expert will be made as an expert and not as an arbitrator and will be in writing and contain the reasons for the determination;

(4) the expert will determine the rules for the conduct of the process but must conduct the process in accordance with the rules of natural justice;

(5) each party will bear its own costs in connection with the process and the determination by the expert together with an equal proportion of the expert's fees and costs; and

(6) any determination made by an expert pursuant to this clause is final and binding upon the parties except where the determination is in respect of, or relates to, termination or purported termination of this agreement by any party, in which event the expert is deemed to be giving a non-binding appraisal and any party may commence litigation in relation to the dispute if it has not been resolved within 20 business days of the expert giving his or her decision.

10.7 Litigation
If the dispute is not finally resolved in accordance with this clause 10, either party is at liberty to litigate the dispute.

10.8 Continue to perform obligations
Each party must continue to perform its obligations under this Agreement, notwithstanding the existence of a dispute.

11. Security and enforcement

11.1 Nothing in this Agreement prevents Council from exercising any function under the Act or any other Act or law relating to the enforcement of any aspect of this Agreement (including the breach of this Agreement by the Developer) or any matter to which this Agreement relates.

11.2 Until such time as the Development Contribution has been delivered in full the Developer must:

a) notify Council in writing of the name and contact details of any certifying authority to which it has applied for any certificate under the Act at the same time that such application is made;

b) at the time it lodges any application for a certificate under the Act notify the certifying authority in writing of the existence and terms of this Agreement.

11.3 The Developer acknowledges and agrees that the Land is charged as security for Council's interests under this Agreement and Council has a caveatable interest in the Land from the date of Development Consent and shall be entitled to lodge and maintain a caveat on the title to the Land notifying Council's interest created by this Agreement.

11.4 The Developer will upon execution of this Agreement deliver to Council a form of written authority as required by Council which recites the consent to caveat signed by the Developer and acknowledging Council's interest created by this Agreement together with a cheque in favour of LRS NSW for the registration fee in respect to lodgement of the caveat.

11.5 Council will provide written consent to the Developer to enable the Land to be mortgaged provided that the mortgagee acknowledges Council's interest in the Land under this Agreement and agrees to the registration of this Agreement in accordance with its terms.

11.6 Upon payment/provision of the Development Contribution to Council or surrender of the Development Consent for the Development (but only if such surrender is prior to the carrying out of any works), the Developer will be entitled to withdrawal of the caveat and return of the Bank Guarantee.

11.7 In addition to the above, the Developer must provide the Security Arrangements as set out in Schedule 6.

12. Notices

12.1 Any notice, consent, information, application or request that must or may be given or made to a Party under this Agreement is only given or made if it is in writing and sent in one of the following ways:

(a) Delivered or posted to that Party at its address set out below.
(b) Faxed to that Party at its fax number set out below.
(c) Emailed to that Party at its email address set out below.

Council

Address: Civic Centre, 725 Pittwater Road, Dee Why NSW 2099

Fax: (02) 9971 4522

Email: council@northernbeaches.nsw.gov.au

Attention: General Manager

Developer

Address: Warringah Road Development Pty Ltd
Level 2, 39 Hume Street
Crows Nest NSW 2065

Email: steve@lodestonehq.com.au

Attention: Steve Schlederer

12.2 If a Party gives the other Party 3 business days' notice of a change of its address or fax number, any notice, consent, information, application or

request is only given or made by that other Party if it is delivered, posted or faxed to the latest address or fax number.

12.3 Any notice, consent, information, application or request is to be treated as given or made at the following time:

(a) If it is delivered, when it is left at the relevant address.
(b) If it is sent by post, 2 business days after it is posted.
(c) If it is sent by fax, as soon as the sender receives from the sender's fax machine a report of an error free transmission to the correct fax number.

12.4 If any notice, consent, information, application or request is delivered, or an error free transmission report in relation to it is received, on a day that is not a business day, or if on a business day, after 5pm on that day in the place of the Party to whom it is sent, it is to be treated as having been given or made at the beginning of the next business day.

13. Approvals and Consent

Except as otherwise set out in this Agreement, and subject to any statutory obligations, a Party may give or withhold an approval or consent to be given under this Agreement in that Party's absolute discretion and subject to any conditions determined by the Party. A Party is not obliged to give its reasons for giving or withholding consent or for giving consent subject to conditions.

14. Assignment and dealings

Until the Development Contribution is delivered in full, the Developer cannot sell, transfer, assign, novate, charge, encumber or otherwise deal with the Land or attempt or purport to do so unless the Developer:

(a) gives Council no less than ten (10) Business Days' notice in writing of the proposed sale, transfer, assignment, novation, charge, encumbrance or other dealing with its rights in respect of the Land; and
(b) procures that any buyer, transferee, assignee or novatee promptly executes an Agreement in favour of Council whereby the buyer, transferee, assignee or novatee becomes contractually bound with Council to perform the Developer's obligations under this Agreement.

15. Costs

Council's Costs of and incidental to the preparation and execution of this Agreement and any related documents and registration of same shall be borne by the Developer.

16. Entire agreement

This Agreement contains everything to which the Parties have agreed in relation to the matters it deals with. No Party can rely on an earlier document, or anything said or done by another Party, or by a director, officer, agent or employee of that Party, before this Agreement was executed, except as permitted by law.

17. Further Acts

Each Party must promptly execute all documents and do all things that another Party from time to time reasonably requests to affect, perfect or complete this Agreement and all transactions incidental to it.

18. Governing Law and Jurisdiction

This Agreement is governed by the law of New South Wales. The Parties submit to the non-exclusive jurisdiction of its courts and courts of appeal from them. The Parties will not object to the exercise of jurisdiction by those courts on any basis.

19. Joint and individual liability and benefits

Except as otherwise set out in this Agreement, any agreement, covenant, representation or warranty under this Agreement by 2 or more persons binds them jointly and each of them individually, and any benefit in favour of 2 or more persons is for the benefit of them jointly and each of them individually.

20. No fetter

Nothing in this Agreement shall be construed as requiring Council to do anything that would cause it to be in breach of any of its obligations at law, and without limitation, nothing shall be construed as limiting or fettering in any way the exercise of any statutory discretion or duty.

21. Representations and warranties

The Parties represent and warrant that they have power to enter into this Agreement and comply with their obligations under the Agreement and that entry into this Agreement will not result in the breach of any law.

22. Severability

If a clause or part of a clause of this Agreement can be read in a way that makes it illegal, unenforceable or invalid, but can also be read in a way that makes it legal, enforceable and valid, it must be read in the latter way. If any clause or part of a clause is illegal, unenforceable or invalid, that clause or part is to be treated as removed from this Agreement, but the rest of this Agreement is not affected.

23. Modification

No modification of this Agreement will be of any force or effect unless it is in writing and signed by the Parties to this Agreement.

24. Waiver

(a) The fact that a Party fails to do, or delays in doing, something the Party is entitled to do under this Agreement, does not amount to a waiver of any obligation of, or a breach of obligation by, another Party.

(b) A waiver by a Party is only effective if it is in writing.

(c) A written waiver by a Party is only effective in relation to the particular obligation or breach in respect of which it is given. It is not to be taken as an implied waiver of any other obligation or breach or as an implied waiver of that obligation or breach in relation to any other occasion.

25. GST

25.1 Unless otherwise indicated, all amounts payable by one party to the other party in relation to a supply under this Agreement have been calculated exclusive of any GST which may be imposed on the supply.

25.2 If any supply made under this Agreement is, or becomes, subject to GST, the party to whom the supply is made ("Recipient") must pay to the party making the supply ("Supplier"), as consideration, in addition to any consideration payable or to be provided elsewhere in this Agreement, subject to issuing a valid tax invoice under the relevant legislation relating to GST (Valid Tax Invoice), an additional amount on account of GST, such amount to be calculated by multiplying the consideration by the applicable rate of GST.

25.3 Any amount in respect of GST payable under clause 25.2 must be paid to the Supplier immediately on receipt of the Valid Tax Invoice.

25.4 If any party is required to reimburse or indemnify the other party for a cost or expense ("Cost") incurred by the other party, the amount of that Cost for the purpose of this Agreement is the amount of the Cost incurred, less the amount of any credit for, or refund of, GST, which the party incurring the Cost is entitled to claim in respect of the Cost.

25.5 If GST is linked with the abolition or reduction of other taxes and charges, all amounts payable by the Recipient to the Supplier under this Agreement (excluding GST) must be reduced by the same proportion as the actual total costs of the Supplier (excluding GST) are reduced either directly as a result of the abolition or reduction of other taxes and charges payable by the Supplier or indirectly by way of any reduction in prices (excluding GST) charged to the Supplier.

26. Explanatory Note

The Explanatory Note must not be used to assist in construing this Agreement.

Schedule 1 – Section 7.4 Requirements

The Parties acknowledge and agree that the table set out below provides for certain terms, conditions and procedures to ensure that the planning agreement complies with the Act.

REQUIREMENT UNDER THE ACT	THIS PLANNING AGREEMENT
Planning instrument and/or development application - (Section 7.4(1)) The Developer has: (a) sought a change to an environmental planning instrument. (b) made, or proposes to make, a Development Application. (c) entered into an agreement with, or is otherwise associated with, a person, to whom paragraph (a) or (b) applies.	(a) No; (b) Yes, for the Development; (c) Not applicable.
Description of land to which this Agreement applies - (Section 7.4(3)(a))	The Land.
Description of change to the environmental planning instrument to which this Agreement applies - (Section 7.4(3)(b)(i))	Not applicable.
Description of the development to which this Agreement applies - (Section 7.4(3)(b)(ii))	The Development.
Description of the nature and extent of the provision to be made by the developer under the agreement, the time or times by which the provision is to be made and the manner by which the provision is to be made. (Section 7.4(3)(c)	See Schedules 3, 4 & 5.
Applicability of section 7.11 of the Act - (Section 7.4(3)(d))	The application of section 7.11 of the Act to the Development is not excluded.
Applicability of section 7.12 of the Act - (Section 7.4(3)(d))	The application of section 7.12 of the Act to the Development is not excluded.
Applicability of section 7.24 of the Act - (Section 7.4(3)(d))	The application of section 7.24 of the Act to the Development is not excluded.

Consideration of benefits if under this Agreement section 7.11 applies - (Section 7.4(3)(e))	Not applicable.
Mechanism for Dispute resolution - (Section 7.4(3)(f))	See clause 10
Enforcement of this Agreement – (Section 7.4(3)(g))	See clause 11
No obligation to grant consent or exercise functions – (Section 7.4(9))	See clause 13

Schedule 2 – Development Contribution Schedule

1. Development Contributions

The Developer undertakes to make the following Development Contribution:

Column 1	Column 2
Development Contribution	**Intended use**
The provision of the Dedication to the Council including having undertaken/ complied with the RMS Works and Requirements in accordance with this Agreement.	Public Road.

Schedule 3 – Development Procedures

1.1 Unless it has already done so, as soon as practicable after entering into this Agreement, the Developer shall:
(a) lodge a Subdivision Application or if required by Council a Plan of Road Dedication, with Council for approval, for the purposes of the Dedication; and
(b) lodge the Modification Application

1.2 The Council must, if it is the consent authority and as necessary, process the Subdivision Application and Modification Application (as the case may be), as proposed by clause 1.1 of this schedule, in accordance with the Act and in accordance with its obligations as a Local Government authority, paying specific regard to clauses 13 and 20 of this Agreement. If a Plan of Road Dedication is required by Council in lieu of a Subdivision Application and Transfer of the Road Dedication Area, it must promptly advise the Developer (acting reasonably) in writing whether it approves such a plan or if not it must advise of any amendments that it seeks to be made to the plan to make it acceptable. .

1.3 On receipt of all necessary approvals/ consents under clause 1.2 for the purposes of facilitating the Dedication:

(a) the Developer must take all necessary and reasonable steps so as to:-

(i) procure the registration of a subdivision of the Land so as to sever the Road Dedication Area from it; or

(ii) register the Plan of Road Dedication;

(b) upon any subdivision to create a separate Lot referred to in clause 1. 3(a)(i) occurring (and any separate titles issuing), the Developer and Council must do all things necessary to facilitate registration of a transfer, including within the PEXA on line forum (free from stamp duty) in respect of the Road Dedication Area and if available, procure the Certificate of Title for the Road Dedication Area or do all things necessary to facilitate registration of a Plan of Road Dedication referred to in clause 1.3(a)(ii) prior to the Development Contribution Date;

(c) Carry out the RMS Works and Requirements

1.4 The Council and the Developer must do all things necessary and reasonably required so as to register the Plan of Road Dedication (as the case may be).

Schedule 4 – Development Program

1.1 The Developer shall deliver the Development Contribution by either:

(a) Effecting a subdivision to facilitate the transfer of the Road Dedication Land by way of Transfer to Council by:

(i) procuring the registration of a subdivision of the Land so as to sever the Road Dedication Area from it;

(ii) upon the subdivision referred to in clause 1.1(a)(i) occurring (and separate titles issuing), the Developer must provide to the Council a Transfer in registrable form (but not stamped for stamp duty) in respect of the Road Dedication Area or do all things necessary on the PEXA forum to facilitate registration of the Transfer to Council and the Certificate of Title for the Road Dedication Area(if available); and

(iii) the Council and Developer must take all steps necessary to then procure the registration of that transfer, effecting the Dedication of the Road Dedication Area as a public road by the Development Contribution Date, or if required by Council in lieu of 1.1(a); or

procuring the registration of a Plan of Road Dedication approved by Council ,

by the Development Contribution Date.

1.2 The Development Contribution shall be delivered to Council in accordance with this Agreement, once the RMS Works and Requirements have been carried out by the Developer:

(a) at its cost in accordance with the RMS Works and Requirements; and

(b) to the satisfaction of both the Council and RMS,

by the Development Contribution Date.

Schedule 5 – Release and Discharge Terms

The Council agrees:

(a) that upon the Developer complying with its obligations under this Agreement including undertaken/complied with the RMS Works and Requirements and delivery by the Development Contribution Date of the Development Contribution as set out in Schedule 4, the Developer would have fully satisfied and discharged its obligations under this Agreement; and

(b) if so requested by the Developer, to provide to the Developer (or to any other person authorised to act on her behalf) a letter within 30 Business Days of receipt of such a request, prepared on the Council's letterhead, confirming the Council's assessment that the Developer has fully discharged its obligations under this Agreement; and

(c) Clause (a) has effect whether or not the Council gives the letter to the Developer under clause (b); and

(d) Upon the event in (a) occurring, it will return the Bank Guarantee and withdraw any caveat it has lodged over the Land.

Schedule 6 – Security Arrangements

1.1 Upon execution of this Agreement the Developer must provide to the Council:

(a) a Bank Guarantee in the sum of $70,000.00, such Bank Guarantee not to have an expiry date that is less than 5 years from the issue date; and

(b) if required, a signed transfer in registrable form at the LPI NSW (but not stamped for stamp duty) in respect of the Dedication Area.

1.2 The Council will hold the Bank Guarantee (and transfer referred to in 1.1(b)) pending completion by the Developer of the RMS Works and Requirements in accordance with this Agreement and provision of the Dedication. The Council, must, thereafter return the Bank Guarantee and remove any caveat lodged over the Land.

1.3 No later than 4 years from the date the Bank Guarantee is issued, including any replacement Bank Guarantee, the Developer must obtain a replacement Bank Guarantee in the sum of $70,000.00, such replacement Bank Guarantee not to have an expiry date that is less than 5 years from the issue date.

1.4 In the event this Agreement is terminated, or the Development Consent is surrendered in accordance with clause 11.6, the Council must return the Bank Guarantee and the Transfer to the Developer in accordance with clause 3.2 and remove any caveat lodged over the Land.

EXPLANATORY NOTE

Planning Agreement

Between

Warringah Road Developments Pty Ltd

&

Northern Beaches Council

Exhibit A - Explanatory Note

Planning Agreement – Dedication of land at Warringah Road for public road

The purpose of this Explanatory Note is to provide a plain English summary to support the notification of a draft Planning Agreement (the **"Planning Agreement"**), under Section 7.4 of the *Environmental Planning and Assessment Act 1979* (the **"EPA Act"**), for the granting of a development consent (the **"Consent"**) involving the following:

(a) the redevelopment of the Land by the construction of a centre based childcare facility for a maximum of 146 children; and

(b) the dedication of land to the Council as a public road and carrying out of associated road and cycle way works,

(all known as the **"Proposed Development"**).

This explanatory note has been prepared jointly between the parties as required by clause 25E of the *Environmental Planning and Assessment Regulation 2000*.

1. Parties to the Planning Agreement

The Parties to the Agreement are Northern Beaches Council (**Council**) and Warringah Road Developments Pty Limited (**Developer**).

The Developer is the developer and owner of the land described in section 2 below and has made an offer to the Council to enter into the Planning Agreement in conjunction with the Proposed Development and the Consent, for:

(a) the dedication of part of the Land (namely a strip of land of at least 3.5m in width located on the northern boundary of the Land) (called the **Dedication Area**) to the relevant Roads Authority; and

(b) the carrying out of associated road and cycleway works to the Dedication Area,

in lieu of Council having to pay for it (and the associated road works) so as to enable Warringah Road to be widened and provide an appropriate and safe trafficable public road. The provision of the Dedication Area (and associated road and cycle way works) is to be at no cost to the Council and free from all encumbrances.

2. Description of the Subject Land

The land to which this Planning Agreement applies is described as follows:

- Lot 3 in DP 25050;
- Lot 2 in DP 25050; and

- Lot 1 in DP 25050,

known as 723-727 Warringah Road, Forestville.

3. Description of Proposed Change to Environmental Planning Instrument

There is no change proposed to the *Warringah Local Environmental Plan 2011*.

4. Summary of Objectives, Nature and Effect of this Planning Agreement

The Planning Agreement will assist Council in achieving its objectives in providing a material public benefit to users of Warringah Road and those residents adjoining the Development.

The objective of the Planning Agreement is to ensure that the Proposed Development may proceed by the implementation of the Dedication and carrying out of the associated road and cycle way works (at no cost to the Council) whilst ensuring that Warringah Road remains an appropriate and trafficable public road under the care and control of the relevant Roads Authority for the benefit of current and future generations.

The Planning Agreement meets the current and future demands created by the Proposed Development for new public infrastructure, amenities and services both by the provision of the Dedication Area and the carrying out of the associated road works.

The Planning Agreement is consistent with the Council's transport vision in that:

- it facilities the freedom to choose between different modes of transport to the Proposed Development
- it provides a safe road network, and specifically, safe entry and exits from the proposed Development
- it improves the efficiency of the road/transport network but provision of deceleration and acceleration lanes
- it integrates the Proposed Development with the existing road network
- it facilitates sustainable development by providing the option of pick up and drop off of children via the transport network
- it effectively provides funding to the improvement of Warringah Road without adversely impacting on Council's revenue bottom line
- it links Forestville with the Dee Why to Chatswood public transport corridor
- it will assist in creating extra jobs on the Northern Beaches

The Planning Agreement is an enforceable arrangement between Council and the Developer under the EPA Act. The Planning Agreement requires the Developer to make a Development Contribution and comply with certain requirements including registration of the Planning Agreement; provision of a Bank Guarantee and Caveat upon/following execution of the Agreement pending delivery of the Development Contribution.

The Planning Agreement also contains provisions as to dispute resolution and

does not exclude application of s7.11, s7.12 or s7.24 of the EPA Act. No Occupation Certificate for the Development is to issue pending delivery of the Development Contribution.

5. Timing of delivery of the public community benefit

The dedication of the public benefit, namely the dedication of the Dedication Area (and consequent carrying out of the associated road and cycle way works – all at no cost to the Council), will occur prior to the issue of an occupation certificate for the Proposed Development. It is anticipated that the Dedication will occur prior to the close of 2021. Importantly, the Dedication will have no ongoing or recurring costs for the Council.

6. Assessment of the Merits of this Planning Agreement

(a) **The Planning Purposes Served by this Planning Agreement**

In accordance with Section 7.4(2) of the EPA Act 1979, this Planning Agreement promotes the following public purpose;

- *the provision of (or the recoupment of the cost of providing) public amenities or public services*

The parties have assessed this Planning Agreement and state that the provisions of this Planning Agreement, in particular the Proposed Development, provide a reasonable means of achieving the public purposes set out above by reason that the Dedication Area (and works within it) will be vested under the care and control of the relevant Roads Authority at the Developers sole cost.

In addition, both the Planning Agreement and the Consent impose obligations upon the Developer to provide bonds (and or carry out rectification works) to make good any damaged public infrastructure when carrying out the Proposed Development. This ensure that Council will have no out of pocket expenses either in acquiring the land or in the physical works themselves.

(b) How this Planning Agreement Promotes the Objects of the *Environmental Planning and Assessment Act 1979*

In accordance with the EPA Act 1979, this Planning Agreement and the Proposed Development promotes its intent to encourage;

(ii) the promotion and co-ordination of the orderly and economic use and development of the Land; and

(v) the provision and co-ordination of community services and facilities; and

The Planning Agreement achieves these Objects by requiring the Developer to make the dedication of the Dedication Area which will enable Warringah Road to

be widened and the area to be controlled by the relevant Roads Authority as a public road.

By providing the dedication of land the Planning Agreement will result in:

- promotion of the social and economic welfare of the community and a better environment;
- promotion and co-ordination of the orderly and economic use and development of land (a better trafficable public road and provision of long day care facilities); and
- provision and co-ordination of community services and facilities (being a public road) as well as a long day care centre.

(c) How this Planning Agreement Promotes the Public Interest

This Planning Agreement's intent is to promote the Public Interest through the acquisition of land (and provision of associated road and cycle way works) for public purposes to the relevant Roads Authority without the relevant Roads Authority having to pay for the land or works. This in turn promotes further Public Interest by ensuring that the scarce and valuable resources of the relevant Roads Authority (and State government at large) are maintained and preserved for the betterment and enjoyment of the community at large.

(d) How this Planning Agreement Promotes one or more of the elements of Council's Charter under section 8 of the *Local Government Act 1993*

This Planning Agreement promotes the following elements of the Council's Charter:

- to provide directly or on behalf of other levels of government, after due consultation, adequate, equitable and appropriate facilities for the community and to ensure that those facilities are managed efficiently and effectively; and
- to properly manage, develop, protect, restore, enhance and conserve the environment of the area for which it is responsible, in a manner that is consistent with and promotes the principles of ecologically sustainable development

This Planning Agreement promotes the above elements of the Councils Charter by providing an appropriate and trafficable public road and cycle way within the Council's local government area under the care and control of the relevant Roads Authority for the benefit of current and future generations at no cost.

(e) The Impact of this Planning Agreement on the Public or any Section of the Public

The growing population of Warringah, and the Northern Beaches local government area requires public roads – particularly those that are both appropriate and safe. This Planning Agreement provides the relevant Roads Authority with land which

will be dedicated to the relevant Roads Authority for use as a public road. As a public road, the Dedication Area will be available to all road users to use. The fact that that dedication (and associated road and cycle way works) is at no cost to the Council is a significant positive impact on the public as it frees up funds that might otherwise have been earmarked for the road upgrade works or cycle way works that are proposed as part of this Planning Agreement.

(f) Identify whether the Planning Agreement conforms with Council's capital works program (if any)" Cl 25E(2)(f)

The Planning Agreement is not inconsistent with Council's Capital Works program.

State whether the agreement, amendment or revocation specifies that certain requirements of the agreement must be complied with before a construction certificate, occupation certificate or subdivision certificate is issued Cl 25E(2)(g)

The Planning Agreement includes a provision that the Dedication of the Dedication Area must be complied with before an occupation certificate is issued.

Execution Page

Executed as an Agreement.

For and on behalf of Northern Beaches Council)
by)

_____
Signature

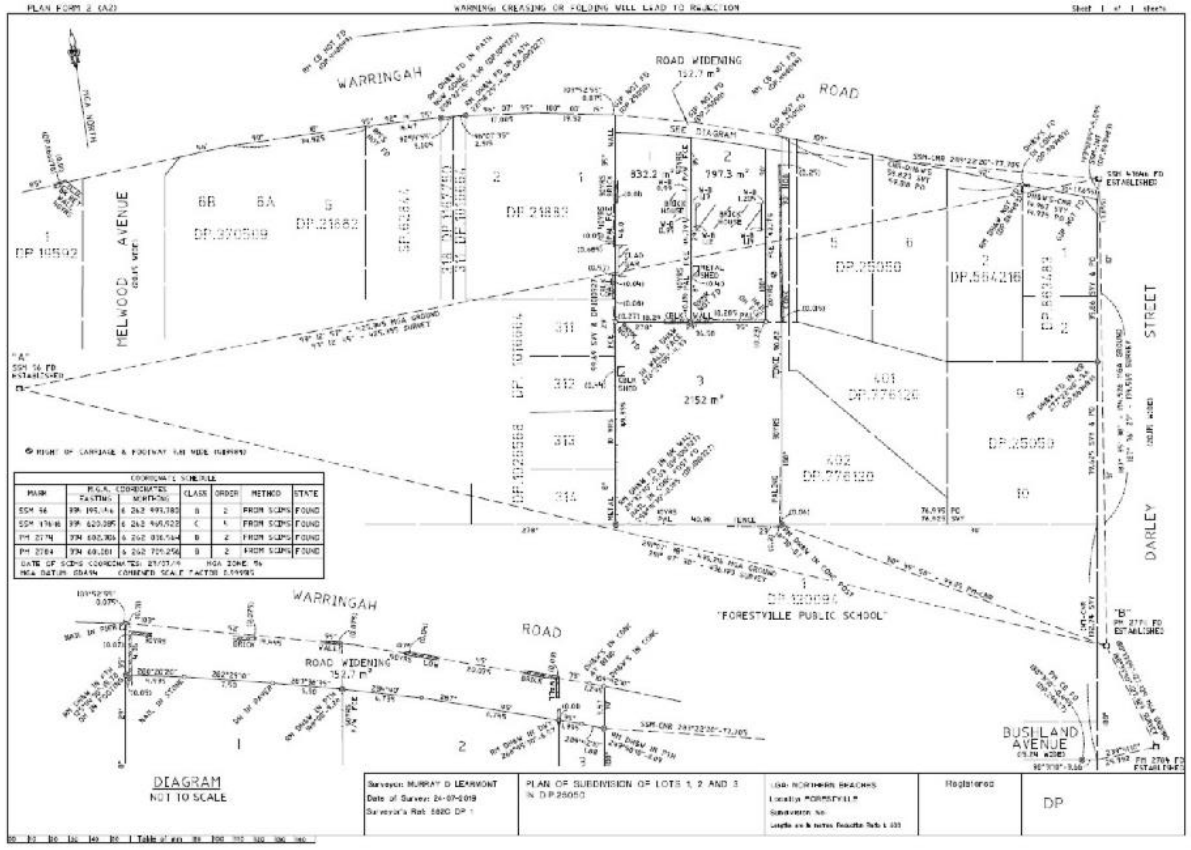
_____

_____
Signature of Witness

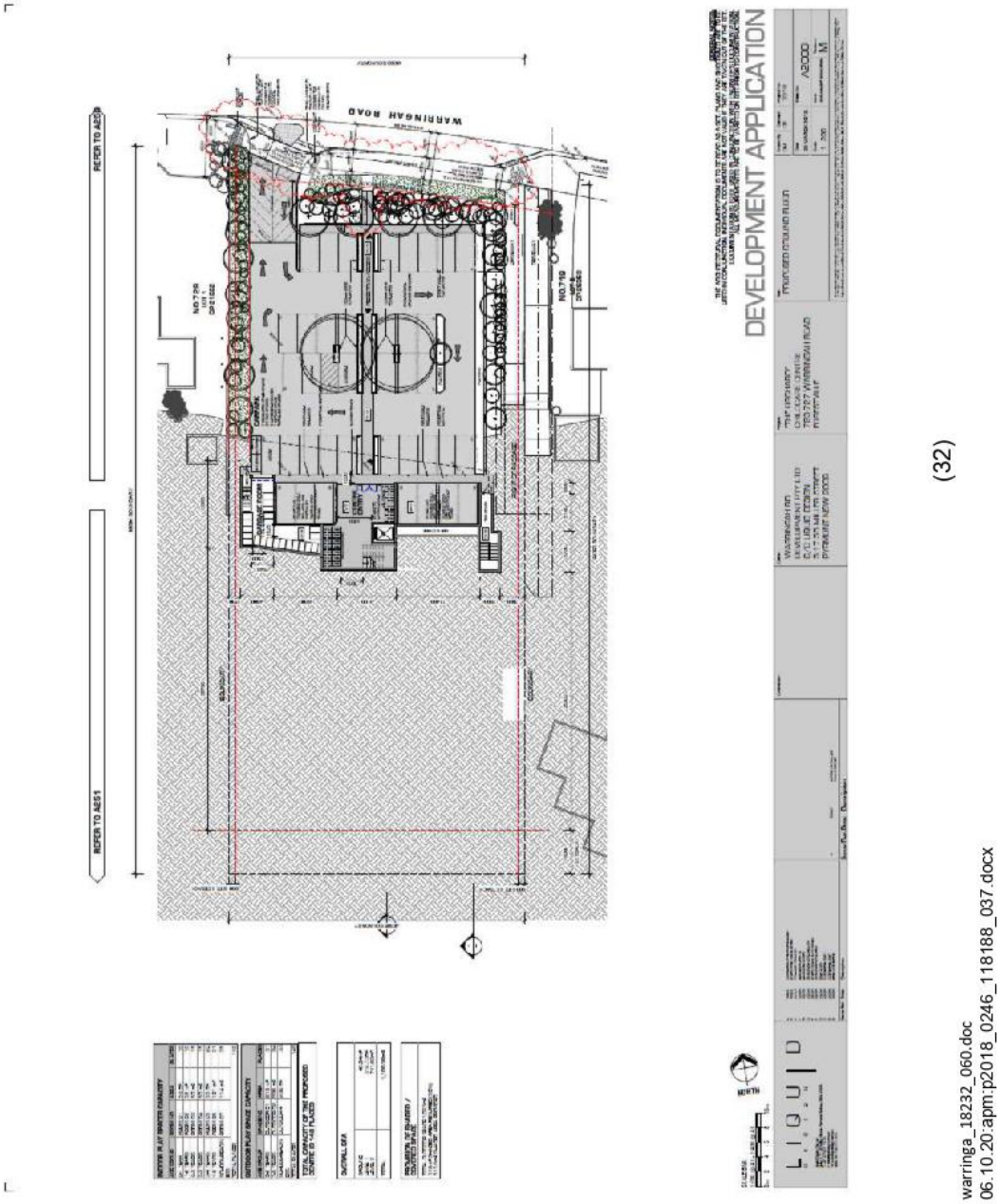
Executed by **Warringah Road Development Pty Ltd** ACN 602 140 634 in accordance with s.127 *Corporations Act*)

_____	_____
Secretary/Director	Director
_____	_____
Name of Witness (print)	Name of Director (print)

Attachment "A" – plan of Road Dedication Area



Attachment "B" – Plan of RMS Works and Requirements



(32)

warringa_18232_060.doc
06.10.20:apm:p2018_0246_118188_037.docx

Attachment "C" – RMS letter to Council and subsequent email correspondence

Transport
Roads & Maritime
Services

5 June 2018

Our Reference: SYD18/00766 (A22498000)
Council Ref: DA 2018/0697

The General Manager
Northern Beaches Council
725 Pittwater Road
DEE WHY NSW 2099

Attention: Nick England

Dear Sir/Madam,

PROPOSED CHILD CARE CENTRE DEVELOPMENT
727 WARRINGAH ROAD, FORESTVILLE

Reference is made to Council's letter dated 11 May 2018, regarding the abovementioned Application which was referred to Roads and Maritime Services (Roads and Maritime) for concurrence under Section 138 of the *Roads Act, 1993*.

Roads and Maritime has reviewed the submitted application and notes that the development proposal include removal of redundant driveway and construction of a deceleration lane into the site and restricts vehicle movements to left in and left out only which is appropriately separated by a median. Therefore Roads and Maritime would provide concurrence under Section 138 of the *Roads Act 1993* for removal of the redundant driveway and for the proposed deceleration lane subject to the following conditions being included in any consent issued by Council:

1. Roads and Maritime has previously vested a strip of land as road along the Warringah Road frontage of the subject property, as shown by grey colour on the attached Aerial – "X".

   Therefore all buildings and structures, together with any improvements integral to the future use of the site are to be wholly within the freehold property (unlimited in height or depth), along the Warringah Road boundary.

2. Any redundant driveways on Warringah Road should be replaced with kerb and gutter to match existing. The design and construction of the access into the site on Warringah Road shall be in accordance Roads and Maritime requirements. Details of these requirements should be obtained from Roads and Maritime Services, Manager Developer Works, State Wide Delivery, Parramatta (telephone 9598 7798).

   Detailed design plans of the kerb and gutter are to be submitted to Roads and Maritime for approval prior to the issue of a Construction Certificate and commencement of any road works.

   A plan checking fee (amount to be advised) and lodgement of a performance bond may be required from the applicant prior to the release of the approved road design plans by Roads and Maritime.

Roads and Maritime Services

27-31 Argyle Street, Parramatta NSW 2150 |
PO BOX 973 Parramatta NSW 2150 |

www.rms.nsw.gov.au | 13 22 13

3. The proposed deceleration lane and access into the site shall be designed to meet Roads and Maritime requirements, and endorsed by a suitably qualified practitioner. The design requirements shall be in accordance with AUSTROADS and other Australian Codes of Practice. The certified copies of the civil design plans shall be submitted to Roads and Maritime for consideration and approval prior to the release of the Construction Certificate by the Principal Certifying Authority and commencement of road works.

   The developer may be required to enter into a Works Authorisation Deed (WAD) for the abovementioned works. Please note that the WAD will need to be executed prior to Roads and Maritime assessment of the detailed civil design plans.

   Roads and Maritime fees for administration, plan checking, civil works inspections and project management shall be paid by the developer prior to the commencement of works.

4. The proposed deceleration lane could be constructed within the existing road reserve subject to dedication of the same land (same length & same width) within the property for future deceleration lane (when needed). The land should be dedicated to Roads and Maritime and identified as a separate lot in the sub-division plan. All works to be carried out at no cost to the Roads and Maritime.

5. All vehicles are to enter and exit the site in a forward direction.

6. All vehicles are to be wholly contained on site before being required to stop.

7. Sight distances from the proposed vehicular crossing to vehicles on Warringah Road are to be in accordance with the Austroads '*Guide to Traffic Engineering Practice, Part 5: Intersections at Grade, Section 6.2 – Sight Distance*' and AS 2890. Vegetation and landscaping / fencing must not hinder sight lines to and from the vehicular crossings to motorists, pedestrians and cyclists.

8. The developer is to submit design drawings and documents relating to the excavation of the site and support structures to Roads and Maritime for assessment, in accordance with Technical Direction GTD2012/001.

   The developer is to submit all documentation at least six (6) weeks prior to commencement of construction and is to meet the full cost of the assessment by Roads and Maritime.

   Details and any enquiries should be forwarded to Mr Suppiah Thillai at Suppiah.Thillai@rms.nsw.gov.au or Phone at 8849 2114.

   If it is necessary to excavate below the level of the base of the footings of the adjoining roadways, the person acting on the consent shall ensure that the owner/s of the roadway is/are given at least seven (7) day notice of the intention to excavate below the base of the footings. The notice is to include complete details of the work.

9. Detailed design plans and hydraulic calculations of any changes to the stormwater drainage system in Warringah Road are to be submitted to Roads and Maritime for approval, prior to the commencement of any works.

   Details and any enquiries should be forwarded to Mr Suppiah Thillai at Suppiah.Thillai@rms.nsw.gov.au or Phone at 8849 2114.

   A plan checking fee will be payable and a performance bond may be required before Roads and Maritime approval is issued. With regard to the Civil Works requirement please contact the Roads and Maritime Project Engineer, External Works Ph: 8849 2114 or Fax: 8849 2766.

10. All demolition and construction vehicles are to be contained wholly within the site and vehicles must enter the site before stopping. A construction zone will not be permitted on Warringah Road.

11. A Road Occupancy Licence should be obtained from Transport Management Centre for any works that may impact on traffic flows on Warringah Road during construction activities.

Should you have any further inquiries in relation to this matter, please do not hesitate to contact Hans Pilly Mootanah on telephone 8849 2076 or by email at development.sydney@rms.nsw.gov.au.

Yours sincerely,

Ahsanul Amin
A/Senior Land Use Planner
Sydney Division – North West Precinct


"X"
WARRINGAH RD
WARRINGAH RD
DP25052
2
DP21882
1
DP21882
1
DP25050
2
DP25050
6
DP25052
311
DP1016684
312
DP1016684
313
DP1028568
1
DP25050
401
DP778120
314
DP1028568
402
DP778120
1
DP120284
1C
DP25050

Ian Johnson

From: Pahee Rathan <Pahee.RATHAN@rms.nsw.gov.au>
Sent: Wednesday, 25 September 2019 9:21 AM
To: Ian Johnson
Cc: Lucy Motta
Subject: RE: 118188: Proposed Childcare Centre Development-727 Warringah Road Forestville- Your Reference SYD 18/00766 (A22498000)

Matter: 118188
Saved: -1

Dear Ian,

I refer to your email below in relation to Condition 4 of Roads and Maritime's letter dated 5 June 2018.

As per my discussion With Lucy Motta of your office, the land should be dedicated to Council as road. Hence, Roads and Maritime provide below the amended Condition 4:

"The proposed deceleration lane could be constructed within the existing road reserve subject to dedication of land (with same length and width) within the property for relocation of the deceleration lane (when needed). The land shall be dedicated to Council as public road and shall be identified as a separate lot in the sub-division plan. All works are to be carried out at no cost to Roads and Maritime."

I trust this information is of assistance.

Should you wish to discuss this matter further, please call me on the numbers below.

Regards
Pahee

Pahee Rathan
Senior Land Use Assessment Coordinator
North West Precinct | Greater Sydney Division
T 02 8849 2219 M 0417 248 510
www.rms.nsw.gov.au
Every journey matters

Roads and Maritime Services
27 Argyle Street Parramatta NSW 2150

Response to Submissions Table – VPA2020/0002

Submission	Issues	Response
1	The estimated 100 metre line of sight will be reduced and either partially or fully obscured by vehicles entering the Centre from the access slip lane. The reduced line of sight will make decision making more complex and difficult for safe entry into 70 KM per multi-lane traffic flow. The knock on effect may cause vehicles to queue in the Centre, again contributing to impatient and rushed decision making.	Vehicle access points to a State Road such as Warringah Road require concurrence from the Roads and Maritime Service (RMS) to approve. The RMS has required that a slip lane be provided as part of the DA approval for the site. Sight line issues were taken into consideration by the Land and Environment Court (as the consent authority for this DA). The plans for the deceleration lane have been certified by an appropriately qualified and experienced traffic engineer as being compliant with Austroads Guidelines including with regard to sight lines. As part of the condition to the development consent, certified copies of the plans are required to be submitted to RMS for consideration and RMS approval (as the Roads Authority) prior to construction.
	Customers parking to disembark/embark their children from their vehicles in the Centre will force queuing of vehicles in the slip lane. The concern is the queuing in the Centre access lane will obscure line of sight for exiting vehicles, cause vehicles to wait on the footpath (placing pedestrians and cyclists at increased risk of harm) and in busy times the Centre vehicles queue spilling onto Warringah Rd.	The carpark incorporates one-way circulation through the carpark which will act to minimise any queuing back into the deceleration lane or across the footpath. The adequacy of the carpark was considered by the Land and Environment Court (as the consent authority for this DA); and development consent issued.
	The increased congestion from left turns on Darley Street (LoS F) in the AM peak will contribute to impatient drivers and parents making poor driving decision when entering Warringah Rd. The Aimsun modelling estimates only addition 47 left turns in AM peak from Darley St.	Revised traffic modelling was submitted to the Land and Environment Court (as the consent authority for this DA) for the Court's consideration, and it demonstrated that only minor increases in delays for left turning traffic from Darley Street were evident.

	Another concern is if the proposed line of sight of 100 metres meets requirements for a 70km/hr road – there is no mention if this is suitable for multi-lane roads as per the Austroads Guide to Traffic Management. Part 6 recommends a different approach for multi-lane roads based on traffic volumes and flows.	Vehicle access points to a State Road such as Warringah Road require concurrence from the Roads and Maritime Service (RMS) to approve. The RMS has required that a slip lane be provided as part of the DA approval for the site. Sight line issues were taken into consideration by the Land and Environment Court (as the consent authority for this DA). The plans for the deceleration lane have been certified by an appropriately qualified and experienced traffic engineer as being compliant with Austroads Guidelines including with regard to sight lines. As part of the condition to the development consent, certified copies of the plans are required to be submitted to RMS for consideration and RMS approval (as the Roads Authority) prior to construction.
	Are sight distances from the proposed vehicular crossing in accordance with the Ausroads 'Guide to Traffic Engineering Practice, Part 5: Intersections at Grade, Section 6.2 – Sight Distance' and AS 2890?	Sight lines have been certified as being consistent with Austroads Guidelines.
	Ausroads suggests that advanced warning signs may be necessary where there is a high approach speed or where approach sight distance is limited. A suggested way forward to ensure safety of the area and maintain consistent traffic flows may be for additional signage to be built on Warringah Rd to inform users of entering/exiting vehicles ahead, lane markings on Warringah Rd to indicate access lane ahead and linking the traffic signals at Darley St with Centre exit.	The certified plans for the deceleration lane are required to be submitted to RMS for consideration and RMS approval (as the Roads Authority) prior to construction. If additional signage or markings are deemed necessary on Warringah Road, RMS will indicate this requirement in their approval to the construction of the deceleration lane. Council has no authority to require such signs and markings on a State Road.
	To reduce the risks of queuing within the Centre the development of a parking application that informs customers of the most suitable parking space (reducing wait time and possible queuing; if there are no spaces available provide advice to go direct to set	The introduction of a parking guidance system or other means of provide advice on availability of spaces has not been considered necessary by the Land and Environment Court when it considered

	down, park else where or loop through Forestville.	and subsequently approved the DA on this site.
	The Aimsun modelling Level of Service is not a safety assessment, for the benefit of all, may the proposed VPA be reviewed by road safety subject matter experts.	The design of the deceleration lane has been reviewed as part of the DA approval process by both Council and RMS officers and has been certified as compliant with relevant Austroads Guidelines by an appropriately qualified and experienced traffic engineer.
2	I am dead against this development being on a very busy main road. Congestion can be quite severe particularly along Darley St and Bushland Ave. After drop off the cars will go up Melwood Ave and into Bushland Ave to exit into Darley St. Bushland Ave is congested already with cars parked on one side.	The traffic impacts of the development have been considered and addressed as part of the Court's Approval of the DA.
3	Whilst providing a "slow down lane" would be seen to overcome the issue of traffic impingement for westbound traffic along Warringah Rd during the mornings, there would still be an amount of "hesitation and caution" that would impact on traffic flow. This, after Warringah Rd has had millions spent on removing bottlenecks seems a bit of a backwards step.	The deceleration lane is an RMS requirement and has been certified as being compliant with relevant Austroads Guidelines in accordance with the Court's DA approval.
	With a projected 146 child care places envisaged, it would be reasonable to predict say 80 car movements in the morning alone, to drop off children. These movements would be during, or just on either side of pre school and public school drop offs, and of course, residents trying to get to work. Already, the library car park and surrounding streets are operating above their limitations. An additional 80 vehicular movements would surely add to the congestion apparent already, every weekday morning.	The traffic generation potential of the childcare centre was the subject of traffic modelling and a traffic impact report submitted as part of the DA assessment process. The traffic generation impacts were found to have been acceptable; hence the Land and Environment Court approved the development consent on this site.

	After dropping children off the majority of cars will turn left into Melwood Ave, and again, left into Bushland Ave, giving these parents / care givers access to the shopping centre, or back east along Warringah Rd via the Darley St traffic lights. Locals will unanimously tell your that the traffic lights at Darley St and Warringah Rd are already inadequate during peak 7:30am to 9:30am, and again in the afternoon for 2:30pm to 6pm.	The traffic generation potential of the childcare centre was the subject of traffic modelling and a traffic impact report submitted as part of the DA assessment process. The traffic generation impacts were found to have been acceptable; hence the Land and Environment Court approved the development consent on this site.
4	Entry and exit into daycare centres and schools in Darley Street and Violet Ave are already causing backups of traffic and delays for residents exiting Forestville either via Darley St and Starkey St onto Warringah Rd. A further buildup of traffic of cars entering and exiting the proposed new daycare laneway will add further to this mess.	The traffic generation potential of the childcare centre was the subject of traffic modelling and a traffic impact report submitted as part of the DA assessment process. The traffic generation impacts were found to have been acceptable; hence the Land and Environment Court approved the development consent on this site.
	Will the proposed "gift" of land and laneway actually mean that traffic along Warringah Road will not be impeded by cars slowing to enter and exit the laneway at an already congested area? Has modelling of the impact of this development on the area and traffic been done by an independent person?	The deceleration lane is designed to reduce the level of impact as vehicles slow to enter the site. As with any driveway accessing a road there is always some impact on through traffic flow. The traffic impacts of the development were the subject of traffic modelling and report as part of the DA process and were found to be acceptable; hence the Land and Environment Court approved the development consent on this site.
	If approved, this laneway should be constructed before building works commence to minimise the impact on Forestville residents by construction vehicles.	The construction of the deceleration lane is part of the development consent. The timing of its construction is not specifically conditioned to occur before/after or concurrent with the child care centre construction. The Planning Agreement requires the deceleration lane to be completed in accordance with the development consent and RMS approval before the land containing the deceleration lane is

		transferred into Council ownership.


Lot 1
DP 1251955
Lot 2
DP 1251955
Lot 3
DP 1251955
Lot 8
DP 1092802
Lot 13
DP 1092788
Attachment 1 - Proposed area for Lynne Czinner Park
Scale: 1:1976
Date Printed: 27/11/2020
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Community and Stakeholder Engagement Report

Naming proposal – Lynne Czinner Park (Stage 1 of 1)

Impact level: Four

Consultation period: 29 January to 28 February 2021

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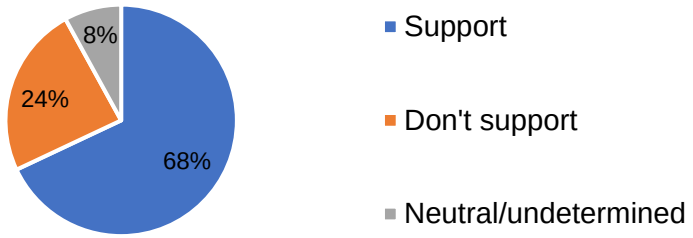
1. Summary[1]

This report outlines the community and stakeholder engagement conducted between 29 January and 28 February 2021 as part of the proposal to name the Fern Creek Reserves in Warriewood, Lynne Czinner Park.

The majority of comments received were in support of the proposal as a fitting tribute to Lynne Czinner.

The main reasons described in the feedback against the proposed naming included a preference for an indigenous name and retaining the name Fern Creek. Some specified that the reserves should not be named after an individual.

1.1. Engagement snapshot

Total comments received	62		
Have Your Say	Visitors: 296	Visits: 342	Av. time onsite: 2 minutes
Print media and collateral	Site signs: Yes		Number: 5
Electronic direct mail (EDM)	Community Engagement (fortnightly) newsletter: 2 Council (weekly) e-News: 1		Distribution: 20,000 subscribers Distribution: 150,000 subscribers
Sentiment			

[1] Community and stakeholder views contained in this report do not necessarily reflect the views of the Northern Beaches Council or indicate a commitment to a particular course of action.

1.2. Who responded[2]



Gender



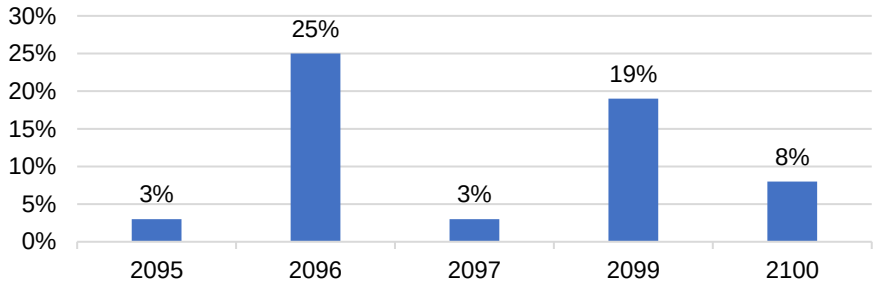


Age groups





Postcodes*



*Only the top 5 postcodes are reflected in the graph.

2. Background

Lynne Czinner was a Councillor and later Mayor of the former Pittwater Council. She was a passionate advocate for the protection of the natural environment and campaigned to protect the Warriewood wetlands and escarpment.

After her passing, Council resolved to find an "appropriate location for a memorial in [Lynne's] honour". In consultation with Ms Czinner's family, it was decided that naming the reserves at Fern Creek Warriewood after Lynne would be a fitting recognition of her contributions.

3. Engagement objectives

- Provide accessible information so community and stakeholders can participate in a meaningful way (inform).
- Identify community and stakeholder concerns, local knowledge and values (consult).
- Build community and stakeholder awareness of the project and the opportunity to provide comments (consult).

[2] Demographic data was gathered by request only. The data represented only includes those respondents who provided this detail.

4. Engagement approach

Community and stakeholder engagement for the Naming Proposal – Lynne Czinner Park project was conducted over a four-week period, from 29 January and 28 February 2021.

The engagement was planned, implemented and reported in accordance with Council's Community Engagement Matrix (2017). The engagement approach is outlined in the Naming Proposal – Lynne Czinner Park Community and Stakeholder Engagement Plan (November 2020).

A project page was established on our have your say platform with information provided in an accessible and easy to read format.

The project was primarily promoted through our regular email newsletter (EDM) channels.

Feedback was captured through an online comment form embedded onto the have your say project page. The form included a question that directly asked respondents for their level of support on the proposal.

An open-field comments box provided community members a space to explain or elaborate on their support, not support or neutral sentiment as well as any other feedback they wished to contribute.

Email and written comments were also invited.

5. Findings[3]

During the feedback period, 62 submissions were received. Of these, 68 percent supported the proposal, indicating that naming the reserves in Lynne Czinner's honour was a fitting tribute to a person who contributed a lot of her time to protecting the local environment.

Twenty four (24) percent of the comments received did not support the proposal for various reasons. Some indicated that they preferred to maintain the current name - Fern Creek or to choose an Aboriginal name to acknowledge the local indigenous heritage. Other commenters suggested a simple plaque with a description of Lynne's community contribution would be a suitable alternative.

A few respondents indicated that places in the northern beaches should not be named after single individual as there are many worthy recipients and the selection process to identify the worthiest is subjective.

[3] This report represents what Council has heard as accurately and transparently as possible by using consistent quantitative and qualitative analysis techniques.

6. Summary of submissions and Council response

Supportive of Name Lynne Czinner Park	Summary of Comments	Council Response
No	A name should be given that acknowledges the traditional owners.	Councils naming policy and guidelines are supportive of Aboriginal names. However in this instance the proposal involves recognition of a community member.
No	The proposed name only represents one person and creates exclusiveness.	This proposal does recognise the efforts of one person. It does not however create exclusiveness of the reserve. There are many reserves named after individuals, which have not created such issues.
No	Where is the reference to the Serbian/Croatian families who made the Warriewood Valley.	The alternative suggest is not without merit. However in this instance the proposal involves recognition of Lynne Czinner.
No	Councillors are paid to do a job and should not be put on a pedestal by naming. There are more deserving who volunteer their time to better the community.	Council follows its policy for *Naming a Council reserve, Road and Facility* and review submission according to its criteria. The proposal is within the Geographical Names Board policy for *Place naming*.
No	The current name Fern Creek Reserve is a more beautiful name.	Council acknowledges the suggestion of the name Fern Creek Reserve, however the proposed name intends to commemorate Lynne Czinner for her contributions to the community and environment.
No	Something smaller such as a bench engraved for her would be better.	On consultation with Ms Czinner's family it was considered the naming of the reserve at Fern Creek would be appropriate recognition of Ms Czinner's contributions.
Neutral	Ms Czinner would be horrified at the state of the reserve at Fern Creek. Pittwater Council including Lynne Czinner use to value and respect the creek and its surrounds.	Council will investigate the maintenance and potential improvements of the creek line.

Yes	The name fittingly acknowledges the contributions made by Lynne Czinner.	Council acknowledges Lynne Czinner's contribution to the community and the environment particularly the Warriewood Wetlands.
Yes	The naming plaque should include reference to maintain the history of Lynne Czinner and her contributions.	Council will be in consultation with Ms Czinners family in developing the text on the signage which will preserve the history of her contributions.
Yes	The park could be landscaped with informal gardens – given Lynne's background as a horticulturist An idea would be to include a community garden, especially featuring tomatoes in glasshouses based on those of Warriewood – paying tribute to her love of the community and the market gardening history of the area. Additionally sculptures by local artists located within the park.	Council will consider the suggestions put forward in the future planning of the reserve.

7. Verbatim community and stakeholder responses

No.	Comment
1	A perfect legacy for someone who cared so much about the environment and did everything possible to save it for future generations and the preservation of the planet.
2	Acknowledging the work that Lynne Czinner did by naming Fern Creek Reserves at Warriewood after her is a fitting tribute for her passion and determination to protect the wonderful natural environment of the Warriewood Wetlands.
3	An appropriate memorial to a wonderful friend and colleague and a tireless worker for Pittwater
4	Councillors are paid to do a job and should not be put on a pedestal by naming anything, streets, parks etc after them. Choose someone more deserving who volunteers their time to better the community. Im sure there are hundreds of such people. If thats too difficult to decide then leave the name as it is.
5	Fern Creek Reserves far better describes the area. The area does not need a verbose two name designation, ie first and second names.
6	Fully support.
7	Great idea.
8	I agree that it is a fitting and very nice gesture to name this reserve as Lynne Czinner Park. This area is part of the Narrabeen Lagoon catchment. Prior to the amalgamation of the three councils the Narrabeen Lagoon and it's catchment was overseen by shared Council's Committee with the long winded acronym and name, (NL JE & FMC) Narrabeen Lagoon Joint Estuary & Floodplain Management Committee. Lynne was a long time serving, and passionate member of that committee. During that period I was a member, in the capacity of a "Citizen Representative & an Anglers Action Group Inc representative". Lynne was not a fisherman, but was very interested in maintaining the Lagoon's marine habitat, including maintenance of Evolved Water Levels. I think that this will be a great tribute to Lynne.

No.	Comment
9	I am very happy with the name Czinner Park but not Lynne Czinner Park. It seems that only in the last 50 years that first names have added to names of places. Adding the first name is cumbersome. By all means erect a plaque that gives Lynne due recognition but keep it simple. First names have been known to be dropped off other place names. Not that the first name I will use here is correct but I am glad our early citizens did not choose to give us Fred Hyde Park in Sydney's CBD.
10	I don't believe any park/reserve/whatever should be named after just one individual. I think Lynne did a great job and perhaps a plaque somewhere to commemorate that could be done but there are too many great people on the Northern Beaches who could, and should, be recognised in some way. Why should one take precedence over the other? Perhaps something like a 'walk of fame' might be more appropriate, that way many people's achievements can be recognised and there is no limit to the amount of people who can be added.
11	I don't know how you have the nerve to ask. I think Lynne would be horrified at the state of Fern Creek. If you think just a cosmetic job of the recent 'slash, burn, spray' on the visible bits (done in time for this proposal, I'd guess) exonerates the neglect of the area since the councils amalgamated - you're deluded. Get out there and have a look at Fern Creek, so choked with weeds it can't run. Shame on you, NB council. Pittwater council used to value and respect the creek and surrounds and this fostered the same respect by the locals. Now? Come and see the graffiti, dumping and weed growth. Disgusting!
12	I hadnt heard of Lynn Czinner before but certainly support recognising people of her stature in the community - we need more of them. Good initiative..
13	I heartedly agree with this suggestion. Lynne certainly made her name, over political, lifetime, in all sorts of ways, and, like Robert Dunn who died within a day of her, she needs to be remembered in any way we can.
14	I knew Lynne and understood her passion for the valley. She loved both the environment and kids and I can't think of a more fitting tribute to her
15	I think it is a great idea and a very appropriate location
16	I think it would be a lovely idea as she did so much for the era and the environment.
17	I think that Lynne does need recognition but I don't this park should be named after her. Practically also the last name is difficult to say and spell which logistically will cause issues when people want to organise to meet at the park. Prefer a name linked to the original owners of the land (aboriginal) or a name that reflect the future of Warriewood, a more transformation name. Can a competition to come up with a name be launched instead.
18	I think that would be a lovely idea.....she certainly deserves a lovely reserve named after her.
19	I worked with Lynne Czinner as a community supporter over 25 years, including on the Catchment Management Committee. Lynne was passionate about the environment and the community, and a fun person to be around. I think she deserves to be remembered
20	If the park is named in honour of Lynne I think the naming plaque should include reference to reason why it was named in her honour. In many years to come, as generations pass, people can lose sight of the origin of the naming, which I think is important. To support this, I make reference to Birdwood Park , North Narrabeen. I believe the park was named in honour of William Riddell Birdwood, 1st Baron Birdwood of Anzac and Totnes, GCB, GCSI, GCMG, GCVO, CIE, DSO . The reason why it was named as such seems to be lost to history, as will be Lynne's park in the fulness of time.
21	It is a good name for the park. She deserves the recognition
22	Lovely recognition for someone who contributed a lot to the community.
23	Lynne Czinner is a deserving recipient of such an honour
24	Lynne Czinner was an active councillor supportive of community and staff. I am sure she would appreciate a natural environment being named after her.
25	Lynne dedicated much of her life serving the Pittwater community, including 16 years on Council from 1992-2008. Prior to being elected to Council she was president of the Warriewood Valley Residents Association where she worked tirelessly to represent the community's views on the early planning for the Warriewood Valley. Lynne contributed so much to her local community, and I wholeheartedly support naming the Fern Creek Reserves – Lynne Czinner Park. Given her dedication to the protection of our environment,

No.	Comment
	and her early and extensive involvement in the Warriewood Valley, the naming of this park will help us remember her tireless efforts.
26	Lynne was a councillor in Pittwater Council and a Committee member of the Warriewood Residents Association and was a passionate advocate of open space and in particular the park at the end of Fern Creek Road. Lynne also lived in Orchard Street close to the park. The naming of the park after Lynne would be a fitting tribute to the work she did for the Warriewood community.
27	Lynne was a friend of mine and a friend of Pittwater and this is a deserved way to remember her.
28	lynne was a great community representative who loved natural environment. this hasn't my total and complete support
29	Lynne was a tireless supporter of the voice of the people on many issues ranging from retention of the Mona Vale hospital to the limits of high rise development. Much of Warriewood Valley's amenities are there thanks to Lynne. Naming the park in her name is a fitting recognition for her many years of work.
30	Naming anything that is part of our environment after a person, e.g. forests, parks, reserves, wetlands etc., is a sign of disrespect and arrogance towards such part, and also provides a wrong state of ownership or entitlement. Already changing names of anything environmental, from the way our First Nations People called it, to English words/names after the English first set foot on Australian soil, e.g. Fern Creek, Spring Valley, Old Oak Forest etc.. was/is a shame and wrong! Changing again to a persons name, is very wrong. And again disrespectful, arrogant and provides a wrong state of ownership or entitlement!! All Australians, including our First Nations People are the owners of our environment, even when it's endangered as it is right now. Especially then, as we are all to blame for it. Actually, when it comes to the word ownership, humans don't really own any part of the environment: this planet does, or Mother Nature, if one wants to be poetic. We are only temporarily borrowing it, and we're doing a very bad job of it. So we shouldn't even be using the word ownership in regards to the environment. We are, however, all paying through taxes, for maintenance and upkeeping and protection. Not just one person. We're also doing a bad job of that as well! I understand the role the former Mayor has played in "protection of the natural environment and campaigned to protect the Warriewood wetlands and escarpment. She was instrumental in ensuring there was an interconnected network of open spaces as part of the development of the Warriewood Valley land release". But we all play a role in protection, in campaigning for or against plans/decisions, it wasn't just the Mayor! If she, or anyone else, needs to be honoured for such roles, then place a statue or a plaque with explanative information, at entrances. Or place a bench with a name plaque, in honour of such person. That benefits even two ways! I, and I'm sure many others, also do not understand why the changing of the names was already discussed and decided, before putting it towards the public. This shows the wrong order in a democratic process, because it seems now as if the decision cannot be made undone. What is, in that case, the point of putting it forward to the public? A false sense of democracy is what it is, and I'm sure that's not in Northern Beaches Councils' best interest, nor in that of it's citizens and voters. I'm sure that it's also not the message you want to send out to us, seeing as Council wants to be known for it's tranparency, respect of citizens and the honouring of a fair and democratic process. Please find another way of honouring the former Mayor.
31	Nice idea to have Lynne honoured by naming the reserve after her.
32	Not in line with current community standards to name a place after a person. Need to avoid potential future reputational embarrassment to community in the event a person is cancelled.
33	Preference is for all place names on the Northern Beaches to be given indigenous names with English translation.
34	She deserves this (I lived in Warriewood 29 years and she was my councilor).
35	She gave the community so much of her time.
36	Strongly support the naming after Lynne. As GM of Pittwater Council I was very aware of Lynne's dedication to Warriewood.
37	Thank you for this memorial. Mum was protecting Warriewood before she was on council. She was a principal activist in the creation of Pittwater Council, to give residents the representation they were not receiving as part of Warringah Council. Then she spent years as a

No.	Comment
	councilor, devoting her life to making theirs better: providing service to the people and protection to the environment. She would be honoured to be remembered this way, and represented by a reserve she probably fought for... right in her front yard. YES!
38	Unfortunately it's a harsh name. Fern Creek Reserve is a more beautiful name for the beautiful reserve. I think a bench engraved for her, in the reserve would be better
39	Warriewood needs recognition of its history more than posterity for a former long serving councillor. Where are the names of the many, many Serbo/Croatian families who made the valley. This is your opportunity to start correcting this glaring omission.History is important. Embrace it.
40	We got to know Lynne when we first came to live in Warriewood 15 years ago, when the development in Warriewood was underway. She was very enthusiastic regarding keeping the greenery, protecting the environment against over development. I fully support naming the reserves in her honour.
41	We knew Lynne when we were living in Warriewood. She shared the same interest as my husband and I regarding the greening of Warriewood, opposing over development and maintaining the wetlands.
42	What's in a name? Fern Creek Park sounds a whole lot prettier than Lynne Czinner Park. She was a paid councillor doing her job. We can't rename everything to honour all the people who perform their jobs above and beyond! Nurses, doctors, police, business owners and many more have done more than their fair share. If Council really feels the need to honour one of their own, put some nice seating in Fern Creek Park and add a plaque; The Lynne Czinner rest spot. But no, don't change the name of the park.
43	Whilst not denying lynne's passion and contribution to the area, she lived in a caravan up the end of warriewood valley for a number of years. is it appropriate to give recognition to a person who was prepared to flout the law and live in a fashion that provided home occupation which was not of a legal nature? i think that nullifies the proposal.
44	Yes I wholly support this proposal in recognition of the years of service Lynn Czinner gave to the community
45	The current name is sufficient

Document administration	
Version	3.0
Date	4 March 2021
Status	Final
Related Projects	Northern Beaches Bike Plan

THE NORTHERN BEACHES ELECTRIC VEHICLE CHARGING INFRASTRUCTURE PLAN

PURPOSE

To provide conditions for the provision, installation, management, maintenance and removal of Electric Vehicle (EV) charging infrastructure on a selection of Council owned or controlled land in the Northern Beaches Local Government Area (LGA).

This Plan relates to charging infrastructure that is:

- Intended for use by the public
- Intended for charging electric vehicle and other transport modes, such as bicycles, Taxis, and new freight and public transport solutions.

PRINCIPLES

This Plan will:

- Support the delivery of EV charging infrastructure on public land that integrates effectively with the transport network and local environment
- Consider all electric transport charging infrastructure
- Ensure a fair and equitable selection of providers that supports current EVs and charging types
- Ensure a council managed community engagement approach to seek support on future EV charging site locations and charging infrastructure
- Increase the availability of EV charging infrastructure to support growth in the uptake of EVs, locally and nationally
- Provide direction for providers of EV infrastructure in the allocation of suitable locations on public land and Council requirements.

PLAN SCOPE

The Plan applies to all publicly accessible Electric Vehicle Charging Infrastructure installed on public land, whether installed by Council or Third-Party Private operators. It provides the overriding direction for the provision of Public Electric Vehicle Charging Infrastructure across the Northern Beaches for Residents, Businesses and Visitors.

PLAN APPLICATION

Council Installed and Managed Infrastructure

i) Provision of Service

- Council will install Publicly Accessible Electric Vehicle Charging infrastructure in locations of its choosing based on demand and strategic decision criteria, inclusive of community feedback.
- Council reserves the right to charge all users equally across the sector, based on the service provided.

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- All data collected as part of the service will be stored securely locally in line with Council's Information Management criteria.
- Council will provide universal charging systems that are not assigned to any particular vehicle manufacturer, that are designed to provide top up charging and will be time restricted to ensure equitable access. This may be achieved through hardware, software, legislation options and varied between time of day, location, and technology used.

ii) Cost Recovery – Fees and Charges

- Whilst Council will fund the infrastructure from capital sources, the operational cost will be recovered from the customer.
- Usage charges will be set by decision of Council in the annual fees and charges, based on the electricity cost projection for the corresponding period.
- Council's fees and charges will be based on actual cost and not based on a comparison with other providers operating on the Northern Beaches.

iii) Council will supply a variety of charging solutions across the area

- Level 2 charging infrastructure (7kw AC) will be installed in several long-term carpark locations to provide charging options for those owners with limited parking availability and/or commuters. Time limit between 2 and 6 hours.
- Level 2 charging infrastructure (11- 22kw AC) will be installed in short term carpark locations and suitable destination location (some models are currently not able to utilise these chargers to their full capacity). Time limit between 30 minutes and 2 hours
- Level 3 charging infrastructure (25kw DC) will be installed at high demand destinations and close to regional transport corridors to allow for short duration rapid top-up charge (PHEV and some older models cannot use DC Charging). May be limited to less than 30 minutes.

Third Party Provider electric vehicle infrastructure management

i) Eligibility of provider

- Any provider wishing to deliver EV infrastructure within the Northern Beaches LGA must express their interest to council
- Where necessary, the eligibility of a provider will be determined through an Expression of Interest (EOI) process that is open to the market and will be evaluated by Council based on the Schedules detailed in the EOI
- Council will determine proposed locations for EV infrastructure.

ii) Obligation of provider

- It is the provider's responsibility to abide by the relevant legislation and technical requirements in order to operate with the Northern Beaches LGA.
- It is the provider's responsibility to financially commit to cost of the EV infrastructure and to ensure that the site is operational at all times
- It is the provider's responsibility to ensure that the site is safe and accessible for all users at all times

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- The provider must enter into a data sharing arrangement with Northern Beaches Council to provide real time access to usage and membership information
- Council has the right to remove any EV infrastructure at any time and for any reason if it is found not to be in the best interest of the community. All costs will be the responsibility of the infrastructure provider.

iii) Lease arrangement

- Any provision of EV charging stations on public land will be subject to licensing/leasing arrangements, or similar, between the provider and Council. Licence and/or lease terms shall be in accordance with Council's related Policies.
- Subject to obtaining the required planning approval/s, entering into a lease or licence agreement with Council to utilise public land for installation and operation of an Electric Vehicle charging station in no way guarantees development consent or approval.
- Council reserves the right to require appropriate remuneration for use of Public Land for the apportionment of user fees or through a fee structure, or other. This is to be determined on a case-by-case basis as part of any licence/lease (or other) arrangement and in accordance with Councils annual Fees and Charges.
- Council may consider a Public/Private Partnership with relevant providers to deliver Electric Vehicle charging stations on Public Land. This will be subject to negotiation on a case-by-case basis.

iv) Security deposit and/or bond

- It will be a requirement of the provider to pay, prior to the commencement of any works, a security deposit and/or bond of no less than $5,000 AUD per site.
- Council will hold the deposit and/or bond for the duration of any lease or licence agreement. Any costs incurred by Council in excess of the deposit and/or bond amount will be borne by the applicant/Electric Vehicle charging station operator.
- Information relating to the deposit and/or bond will be identified within the lease or licence agreement.
- Council reserves the right to amend the security bond/deposit payment at any time.

SITE SELECTION

Council will initially consider locations that are in strategic and tourism destinations for EV charging infrastructure. This will include strategic centres such as Mona Vale, Brookvale/Dee Why, Frenchs Forest and Manly, some sporting grounds, as well as tourist areas such as Palm Beach.

Council will consider a site based on the following factors:

- There must be existing and/or potential demand for EV charging.

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- That any site considered for the provision of EV charging infrastructure is desirable location for the user to stop, spend time in the area or use local amenities.
- A safe location for access to the proposed charging infrastructure.
- Access to a suitable power supply.

Council will also consider sites that are located at key entry points to the Northern Beaches LGA or located near the main road corridors.

The ongoing implementation of this plan will be scaled up as the ownership and usage of Electric Vehicles increases across the area, to allow a convenient charging network to be used by residents, visitors and businesses, especially in areas where there is a high demand for charging infrastructure.

A third party owned publicly accessible Electric Vehicle Charging site may be considered suitable for an EV charging infrastructure where the proposal demonstrates to Council's satisfaction that:

- The land is public land, as defined in this Plan
- Considers land classification. Land classified as operational land is preferred, however community land may be considered suitable where the proposal is in accordance with the *Local Government Act, 1993, Crown Land Management Act, 2016* and the relevant Plan of Management for that land
- Electric Vehicle charging stations are permissible under the relevant legislation at the proposed location (e.g. Pittwater Local Environment Plan, 2014, Warringah Local Environment Plan, 2000, Warringah Local Environment Plan, 2011, Manly Local Environment Plan, 2013, State Environment Planning Policy (Infrastructure) 2007, the *Roads Act 1993* and the like). Note: the provider is responsible for securing development consent or approval, where applicable, from the relevant planning authority or a case by case basis
- Environmental constraints, characteristics and amenity have been considered
- There is a demand and future growth in the proposed location specific to the charging type
- The electricity supply infrastructure capacity of the existing electrical supply network is suitable (or can be reasonably upgraded). Note: Council will not contribute to the cost or be responsible for the provision, or upgrade to, electrical supply infrastructure to service a proposed EV charging site, unless by prior agreement
- The land is located within a reasonable walking distance (generally within 400m) of a town or village centre or a strategic tourism location
- The land has reasonable connection to the wider road network
- The facility and its operation will not adversely impact upon the amenity of surrounding development or the public domain
- The facility is safe with adequate lighting, and pedestrian, vehicle and bicycle access available at all times of day and night
- The facility is compliant with relevant Australian standards and road design guidelines
- The facility is compliant with relevant Australian standards and regulations for workplace health and safety. Charging station hardware must be located a safe distance away from hazards (e.g. dangerous goods and fuels)

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- Consultation with the local community and relevant stakeholders is satisfactorily undertaken in conjunction with site selection.

DESIGN CONSIDERATIONS - VISIBILITY AND IDENTIFICATION

The provider (whether Council or Third Parties) is responsible to ensure that the facility and all ancillary infrastructure (including signage, parking bays and charging infrastructure) shall be easily visible and accessible for users to find, with consideration of the following:

- Wayfinding signage (white on blue) will be required to allow users to locate the EV charging station from the main road network, similar to the wayfinding signs for car parking (note: wayfinding signage shall be consistent with the relevant standards and guidelines)
- All Electric Vehicle charging bays shall be clearly marked with the words 'EV Charging Only' painted on the ground. Note: Non-compliance with this provision may be considered in areas where it is inappropriate, provided sufficient alternative identification can be provided to the satisfaction of Council or where the infrastructure is provided in a manner that allows for more widespread charging including the use of 'Smart Poles' or other similar infrastructure. Liability of on-street charging infrastructure is the responsibility of the provider and Council will not be held liable under any circumstances
- Appropriate pole signage is to be installed to indicate the parking spaces are allocated for EV charging only. Pole signage shall be provided in accordance with *TfNSW Sign* No. r5-41-5 or equivalent
- Adequate lighting must be provided for the safety and security of drivers, passengers, vehicles and associated infrastructure. Lighting must be sufficient to easily read related signs, instructions, controls on vehicles, controls on EV infrastructure and to identify and provide visibility of all EV charging inlet locations
- Selected parking spaces shall be located to ensure safe sight distances for pedestrians, vehicles and bicycles are provided
- The use of advertising by any provider is to be disclosed to Council in the initial application process and disclosed as part of the community engagement process. Separate planning approvals may be required for the presence of advertising. Advertising must comply with relevant standards. Advertising that contains tobacco, nicotine, alcohol and gambling will be prohibited from any EV charging infrastructure and site in the Northern Beaches LGA.

ENVIRONMENTAL

- The proposal must consider renewable electricity that may include onsite solar, green power or a Renewable Power Purchase Agreement.

PARKING CONFIGURATION

The following must be considered at a minimum:

- All aspects of EV charging bays are to be designed and constructed in accordance with relevant Australian Standards
- All EV car parking spaces/charging by pavements shall be constructed to Council's specifications including sealing, kerb and guttering, pram ramps, signage and line marking
- Preference is given to the provision of EV charging infrastructure that can service two vehicles in adjacent car parking spaces at a minimum of two related (e.g. adjoin/adjacent) car parking spaces in any given location

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- Off-street car parking will permit both front to kerb and rear to kerb parking, where possible. Vehicles must park in accordance with relevant legislation determined by NSW State Government
- Dedicated areas for parking of bicycles when charging at designated areas
- All EV charging bays are to be compliant with the Disability Discrimination Act 1992 which includes compliance with current standards for access (AS2890.5/AS2890.6).

ELECTRIC VEHICLE CHARGING TECHNOLOGY

Council's objective is to facilitate the provision of EV charging infrastructure in an efficient, inclusive and accessible manner.

The installation of EV charging on Public Land on the Northern Beaches shall be consistent with the NSW State Government *Future Transport 2056 – NSW Electric and Hybrid Vehicle Plan* and at a minimum shall include:

- Consistent standards for charging connections based on European CCS2 and CHAdeMO for DC fast chargers, and Type 2 for AC charging
- Preference for connected and smart chargers, to allow the most efficient energy use for both consumers and network operators
- Preference for all EV charging infrastructure to have a minimum power capacity of 22kW AC or 50kW DC
- Public access and open payment options platforms (credit/debit cards).

In areas where there is high demand for on-street parking Council will consider the availability of public slow chargers to service residents with limited access to off-street parking.

The charging cable shall have the capacity to reach all points of the vehicle when charging in an on street or off-street car parking space to cater for EV's with front, rear or side charging points.

Cables should not be a hazard for pedestrians or other vehicles at any given time.

Note: Amendments may be considered for future EV charging infrastructure that supersedes the content included in this Plan or if a suitable alternative is demonstrated to the satisfaction of Council.

REFERENCES AND RELATED DOCUMENTS

- Move – Northern Beaches Transport Strategy 2038
- Protect. Create. Live Northern Beaches Environmental Strategy
- NSW State Government Future Transport 2056 – NSW Electric and Hybrid Vehicle Plan
- NSW Department of Planning Industry and Environment Net Zero Plan. Stage 1 2020 - 2030
- Pittwater Local Environment Plan 2014
- Warringah Local Environment Plan 2000
- Warringah Local Environment Plan 2011
- Manly Local Environment Plan 2013
- Local Government Act 1993
- Crown Land Management Act 2016
- Roads Act 1993
- Disability Discrimination Act 1992
- State Environment Planning Policy (Infrastructure) 2007

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- AS2890.5 - Parking facilities Part 5: On-street parking
- AS2890.6 - Parking facilities Part 6: Off-street parking for people with disabilities.

DEFINITIONS

Ancillary infrastructure means any and all physical items that relate to the EV charging infrastructure, whether at the site of the EV charging infrastructure, or elsewhere.

CCS2 means a Combined Charging System Type 2 EV charging connector with both AC and DC option, allowing both DC fast charge and Level 2 AC charge.

CHAdeMO means 'CHArge de Move' and is a DC charging standard for EVs.

Council means Northern Beaches Council

DDA Compliant means compliance with the *Disability Discrimination Act 1992*

Ecologically sustainable development (ESD) principles means as defined by Australia Government, Department of Agriculture, Water and the Environment.

Public land is as defined in the Local Government Act, 1993, means any land (including a public reserve vested in or under the control of Council, but does not include:

a) A public road*, or

b) Land to which the *Crown Lands Management Act 2016* applies*, or

c) A common, or

d) A regional park under the *National Parks and Wildlife Act, 1974.*

*For the purpose of this Plan, a public road and Crown reserve may also be considered suitable for an EV charging station.

Strategic tourism location means:

a) a place of recognised tourism significance, including a natural place or built form place; or

b) a tourist visitor centre, or the like; or

c) a place zoned for tourism purposes under Pittwater Local Environment Plan, Warringah Local Environment Plan, 2010, Warringah Local Environment Plan, Manly Local Environment Plan, or the relevant planning instrument applying to that land.

Type 2 socket means EV charging connectors designed to specification IEC 62196 (commonly referred to as Mennekes).

Responsible Officer

Executive Manager, Transport and Civil Infrastructure

Review Date

This plan is to be reviewed annually from date of implementation.

Revision History

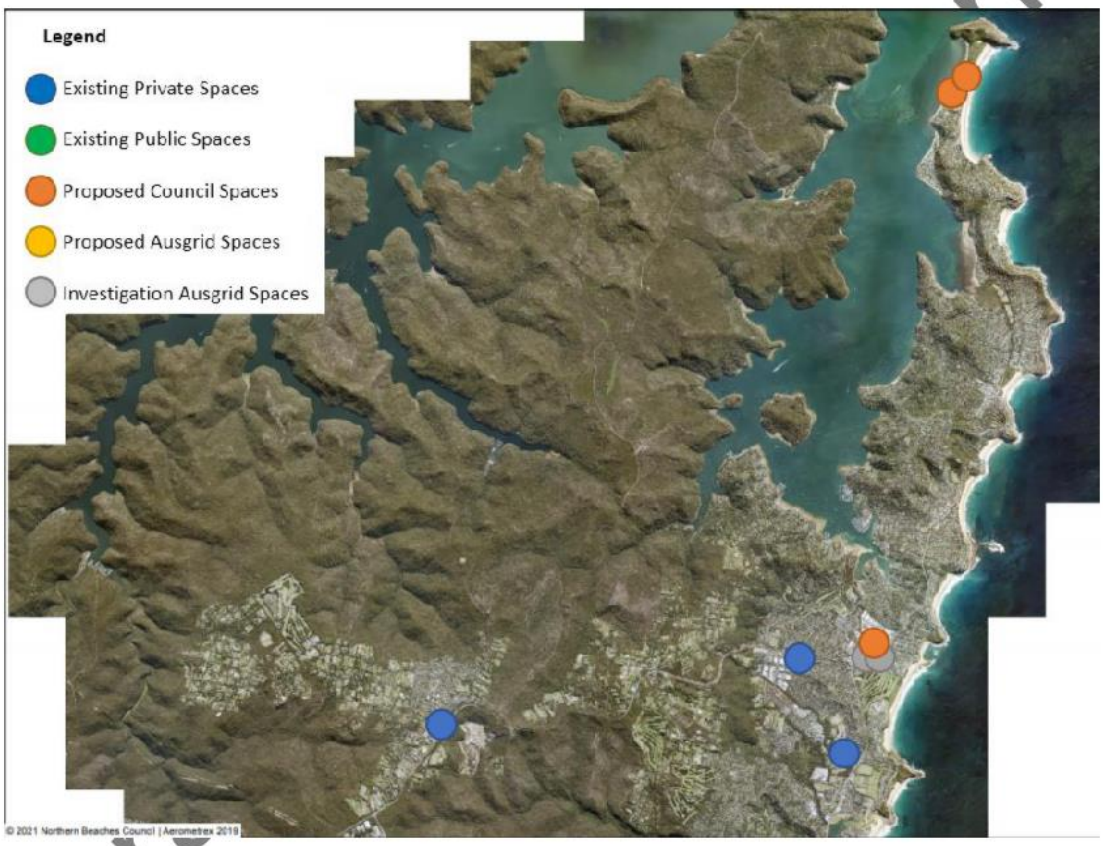
Revision	Date	Change	TRIM #
1			

Draft for Endorsement

THE NORTHERN BEACHES ELECTRIC VEHICLE CHARGING INFRASTRUCTURE PLAN

Revision	Date	Change	TRIM #
2			
3			

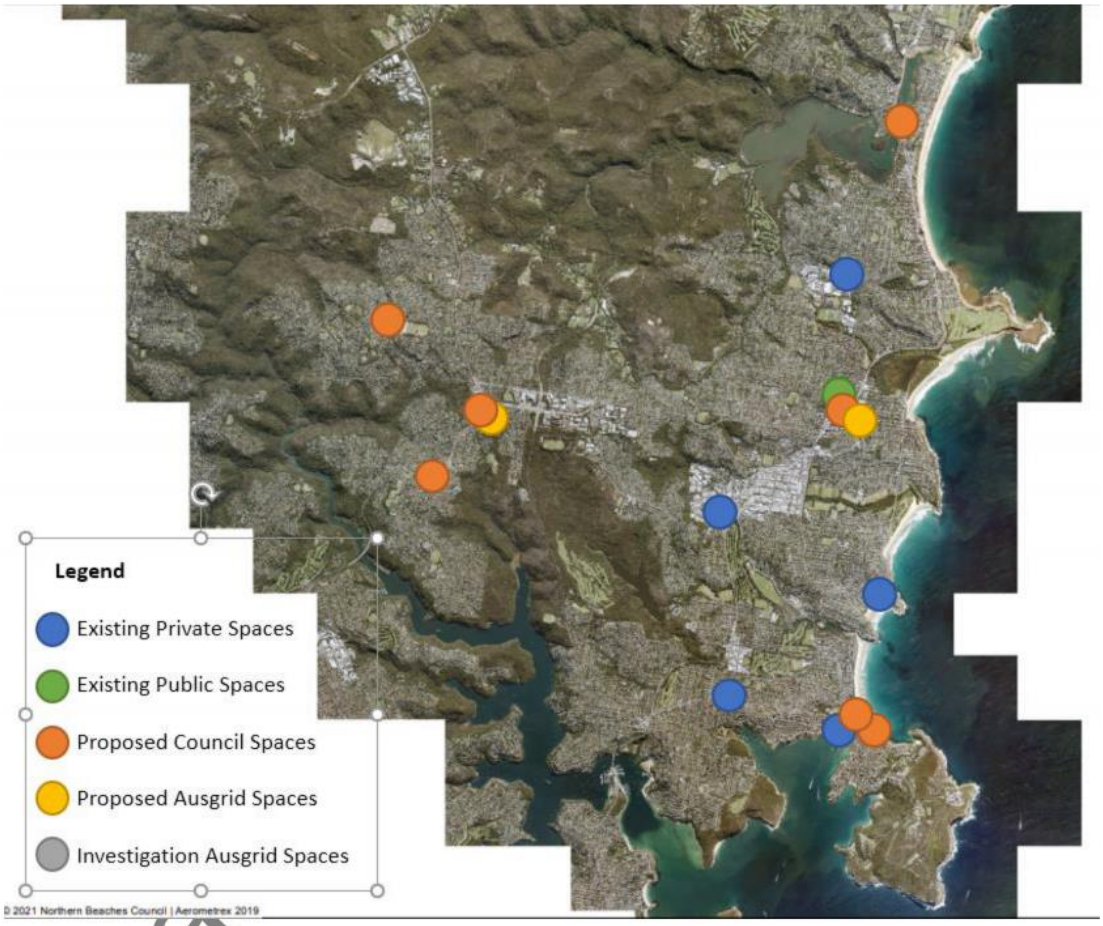
North Area



Draft

THE NORTHERN BEACHES ELECTRIC VEHICLE CHARGING INFRASTRUCTURE PLAN

South Area



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2020

ndevr environmental

northern beaches council

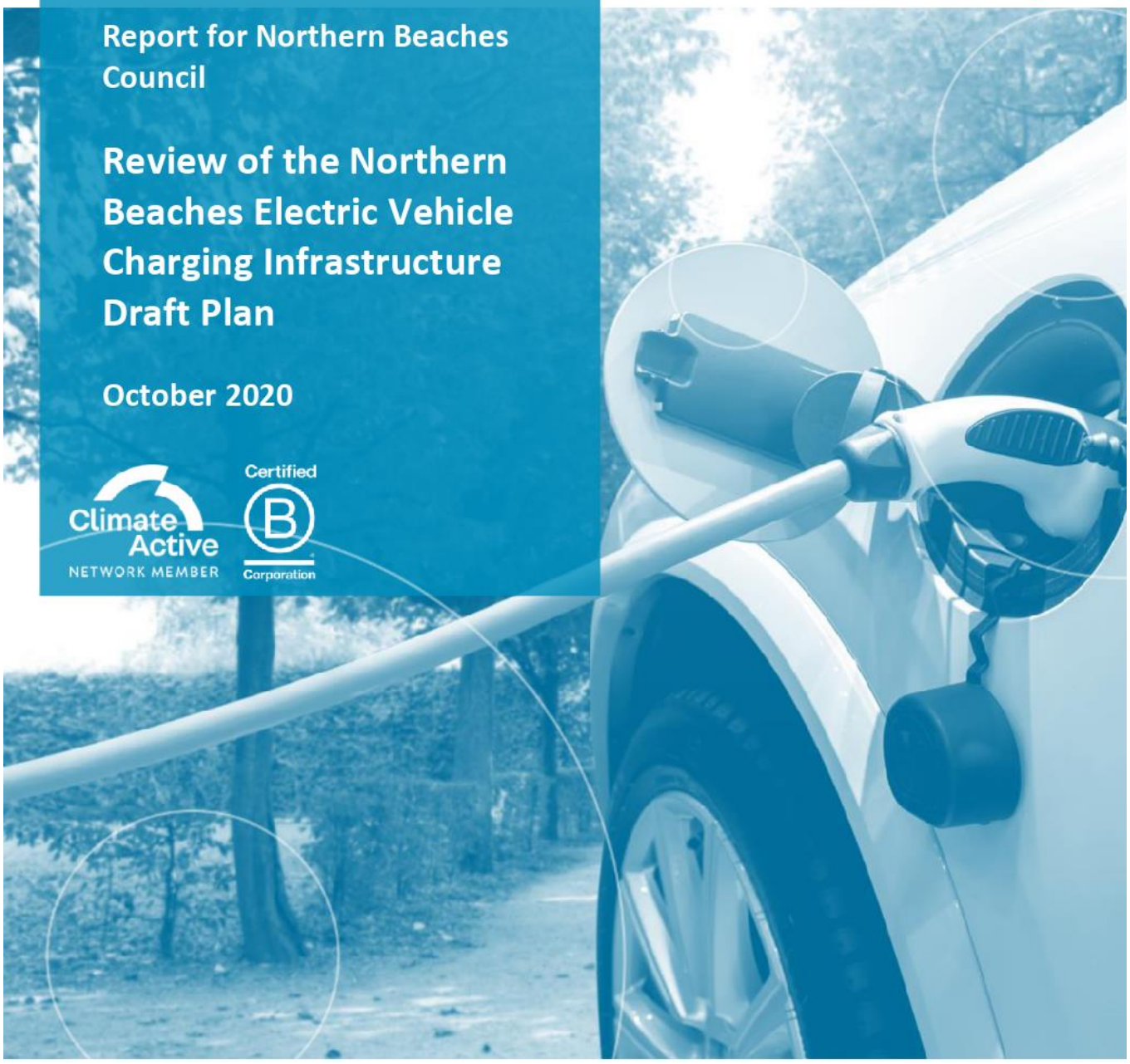
Report for Northern Beaches Council

Review of the Northern Beaches Electric Vehicle Charging Infrastructure Draft Plan

October 2020

Climate Active NETWORK MEMBER

Certified B Corporation



Executive Summary

Northern Beaches Council (Council) is committed to supporting NSW achieve net zero emissions by 2050; and a key item of the Northern Beaches Environment and Climate Change Strategy 2040 is supporting the community to transition to electric vehicles. To facilitate this, Council is preparing an Electric Vehicle (EV) Charging Infrastructure Operational Plan (the plan). The plan will provide criteria for the provision, installation, management, maintenance, and removal of EV charging infrastructure in the Northern Beaches LGA.

Council engaged Ndevr Environmental to undertake an independent review of the draft plan and to provide an overview of key considerations for public EV charging infrastructure prior to the plan being more broadly distributed for comment by stakeholders. This report provides the findings and key considerations of the investigation and recommendations by Ndevr Environmental for the plan.

Local Councils play a vital role in their respective communities, as they are on the ground with the community and therefore have an important role in supporting local communities through transitional periods. Considerations for council installing EV charging infrastructure are summarized below in Figure 1 below and in detail in the report.

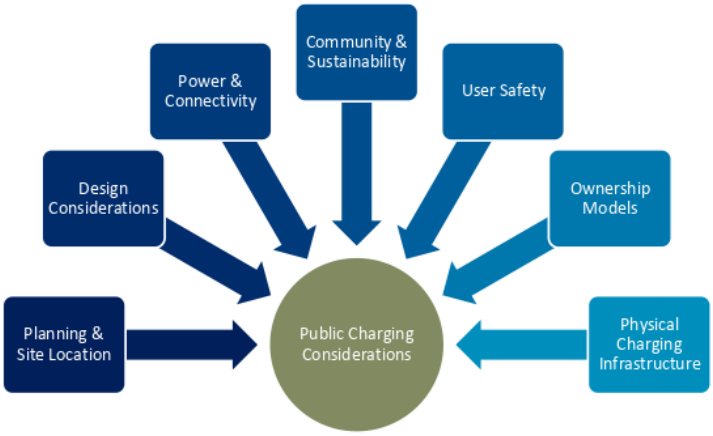


Figure 1: Considerations for Public Charging Infrastructure

This report constitutes this background report for Northern Beaches' learnings. The first section of the report includes a background overview of electric vehicles and different types of charging infrastructure. The second section discusses the role of councils in providing public charging infrastructure, expected demand and existing public charging infrastructure within Northern Beaches.

The report acknowledges the growing demand for EVs, and that Council has a role to support their community transition to EVs. The third section of the report continues by providing key lessons (policy, technical and commercial) from other Councils and government bodies who have previously installed or are installing public charging stations. The learnings are summarized into tables and discussion points within the report for consideration by Council.

Detailed responses from consultation sessions are also provided in Appendix B, which is provided to Northern Beaches Council in confidence, as they contain potentially sensitive information. The fourth section of the report provides a short summary of the policy review recommendations (the annotated policy was provided separately), and next steps including some guidance for change management within Council.

A glossary of common and helpful terms around EVs and EV charging is provided in Appendix A, with the aforementioned table of consultation summaries provided in Appendix B. The previous draft version of this report included the annotated Report in Appendix C.

The review recommends separating the draft plan into two documents – a policy and a supporting background report. The revised policy will take into account recommendations and we understand the background report will be prepared utilizing some of the background info in this report.

Review of the Northern Beaches Electric Vehicle Charging Infrastructure Draft Plan

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Version	Date	Authors	Reviewed by	Description of Change
Draft vA.0	17.08.2020	Hannah Meade, Michaela Hermanova, Juliana Bedggood	Hannah Meade	Draft for Discussion with Northern Beaches Council
Final vA.0	22.10.2020	Michaela Hermanova	Hannah Meade	Addressing Feedback

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Review of Northern Beaches Electric Vehicle Charging Infrastructure Draft Plan

1 Introduction

1.1 Project Overview

Northern Beaches Council (Council) is committed to delivering an efficient, innovative and reliable transport network through implementation of the five key themes in its 'Move –Northern Beaches Transport Strategy 2038' (Figure 2); in line with Council's transport vision to "**enable freedom of movement to, from and within the Northern Beaches using a safe, smart, efficient, integrated and sustainable transport network**".

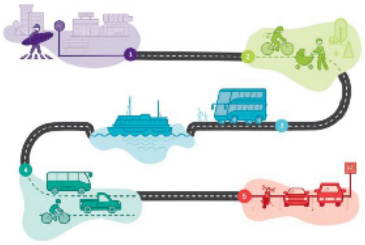


Figure 2: Five key themes

Council supports increasing electric vehicle uptake through the provision of an Electric Vehicle (EV) Charging Infrastructure Operational Plan (the plan), which will provide criteria for the provision, installation, management, maintenance and removal of EV charging infrastructure in the Northern Beaches LGA.



Council has engaged Ndevr Environmental to undertake an independent review of the draft plan and to provide an overview of key considerations for public EV charging infrastructure prior to the plan being more broadly distributed for comment by stakeholders.

This report provides the findings and key considerations of the investigation and recommendations for the plan.

1.2 Northern Beaches Council

Northern Beaches Council is located along the northern beaches of metropolitan Sydney, stretching from Palm Beach to Manly (Figure 3) with a population of more than 266,000.

Council is committed to doing its part to support NSW in achieving net zero emissions by 2050; and the **Northern Beaches Environment and Climate Change Strategy 2040** includes specific reference to supporting its community to transition to electric vehicles through the implementation of **Northern Beaches Transport Strategy 2038**, which has an interim target of 30% reduction in carbon emissions from transport by 2038.

Council is leading by example by increasing the number of EVs in its fleet as vehicles are due for replacement and practical.

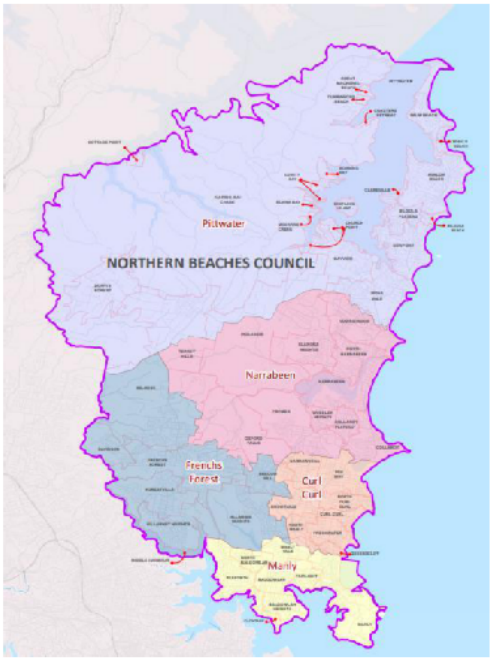


Figure 3: Northern Beaches Council







1.3 Electric Vehicle Overview

The term electric vehicle (EV) refers to a vehicle which is at least partially powered by electricity. Figure 4, below illustrates the different propulsion schematics between an internal combustion engine (left), different hybrid variants and EVs (right). Parallel hybrids allow the engine to operate in both ICE and electric mode; while series hybrids utilise a smaller ICE engine to deliver electric energy to support wholesale use of the electric motor for motive force. Battery electric vehicles (BEVs) are fully electric vehicles with rechargeable batteries that plug-in to charge and have no internal combustion engine, and therefore no tailpipe emissions.

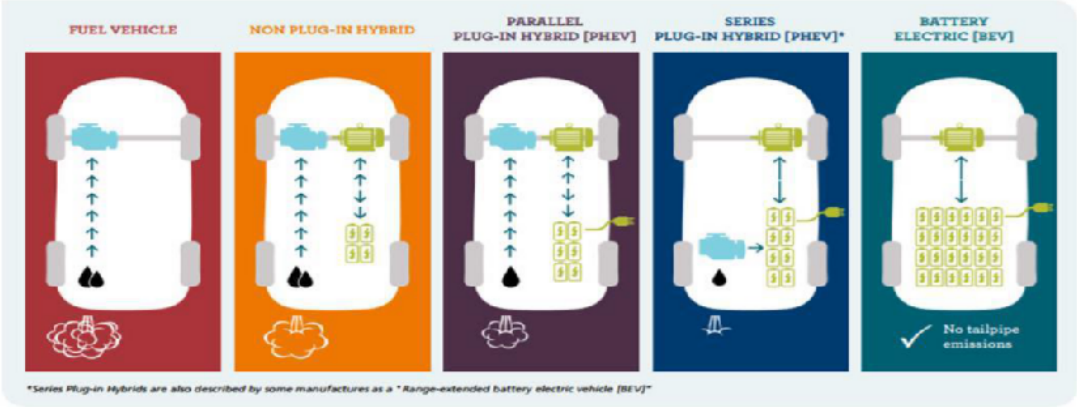


Figure 4: *Different types of vehicles (left conventional fuel vehicle to right full battery EV)*

EV adoption has a wide range of benefits, including fuel and operational cost savings. The operational savings are due to the higher efficiency of the electric motor, which has a simpler technical structure and requires fewer ongoing maintenance and repairs. Electric motors' energy efficiency is around 90% (as high as 98% with newest proposed models), compared to 17-21% efficiency in internal combustion engine (ICE) vehicles.

Broader EV benefits include environmental and public health benefits from the absence of tailpipe emissions. In contrast, ICE vehicles emit a wide range of tail pipe air pollutants (including carbon monoxides, nitrogen oxides, particulate matter, benzene and volatile organic compounds) which are directly linked to a wide range of public health issues such as lung disease, respiratory disease, heart disease and strokes. Air pollution linked to ICE vehicle emissions causes around 500-1,000 deaths in Australia every year[1]. In 2015, 1,715 deaths were estimated to have been caused due to air pollution from vehicle emissions – greater than the national road toll fatalities that same year.[2]

The transport sector is currently the second largest and fastest growing emitter of greenhouse gases in NSW and Australia.[3] The average new ICE vehicle emits approx. 0.185 $kgCO_2$/km, as opposed to the average new EV, which contributes appx. 0.098 $kgCO_2$/km when charged via the electricity grid, or zero when powered by renewable energy. As renewable energy proportions in the electricity network improve along with battery capacity, EV emissions are estimated to fall to 0.058 $kgCO_2$/km.[4] Considering that 80% of household trips (for social, recreation, education and shopping purposes) within Northern Beaches Council are by car, and that 27% of total carbon emissions come from passenger vehicles, this provides a significant window for change.[5]

[1] Parliament of Victoria (2018).

[2] Ibid., pp. 37.

[3] Future Transport 2056: NSW Electric and Hybrid Vehicle Plan, pp. 9.

[4] Electric Vehicle Council (2018).

[5] Northern Beaches Transport Strategy, pp. 8.

1.4 Charging Infrastructure Overview

There are three levels of charging available, varying in the output of voltage and amps and thus charging time:

- **Level 1 trickle charging (AC)**. EVs can be charged from a wall power socket involving voltages of 240 volts and transfer rates in the order of 15 amps; this process takes approximately 8 hours and is suited to a domestic environment.
- **Level 2 fast charging (AC)**. This form of charging uses the same voltages as trickle charging but involves higher electric currents (typically 30–80 amps); and takes approximately 3 - 4 hours to fully recharge.
- **Level 3 rapid charging (DC)**. This form uses high voltages (around 400 volts) and high transfer rates (up to 600 amps); and takes in the order of 30 minutes to recharge. Tesla also offers their own superchargers which is reported to add 270kms of range to Tesla vehicles in only 30 minutes

Increasing power output of the charger the increased speed in which the EV can charge. However, this is limited by what the EV can actually take and as shown in Figure 5 there are few models currently available that can charge at 11kW AC and above (BMW i3 (up to 11kW), Renault Zoe and Tesla Model X and S). Further, the increase in power output, the increase in costs and complexity of installation.



	Level 1 Trickle	Level 2 AC Destination Charging			Level 3 DC Fast Charging			
	2.3kW AC	7kW AC	11kW AC	22kW AC	25kW DC	50kW DC	100kW DC	350kW DC
Locations	General Power Point	Homes, Hotels, Council Offices	Shopping Centres, Car parks, Destinations		Destination	Transport Corridor	Transport Corridor/Highway	Superhighway
Electrical Inputs	Single Phase, 10A	Single Phase, 32A	Three Phase, 32A		Three Phase, 40A	Three Phase, 80A	Three Phase	Three Phase
EV Limitations	None	None	The majority of EVs on the market cannot charge at more than 7kW AC		Some older model EVs and PHEVs cannot use DC		Tesla Only	The majority of EVs currently on the market cannot charge at this rate.
For 100 km	In theory: 8.7 hr	2.7 hr	1.7 hr	55 min	50 min	24 min	10 min	5 min
	For most of the current day EVs: 8.7 hr	2.7 hr	2.7 hr	2.7 hr	50 min	24 min	10 min	10 min
Approximate Hardware Cost	$$$	$,$$$	$,$$$	$,$$$	$$,$$$	$$,$$$	$$$,$$$	$$$,$$$

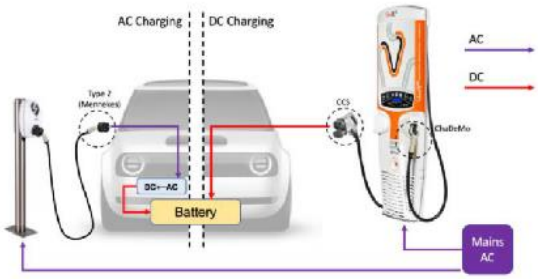
Figure 5: Overview of Charging Infrastructure

3

Important to note is that EV charging behaviour is more similar to behaviour when charging a phone, rather than the behaviour of refuelling conventional vehicles. EV drivers will utilise charge when it is available and the average charge time for public stations is one hour. This is different to conventional vehicle refuelling where the behaviour is to let the vehicle get close to empty before charging.

Charging infrastructure technology is continually advancing and an overview of the key terms is provided in Appendix A with the Table below providing an overview of AC v DC charging.

Table 1: Key differences between AC Level 2 and DC Level 3 Charging

Level 2 (AC)	Level 3 (DC)
	
Cheaper in design and cost Installation is of medium difficulty in a public environment as within the scope of a property owner to plan and deliver. The vehicle is connected directly to the electrical network via specific socket and plug and a dedicated circuit. Review of electrical infrastructure is still necessary and should be located next to main switchboard with a simple connection to host electricity. AC chargers often have longer cables which can reach to all sides of a parked car, in which case placement of the charger is less critical.	More complex in design and cost Installation more difficult and likely to require coordination with electricity networks and road transport planning agencies. Charger is part of station, not part of car Needs to be placed with high regard to capacity of surrounding electrical infrastructure - next to an existing high-power transformer with sufficient capacity. DC fast chargers carry high amounts of current and, therefore, the charging cables are thick and heavy, resulting in relatively short cable lengths.
Examples - Wall Charger in shopping centres, public car parks, on-street parking.	Examples - Fast charger in petrol stations and intercity travel locations
	

[6] Images in table from *Charge Together Fleets (n.d.). EV Charging Infrastructure.*

2 Public Charging Infrastructure

There is a growing demand for EVs, and there is a role for Council to play in supporting its community transition to more sustainable transport option.

2.1 Role of Council

The *Local Government Act 1993* requires local governments to: provide goods, services and facilities, and carry out activities appropriate to the current and future needs within its community and to the wider public, consider the long term and cumulative effects of actions on future generations, innovation and continuous improvement is to be pursued; and collaboration with other Councils and Governments and statutory bodies is to be sought. Councils are on the ground with the community and, therefore, have an important role in leading and supporting local communities through transitional periods.



Figure 6: Role of Local Councils in the EV transition

The C40 Cities' *Best Practice Guide for Low Emission Vehicles* reports that the best way to encourage uptake of lower emission vehicles after demonstrating benefits through council fleet transition is to provide infrastructure.

The C40 Best Practice Guide for Low Emission Vehicles

- **Focus on city fleets.** Demonstrate benefits to the community and generate market potential for manufacturers through incorporation within councils' own fleets.
- **Provide infrastructure.** This improves the viability of EVs over conventional vehicles. Their presence also increases public awareness.
- **Tackle purchasing and technology.** To address the high purchase price of the battery, some cities determined the actual size they needed and purchased smaller BEVs.
- **Provide incentives.** While state and federal government have the greatest scope for providing incentives, councils can provide incentives through prioritised parking, cheaper parking permits, or through access to recharge infrastructure.
- **Introduce zoning**. Cities have implemented initiatives to limit vehicle traffic in high urban areas and only low emission vehicles in such areas.
- **Work with partners**. Collaboration with partners (private or otherwise) to support EV uptake and charging infrastructure development. As well as strategies to support policy development and understanding vehicle use patterns.
- **Focus on education and awareness**. It is important to develop city-specific education and awareness programmes to overcome misperceptions and empower consumers and stakeholders to shift to low emission vehicles.

Source: C40 Cities Climate Leadership Group 2016

Figure 7: Key Points from the C40 Cities Best Practice Guide for Low Emission Vehicles

2.2 Expected Demand

The EV industry is growing at a rapid rate. While Australia has been relatively slow to catch up to the global trend, sales of EVs increased by more than 200% between 2018 and 2019 as depicted in Figure 8.

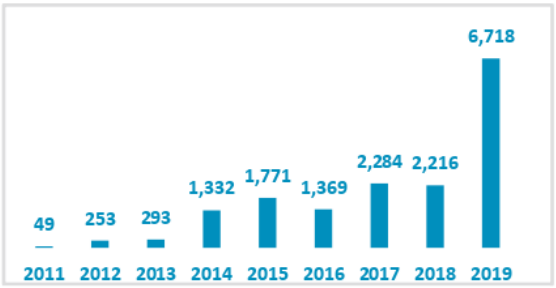


Figure 8: Annual EV sales in Australia

Australia's EVs sales are predicted to represent 21%-63% of yearly vehicle sales by 2030, and modelling completed by the Australian Renewable Energy Agency (ARENA) and the Clean Energy Finance Corporation (CEFC) in 2018 predicts that even with no intervention new EV sales in NSW will be in the order of 220,326 per annum in 2035, with a cumulative total of 1,094,820 EVs in NSW. Currently (March 2020) there is 4,804 registered EVs, and 45,418 electric/petrol hybrids in NSW, representing an increase by 677 EVs and 4,128 electric/ petrol hybrids since January 2020. This strong growth is expected to continue as Federal and State initiatives come in place to promote EVS.



Figure 9 National EV strategy is coming (L); NSW has committed to an EV investment program (R)

The NSW government has committed to an *Electric Vehicle Infrastructure and Model Availability Program* in its Net Zero Plan (NSW Department of Planning, Industry and Environment). Investment is targeted to co-fund: (a) the deployment of fast EV charging infrastructure via a reverse auction by 2024; and (b) vehicle fleet owners, such as local councils, to procure electric vehicles. The *Future Transport 2056 – NSW Electric and Hybrid Vehicle Plan, by* Transport for NSW details an ambitious 40-year vision for EVs in NSW. The plan focuses on three key priority areas – vehicle availability; **charging points** and customer information.


Figure 10: EV taxi fleet

In Northern Beaches LGA EV registrations are not explicitly captured, however there is currently 1,064 'Other fuel types', which is understood to include EVs. The community response to the Transport Strategy was supportive of EV growth and Northern Beaches is currently serviced by ETaxiCo's pilot of 120 electric taxis.

Further, Northern Beaches is an important travel corridor to Sydney CBD, Parramatta and employment hubs, and the Northern Beaches corridor was the tenth most congested corridor in the Sydney region in 2011.[7] In 2016, an estimated 20,585 people traveled to Northern Beaches for work. [8] Tourism is also an important part of the Northern Beaches' economy, with 4.5 million international and domestic visitors staying overnight and 1.4 million domestic day trips annually.[9] As the prevalence of EVs continues to grow in NSW, Northern Beaches will need to ensure that is not disadvantaged by an inability to service the needs of EV tourists.

[7] Northern Beaches Transport Strategy 2038, pp. 8
[8] Ibid, pp. 9
[9] Ibid, pp.9

2.3 Existing Public Charging Infrastructure

The increased visibility of charging infrastructure has been linked to increased uptake of EVs[10] through reducing perceived range anxiety.

Northern Beaches Council has acknowledged that to meet 30% reduction in carbon emissions from transport by 2038, it needs to support the provision of infrastructure for those who cannot charge at home.

Currently available public charging infrastructure in the Northern Beaches LGA is limited. The stations currently publicly available in the LGA, as shown in Figure 12, are all level 2 charging and are primarily Tesla Destination Chargers (for use by Tesla vehicles), and Charge Point (which is no longer supported in Australia[11]).

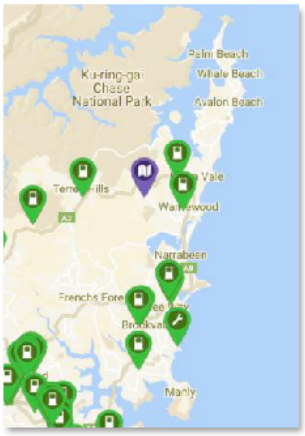


Figure 12: Plugshare Excerpt

> "Electric vehicles will dominate the roads in 2038 and charging of these vehicles will mostly occur at home but charging facilities will also be needed for those living in apartment buildings which do not have access to charging facilities.[14]"

Figure 11: Excerpt from Northern Beaches Transport Strategy

Council therefore acknowledges the need for additional infrastructure in the LGA to accommodate and support the growing demand. There are several key considerations for planning public infrastructure, illustrated in Figure 13, and Section 3 provides an overview of best practice from the experiences of other jurisdictions in each of these.

Ensuring appropriate guidance is provided in Councils EV Operational Plan will aid in optimizing the benefit to the community that can be realized through the installation of charging infrastructure. Namely, the **economic development benefit** from expenditure in local areas from additional foot traffic while EVs are charging; the **potential revenue** from charging or leasing of land to a party that is charging; and **the broader environmental, health and reputational benefits** from supporting EV uptake.

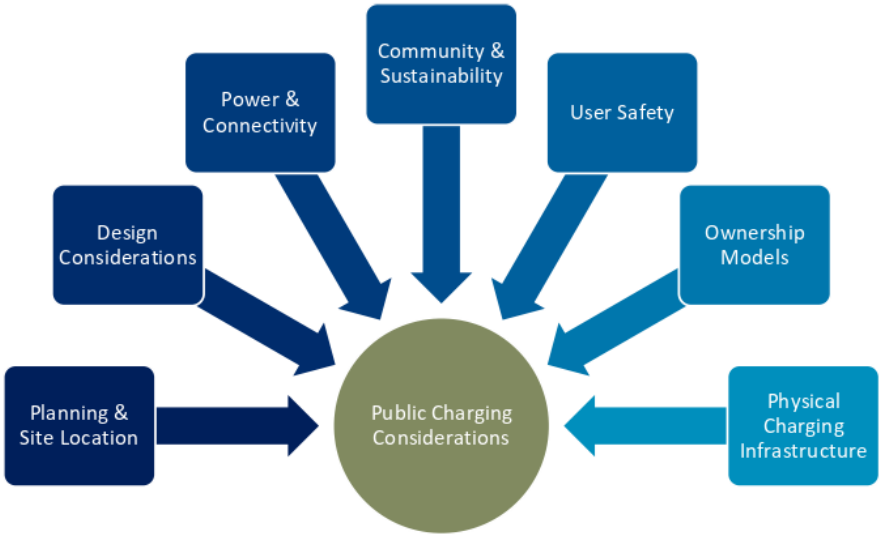


Figure 13: Considerations for Public Charging Infrastructure

[10] Morrissey, P., Weldon, P. and O'Mahony, M. (2016).
[11] Charge Point are leaving the Australian market. The assets can remain functional, but will not be supported.

3 Best Practice and Peer Learnings

This section consolidates key lessons (policy, technical and commercial) from councils and government bodies which have previously installed or supported the install of public charging station that can be incorporated into Councils Plan.

This section contains insights learned from other jurisdictions including States and Councils across Australia and New Zealand that have implemented public charging infrastructure. A table of suggested features incorporating text from Councils Draft Plan as appropriate is included in each subsection.

Additional confidential detail on specifics by jurisdiction are provided in Appendix B, and publicly available case studies for further information can be found here for the following:

- NRMA
- Eastern Suburbs Public EV Charging Station Network (Waverley, Woollahra and Randwick Councils)
- Queensland Electric Superhighway and supplementary Northern Queensland EV tourist drive
- New Zealand
- Moreland City Council
- Knox City Council
- City of Adelaide

Neighbouring councils, Newcastle, and Hornsby, were consulted as part of this investigation to obtain information to ensure Northern Beaches alignment and insights have been incorporated. Noting that these councils are at different stages of implementation, further consultation and collaboration is recommended.

3.1 Planning & Site Location

3.1.1 Extent of Coverage

Influencing factors for coverage of stations in an area includes **population density, EV ownership, strategic tourism locations, transport corridors**, and generally a large contributing factor in jurisdictions available funding. As an example, New Zealand's Transport Agency has set an initial target of 1 fast charger for every 35 EVs in an urban area, and 1 fast charger every 75 km in rural areas, however due to the high uptake those targets are currently being revisited. The Queensland Super-Highway planned a charging station location (1 x 50kW DC and 2 x 22kW AC) at least every 200km during the first phase, with the second phase a planned infill of stations to be at least every 100km.

Northern Beaches Council in preferring the leasing option is not limited by funding for coverage and will instead be limited by suitable sites and interested third parties and a business case for their investment. Council should consider whether there is a target number or minimum number of sites it would like in the LGA to accommodate anticipated public demand.

3.1.2 Stakeholder Consultation

Many EV charging installation projects cited a key learning as early engagement with local council stakeholders to ensure required permits for works were obtained to prevent delays. Further, particularly with level 3 stations, engagement with the network provider to ensure that there is sufficient network

capacity for the proposed installation. Further, peers indicated internal stakeholder workshops were valuable in developing policies.

There are a range of stakeholders involved in the installation of charging infrastructure, an overview is provided below, and a snapshot of current market providers and their relationships is illustrated in Figure 14.

Hardware Manufacturers	Distributors	Software Providers	Installers	Host Site	Approval Bodies
• Manufacture the physical stations • May or may not offer ongoing charger maintenance	• On-sell chargers • Provide turn-key packages (may include ongoing charger maintenance)	• Connected network software platforms	• Electricians (independently or via distributors)	• Where the charging stations are located	• Electricity Distributors • Council Planning

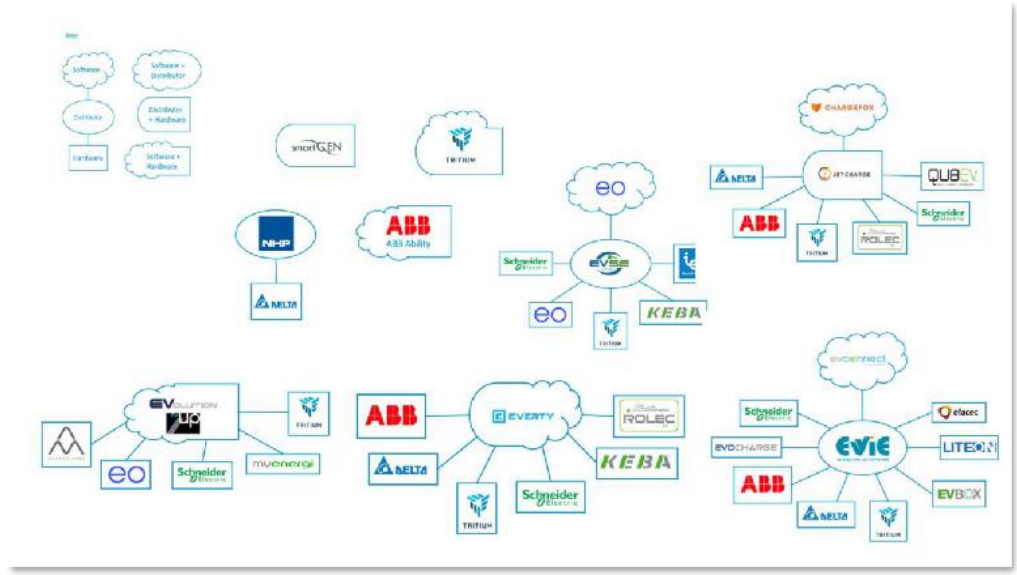


Figure 14: Examples of market players and relationships (Note: this is a snapshot in time and not exhaustive; additional relationships and stakeholders may exist)

If Northern Beaches requests EOI's for installations, it is recommended that it seek a response from all distributors to capture the range of market offerings.

A further insight from peers which is applicable to Northern Beaches is the use of public land by a private entity to generate revenue. There were mixed responses from councils in Victoria who had faced potential pushback internally at this notion.

3.1.3 Physical location

The ideal sites for public charging infrastructure are existing **off street**, **highly visible council owned car spaces** with **access to power near public amenities**.

A key feature of the site is that it is in a desirable location for an EV driver to charge, noting that depending on the charging station the driver will expect to be in the area near the vehicle for a period of time. EV drivers in Northern Beaches will include local residents, commuters driving to work in the area and EV driving



Figure 15: Example of Off-street EV charger

tourists. The different stakeholders having different albeit similar requirements with respect to location, that it is convenient, desirable and safe. From the drivers' perspective, when stopping to charge, they will be seeking a location with access to amenities (bathrooms, eateries) to utilise while their vehicle is charging. Additional amenities to consider are seating and shelter. Ideally, supporting a local business in the process.

Best practice learning from peers is that off-street parking will generally have more space available for charging infrastructure than on street parking, and was generally recommended by stakeholders due to the hazards that face on street parking (tripping hazards, etc). Off-street car spaces are also often easier to upgrade and modify for ease of use, lighting, safety (such as CCTV cameras, lighting, shelter, concreting if ground around charger is unstable, etc). Perpendicular spaces allow for ease of plugging in. The Road Rules prohibit reversing into angle parking, which precludes them as a suitable space as the cable will not reach.



Figure 16: Example of EV required to park illegally to use on-street charging

Table 3: Summary of Best Practice Location Features

Location & Facilities	
Close proximity to facilities	Destination charging needs to be close to driver amenities such as toilets and eateries for the driver; and located near recreation or tourism opportunities to linger and spend money to benefit the town.
High visibility location	To overcome perceived range anxiety, the presence and high visibility of charging stations will assist in raising awareness and overcoming this barrier. Coupled with wayfinding signage to further increase awareness.
Space	There needs to be enough space for the charging infrastructure, and preference is given to locations with space for onsite renewable energy. Level 2 stations can be installed on a wall or pedestal, Level 3 will require additional space. On-street or off-street locations that are ideally perpendicular (not angled).
Planning Scheme	Ideally located in a zone with no restrictive overlays to avoid the need for permits, and not on a space that crosses over title boundaries. If Council is to be installing, it is ideal to consider council owned land and an existing car space. For private applications, the applicant will need to have the right to install on the site. Further, best practice is to include a planning scheme requirement that new developments include wiring and cabling to enable ease of future installations.

Northern Beaches to consider specifying sites that are in locations that will be of greatest benefit to the community. While noting that if the aim is for third party investment there will need to be a business case for them demonstrating sufficient demand and expected revenue.

3.2 Site Design Features

Design & Access	
Safe to access	New (and existing car parks) are to be constructed in accordance with Australian Standards – including that drivers can see oncoming traffic when exiting and are not required to reverse onto a main road.
Traffic Requirements	Sufficient space for traffic access and turning circles to access car space, assess impact on street from any change in traffic volumes.
Wayfinding signage	Consistent way finding signage (white on blue) will be required to allow users to find the EV charging station from the main road network, similar to wayfinding signs for car parking (note: wayfinding signage shall be consistent with the relevant standards and guidelines). Wayfinding signage also helps reduce perceived range anxiety and raise EV awareness.
Restrictive EV signage	All EV charging bays shall be clearly marked with the words 'EV Charging Only' or the like, painted on the ground. Note: Non-compliance with this provision may be considered in areas where it is inappropriate, provided sufficient alternative identification can be provided to the satisfaction of Council. Appropriate pole signage must be installed to indicate the parking spaces are allocated for EV charging only. Pole signage shall be provided in accordance with Transport for NSW Sign No. r5-41-5 or equivalent.
Parking bays	Off-street parking locations are likely to provide more layout options because more space is available. It is recommended that a wide zone is provided around the vehicle to enable the charging station to connect with multiple vehicle types and orientation requirements. Ideally with no more than 3m between the station and the car charge point to accommodate cabling. If new car spaces are required, all EV car parking spaces/charging by pavements shall be constructed to Council's specifications including sealing, kerb and guttering, pram ramps, signage and line marking, where upgrades are required by Council.
DDA compliant	While this can be incorporated at the installation, the ideal site will have sufficient space to incorporate wheelchair and pram access into the design. All EV charging bays are to be compliant with the Disability Discrimination Act 1992 which includes compliance with current standards for access (AS2890.5/AS2890.6).
Drainage and gradient	In accordance with Australian Standards for carpark design. Preference to avoid sites on a flood plain, otherwise to satisfy council that appropriate measures have been made.
Charging Standards	Consistent standards for charging connections based on European CCS2 and CHAdeMO for DC fast chargers, and Type 2 for AC charging.

3.3 User Safety & Council Liability

In line with the desirability of the site for EV drivers, user safety is a key consideration. Well-lit visible areas are safer for the user and deter potential vandalism. There was a consensus among peers and manufacturers consulted by Ndevr Environmental that vandalism of stations was not as big of an issue as expected prior to installation. Manufacturers and providers will provide their own routine check ups of the chargers in their contracts and are available to provide maintenance beyond routine check-ups should issues arise. The frequency of routine check ups and conditions of maintenance should be contractually agreed upon during engagement of charging provider.

A key learning from a peer was liability concerns from its internal risk team with on-street charging and cables presenting a trip hazard; and it is recommended that Northern Beaches have this discussion with its internal risk team.

Safety	
Clear of trip hazards	Once at design and construct phase, ensure no cables will cause a trip hazard to pedestrians.
Lighting	Adequate lighting is to be provided for the safety and security of drivers, passengers, vehicles and infrastructure. Lighting should be sufficient to easily read associated signs, instructions, controls on vehicles / EV infrastructure, identity of all EV charging inlet locations and for charging cable visibility.
Hazardous materials	Safe proximity from hazardous fuels and materials.
Safe neighbourhood	The site needs to be desirable for a driver to charge.

Further, charging infrastructure needs to be installed by qualified electricians. Different levels of EV charging have different installation requirements – for example a Tritium 50kW Veefil-RT charger is designed to allow any electrician to install it, whereas a Tritium 350kW Veefil-PK requires a Tritium commissioned installation, due to the increased complexity of installation. Different locations may require different levels of expertise. As an example, City of Adelaide used SA Power to install the on-street stations, and Nilsen to install off street stations. Providers will often have their own preferred installers, however Council should specify that installations are undertaken by suitably qualified persons.

3.4 Other Charging Infrastructure Considerations

Section 1.4 provides an overview of the different charging levels; further consideration should be given to the following:

- **The more powerful the charging station, the more expensive** and the more complex the installation. Network augmentation (i.e. increasing capacity to accommodate charger) can incur a range of costs depending on the additional capacity required (e.g. for the Queensland project, costs ranged from $4,000 to $100,000 per site). 25-50kW DC charging is a desirable amount that will be attractive and practical to the driver (fast charge with no long-term detriment to car battery) while also generating expenditure in the LGA during charge time.
- **Data ownership and advertising concerns**. Multiple case studies raised concern with providers seeking to monetise the data collected from stations. Additionally, issues pertaining to advertising rights on the

station were raised by several councils. Discounted or free infrastructure can incur hidden costs in the form of advertising or data contracts which may disadvantage councils in the long term and go against broader Council values (e.g. big advertisements for large national chain in front of local business). Driver and usage data and advertising space are very valuable.

- **Be future ready.** A mix of charging stations will be required to provide a future ready network of charging. Enough fast chargers on the major artilleries and a dense number of destination chargers in and around towns to cater for both passing through and visiting tourists will be required. The future is connected and a current limitation of the non-networked charging station is that the only way to be aware of a fault is to be on-site, whereas connected stations can send alerts instantaneously.
- **Collaborate** with neighbouring councils or across the State to establish a networked model that will be accessible and visible to all EV users.
- **Driver Amenity**. Consider the end user - how much charge and how quickly it will be required.
- **DC charging stations** require a transformer. This could already exist at the site, otherwise will need to be factored into costs.
- **OCPP compatible** hardware to enable a software solution to manage multiple hardware types in one uniform data base.
- **Tethered** The common preference is for tethered stations to remove the need for drivers to carry their own cable.
- **Software options** for user platform and council access to all data collected.
- **In built load management**. To enable the station to adjust charging rates to avoid exceeding the site capacity.
- Designed for public use and ability of stations to be co-branded Northern Beaches

3.5 Power & Connectivity

If Council is assisting in site selection**, co-locating with an existing load** rather than a new site will be much more affordable from a network connection perspective. Industrial loads will be the best place –unless they are already running at capacity. To determine current site capacity, information can be requested from the electricity retailer.

Network Connections. Access to the network requires approvals from electricity distributors, and peer learnings were that it was difficult for network distributors to confirm capacity and/ or connect to sites without an address.

Proximity to Switchboard. Cables and trenching to connect a station to the switchboard incur the largest installation cost, often costing more than all other project components combined. Trenching costs may often trigger other additional costs – such as the need for traffic management for several days when trenching goes across the road. It is therefore advisable to install infrastructure in close proximity to switchboards, wherever possible, and that placement is carefully considered. While Council is seeking to outsource installation and the provider to incur the costs, consideration should still be given to reducing installation costs to improve the likelihood of interested providers.

Power & Connectivity	
Access to Power	An existing network connection with 3 phase power.

Power & Connectivity	
Proximity to Switchboard	Trenching to lay extended cabling can be the largest cost of installation. Decreasing the distance of cable from the charger to the switchboard will minimise costs.
Able to connect to an existing Load with spare capacity	Sites that are already connected to electricity will be much more cost effective than requiring a new network connection. Network augmentation costs can range from $4k - $100k and in some instances there might not be any additional network capacity available. To identify spare capacity, electricity retailers can provide usage from the smart meter – and compare peak demand with capacity provided.
Network Capacity	This information is only able to be provided by the Electrical Distributor (Ausgrid), however, is only required if wanting to upgrade the current connection for additional power.
Switchboard condition	To avoid upgrading the switchboard, one that is in good condition with an available circuit breaker with the required amperage for the charging level.
Internet Reception/Mobile Reception Signal	To enable the charging station to be monitored remotely and to accommodate different billing methods.
Software connectivity	Preference for connected and smart chargers, to allow the most efficient energy use for both consumers and network operators. Public access and open payment options platforms (credit/debit cards), all chargers and software must be OCPP for future proofing and flexibility.

3.6 Ownership & Payment Models

Different ownership options are outlined in Figure 17 below. **Outright ownership** provides council with control to select sites, software and hardware, but incurs higher upfront costs. This option can be done through a turn-key approach where one provider is engaged to arrange everything (chargers, installers, software, maintenance), or via separate contracts with different providers.

The **lease and subscription** option is a new service offering in Australia. In this option, Council would pay a lease or subscription fee for use. Terms, conditions and contractual agreements will vary, for example whether installation costs are included or excluded, whether ownership of hardware remains with the provider or with council at the end of the term and whether profit from charging is attributed to Council or leasing provider.

Private investment can be facilitated by Council through the provision of funds and/or through access to public land. If a private company profits from public land, certain requirements must be satisfied (e.g. use must be of benefit to community). The specifics apply depending on location and exact type of land. It is understood that this is currently the preferred option for Northern Beaches Council.



Figure 17: Ownership models

Northern Beaches has indicated that it is interested in the latter option to incentivise the market through the provision of land. Insights from peers found that even popular sites in general had relatively low utilisation due to current EV numbers. To date the owners of sites have majority been either government bodies providing for community or private bodies providing for their customers (e.g. shopping centre, office building) given that the business case for installation is on the externalities rather than direct revenue benefits. Accordingly, additional considerations to Council for this option will be providers with additional requests to improve their business cases (i.e. advertising rights and monetisation of user usage data). Peers were wary and warned of these options.

Peer learnings were in favour of charging for use, despite the majority having provided free use periods. However, payment models (i.e. cost to user to charge EV) will be the consideration of the provider if Council leases the site. Noting that Council can still specify preference for networked chargers that enable data to be shared with Council and can encourage universal model of charging that does not rely on multiple apps. Another council which has adopted a similar type of ownership and management model in its EV charging infrastructure policy has included terms for a probation period to be included in lease arrangements. This acts as a failsafe in case the provider or their method of delivery is not compliant or receives community backlash (e.g., advertising arrangements).

3.7 Sustainability

Renewable energy. A council driver for encouraging EV uptake is the environmental benefit and, therefore, ideally stations should be charged with renewable energy (either on site solar or a GreenPower product). Batteries will be required to supplement solar PV for fast chargers.

The use of on-site solar to provide power to the charging infrastructure is a clear visual demonstration that charging at the site is by renewable power. For example, the RACV Chargefox stations rolled out across Victoria with funding from ARENA were built with on-site solar and batteries to power them.

On-site solar will require physical space for the panels, and an additional agreement with the electricity distributor. The use of onsite solar also has the potential to act as shade and sheltering of the chargers and users. Alternative to on-site solar, charging stations can be contractually powered by renewables. **GreenPower** is the Federal Government's accreditation scheme that enables businesses and individuals to purchase GreenPower through their electricity retailer and support renewable energy generation in Australia. Purchasing GreenPower enables the user to use the GreenPower customer logo and claim renewable energy for the portion of GreenPower purchased. **Power Purchase Agreements (PPAs)** are long term contracts between a group of buyers and a renewable energy generator that enables



Figure 18: Example of new innovation combining wind/solar with a multi-use charging station (SmartGEN)

both parties to hedge their prices; and if the renewable energy certificates are also surrendered, the power purchased can be claimed as renewable.

Given Northern Beaches is not proposing to pay for the power consumption, it can only stipulate a preference or requirement to third parties to source from renewables.

Sustainability	
Ecologically Sustainable Development	Ideally the charging stations would be coupled with distributed renewable energy, such as solar PV, or with low cost and renewable electricity tariffs.

4 Plan Review Recommendations

This section provides an overview of recommendations for Council to consider when finalising the Plan.

This section includes an overview of structural comments and recommendations for the Draft Plan (or Policy with supporting material). For more detailed comments, please refer to the Annotated Report provided in Appendix C of the previous draft report.

4.1 Structure Recommendation

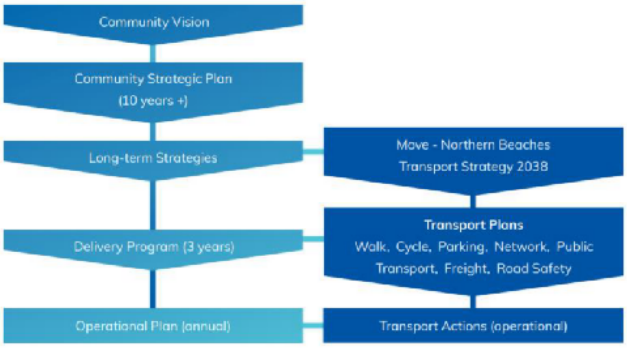


Figure 19: Integrated Planning and Reporting Framework (source: Move - Northern Beaches Transport Strategy 2038).

Northern Beaches Council follows an integrated planning and reporting framework set out in the *Local Government Act (1993)* (NSW) and is illustrated inFigure 19. The Northern Beaches Delivery Program 2020/24: Operational Plan and Budget 2020/21 sets out how Council plans to achieve its vision. Council plans and policies serve as products of the Delivery Program and Operational Plan, guiding Council and the community in achieving its goals. Therefore, the goal to deliver an integrated transport network that meets the needs of the community is guided by the Move – Northern Beaches Transport Strategy 2038. In addition, the direction for supporting the introduction of infrastructure for electric vehicles needs to be guided by a policy which sets out provisions and requirements for EV infrastructure on public land.

Ndevr Environmental recommends that the Electric Vehicle Charging Policy is clear and concise, including only relevant information and guidelines. The proposed structure is as follows:

- Policy Objective
- Context – Concise and related back to overarching strategies
- Electric Vehicle Infrastructure Management
  - Eligibility of Provider – outline the application and approval process including any provisions around fair and equitable selection of providers and community engagement
  - Obligations of Provider – outline obligations of the provider for the installation, maintenance and removal of the infrastructure, including liability concerns, and provision of data
  - Role/Obligations of Council – outline Council's responsibilities in the management of infrastructure
- Lease Arrangements
- Site Selection Criteria – Council to provide shortlist of sites to the market for responses
- Electric Vehicle Charging Technology Requirements – consider a preference for 25-50kW DC charging to future-proof infrastructure for EV technology upgrades
- Design Considerations – including guidelines for any advertising arrangements, wayfinding signage
- Parking Configuration.

Policies are often accompanied by supporting or background reports. Any additional detail and background information can be provided in the accompanying report to avoid confusion around the specifications set out in the policy. Council can also use material contained in this report, excluding Appendix B, as part of the

background report.

4.2 Internal Stakeholder Consultation Recommendation

It is recommended that internal stakeholders are consulted prior to release of the policy, specifically:

- **Risk / Legal Team** to clarify whether public liability can be put on to the provider for any issues occurring on site that is leased by Provider; and whether it is possible to lease and pass on liability for street furniture
- **Planning** to assist in identifying desirable sites that are not subject to any planning restrictions.
- **Economic Development** to assist in identifying desirable site locations
- **Fleet & Parking** given that Council is transitioning its own fleet, are there locations in the LGA that would be beneficial for Council vehicle top-ups.

It is recommended that internally Council determine what it wants to achieve in terms of outcomes so that it can effectively communicate this to potential respondents.

4.3 Supplementary Ways to Achieve Goal

The end vision is the provision of EV charging infrastructure for the Northern Beaches LGA to support EV uptake and reduce transport emissions. The current limitation of funding is requiring Council to invite interest from third parties to provide and manage sites. However, additional measures can include:

- Council facilitating a bulk buy of AC chargers for local businesses as an additional infill measure
- Consideration that businesses other than charging infrastructure providers may be interested in the offer and suggest that when council releases the shortlist of sites to not limit itself in responses (e.g. the electric taxi)
- Consideration of planned NSW State support future Council owned EV infrastructure. The State Government will co-invest in charging points in commuter car parks and help councils prepare for EV charging through strategic land use planning and guides
- Collaboration with neighbouring Councils for implementation.
- Council to facilitate community engagement and knowledge sharing sessions on EVs.

4.4 Specifications

Council will need to identify and provide the shortlisted site options to the market to respond to, ensuring that sites will be of most benefit to the LGA. Council can also publish the site selection guidance to allow for the market to suggest any additional sites.

Given that it is an internal document, it is recommended that it also include evaluation criterion to support council in evaluating responses.

4.5.1 Change Management

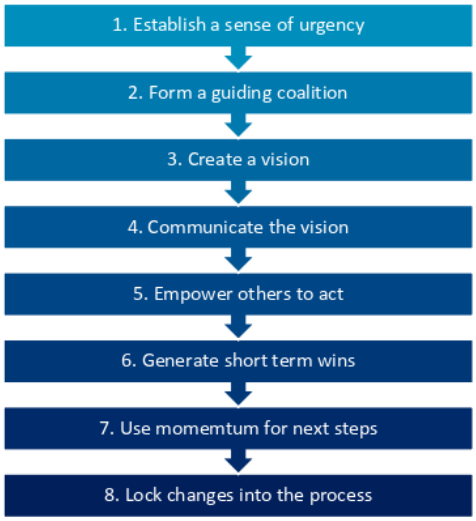


Figure 20: Change management process (Kotter 1995)

Following this report and the draft EV Charging Infrastructure Policy (annotated), Northern Beaches Council can be guided by key change management processes illustrated in Figure 20 to ensure buy in from all necessary stakeholders and successful roll out of the policy.

Step 1. Through its strategic documents, Northern Beaches Council has already established a sence of importance for public charging infrastructure within the municipality.

Step 2 and 3. Early and ongoing communication and collaboration is key to get buy in from all necessary stakeholders. First, is to get buy in from management of relevant departments within Council (i.e. a guiding coalition). Other councils have conducted a workshop to present the report and proposed policy to relevant departments, such as planning, parking, transport, sustainability, legal, etc. Decisions for inclusions in the policy can be made collaboratively. The resulting policy and the background report will be the 'vision' which can be communicated with the Councillors and community.

Step 4. With a guiding coalition, Council can put the policy to Councillors for approval. The intention of a background report to the policy, is to highlight key reasons for, and benefits to, Northern Beaches Council for providing land for EV charging infrastructure and the guidelines set out in the policy. Key arguments in this report have been designed to appease community concerns, and council is welcome to utilise material in this report (excluding Appendix B), for inclusion in a council background report.

Step 5, 6 and 7. Implementation of the policy will empower providers to install EV charging infrastructure and, in turn, will promote EV uptake in the community. Consistent reporting on 'wins' such as emissions reduction targets or progress towards renewable energy targets will generate continued support and momentum for EVs and EV charging infrastructure.

Step 8. The policy in itself institutionalises the change.

4.6 Conclusion

The revised Operational Policy provided by Council following the draft iteration of this report was found to address the recommendations above.

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6 Appendix A - Glossary

Term, Acronym or Abbreviation	Definition
AC	Alternating Current – an electric current that reverses its direction many times a second. Australia's electricity grid delivers power in AC. Electric vehicle (EV) batteries charge with direct current (DC). Therefore, when using AC charging infrastructure, an EV's battery needs to convert AC power to DC using its onboard charger. This slows down the charging process as the rate of charge is dependent on the vehicle not the charger.
Ancillary Infrastructure	Any and all physical items that relate to EV charging infrastructure
BEV	Battery electric vehicle – a fully electric vehicle with rechargeable batteries and no internal combustion engine.
Bidirectional Charging	See V2G below
CCS/CCS2	Combined Charging System, a Type 2 charger which allows both AC and DC charging on the same plug 
CHAdeMo	Abbreviation of "CHArge de MOve", a plug type for DC charging. 
Chargefox	Australia's largest public charging network
Chargenet	New Zealand's largest operator, providing EV charging hardware and software.
Council	Northern Beaches Council
DC	Direct Current – electric current in one direction. EV batteries are DC. Therefore, DC charging infrastructure allows for a direct connection and communication between the car battery and chargers, enabling faster charging and "smart charging" where the EV can communicate to the charger how much is needed to charge its battery.
DDA Compliant	Compliance with the *Disability Discrimination Act 1992*
ESD	Ecologically sustainable development (ESD) principles defined by Department of Agriculture, Water and the Environment
EV	Electric vehicle, refers to vehicles which are at least partially powered by electricity.
Fuel cell vehicles	An alternative vehicle using a fuel cell instead of a battery, typically run using oxygen and compressed hydrogen. Generally better for heavier vehicles such as trucks where battery size and weight would significantly decrease "fuel" efficiency. A complementary technology to EVs, with the first public hydrogen refuelling station to open in Australia in December 2019.
GPO	General Purpose Outlet – an abbreviation for the standard 3-prong power-point plugs found throughout Australia.
HEV	Hybrid electric vehicle, such as a Toyota Prius Hybrid – usually starts off by using an electric motor with the petrol engine cutting in once load or speed rises. The battery in an HEV is charged during the car's braking process (regenerative braking).
ICE	Internal combustion engine.
kVA	Kilovolt-amps. Measure of Apparent Power provided by the electricity distributor to a circuit (of relevance to this report is that capacity provided to a site location will be provided in kVA).
kW	Kilo-watt. A unit of electric power - measure of Actual Power (apparent power x power factor) (of relevance to this report is that charging stations provide power rating in kW).
kWh	"Kilowatt hour". Measure of Energy Consumption (i.e. the amount of electricity consumed in an hour) (of relevance to this report as electricity retailers are paid in $/kWh).
Load Management	Also referred to as "load balancing". A load management system that monitors power demand and adjusts the charging rate of each charging station dynamically.
Networked Charger	Networked chargers are connected through the internet of things and can be activated through an app – users don't need an RFID card to activate a charging session.
NMI	National Meter Identifier. A unique eleven-digit number for each electricity meter, found on the meter and on electricity bill.
OCPP	Open Charge Point Protocol – an initiative by the Open Charge Alliance to allow electric vehicle charging stations and software to communicate seamlessly with each other - can switch between providers without being "locked in". It has become the de facto standard in the EV charging industry, with updated versions released periodically (e.g. OCPP 1.5, OCPP 1.6J).
PHEV	Plug-in hybrid electric vehicle. PHEVs work in much the same fashion as regular HEVs, with the additional option of recharging the batteries by plugging into an external source of electrical power in addition to a combustion engine.
PlugShare	A worldwide crowd sourcing app allowing anyone to upload possible plug-in stations for EV owners (even GPOs – general purpose outlets). It distinguishes between public/residential access points and allows users to leave feedback and comments.

Term, Acronym or Abbreviation	Definition
Power Factor	Ranges from 0 to 1 and is the ration of actual power and apparent power.
Public Land	Defined by the Local Government Act 1993 as any land (including a public reserve vested in or under the control of Council, but does not include: a) A public road*, or b) Land to which the Crown Lands Management Act 2016 applies*, or c) A common, or d) A regional park under the National Parks and Wildlife Act, 1974. *For the purpose of the Plan, a public road and Crown reserve may also be considered suitable for an EV charging station.
Range	The distance an EV can travel before the battery requires charging.
Range Anxiety	Perceived anxiety that an EV will run out of battery while driving. Very common among non-EV drivers.
Responsible Officer	Executive Manager, Transport and Civil Infrastructure
RFID Card	Type of card commonly required to access public charging stations, often used by older charge points and being replaced with app-based payments or credit card tap and go.
Single phase power	Single-phase power supply has one distinct wave cycle. A single wire is connected to the circuit. Voltage is 230V (the most common type of power in residential households).
Smart charging	An umbrella term for a series of functions that a data (usually Wifi) connected EVs and charging points can perform – monitoring, managing the use of devices to optimise energy consumption, as well as load balancing.
Strategic tourism location	Defined as: a) a place of recognised tourism significance, including a natural place or built form place; or b) a tourist visitor centre, or the like; or c) a place zoned for tourism purposes under Pittwater Local Environment Plan, Warringah Local Environment Plan, 2010, Warringah Local Environment Plan, Manly Local Environment Plan, or the relevant planning instrument applying to that land.
Tariff	An electricity pricing structure offered by energy retailers.
Tesla Supercharger	A super-fast charging system that can provide up to 120kW directly into a car's battery – only available to Tesla vehicles.
Tethered/ Untethered	"Tethered" charging points have a permanently fixed charging cable/connecter, whereas untethered points require drivers to supply their own cables.
Three-Phase Power	Three phase has three distinct wave cycles and needs 3 wires connected to the circuit. Three phase voltage is 415V (i.e. commercial supply) – most common in industrial areas but can also be found in some residential areas.
Top-up charging	The practice of plugging in an EV when out and about to "top up" existing charge on a battery. EV charging behaviour differs from conventional vehicle refuelling behaviour, and is more similar to mobile phone charging.
Transformer	A transformer is a device which is used to either raise or lower voltages and currents in an electrical circuit. In modern electrical distribution systems, transformers are used to boost voltage levels to decrease line losses during transmission
Trickle charging	The slowest type of charging using a standard GPO, takes many hours and is best for overnight charging.
Type 1 (J1772) (plug)	The first plug type to appear in Australia; these have been replaced by Type 2 by most manufacturers.
Type 2 (Mennekes) (plug)	The Australian standard plug type for level 1 and level 2 AC charging, designed to specification IEC 62196. Type 2 
V2G	"Vehicle to grid" or bidirectional charging – A system in which EVs plugged in can communicate with the power grid to transfer energy between the vehicle and the grid. Similar to smart charging but goes one step further to allow communication between the EV to the grid.

REPORT

Wakehurst Parkway Flood Mitigation Feasibility Study

Client: Northern Beaches Council

Reference: PA1943

Status: 0.2/Final

Date: 09 March 2021

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APPENDIX C – Existing Flood Mapping

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APPENDIX F - Sand Sheet Investigation Report

APPENDIX G – Soil Contamination Report
APPENDIX H - Services Locating Plans
APPENDIX I - Flood Model Refinements
APPENDIX J – Concept Design Plans
APPENDIX K – Flood Impact Maps

Executive Summary

Northern Beaches Council (Council) engaged Royal HaskoningDHV (RHDHV) to undertake a flood mitigation options feasibility study to determine the appropriateness and effectiveness of proposed measures to mitigate very frequent flooding of Wakehurst Parkway.

The option feasibility assessment (reported herein) built upon an initial options assessment undertaken by RHDHV (RHDHV, 2018). The RHDHV (2018) report identified several options for flood mitigation and concluded with a shortlist of options requiring further assessment. The options were segregated across three geographical locations of the Wakehurst Parkway, namely in the vicinity of the Sydney Academy of Sports in the north, Oxford Falls Road junction in the south, and at a section of road referred to as 'The Bends', approximately part way between the two. These three locations were identified as most susceptible to over-road flooding and therefore formed the focus for flood mitigation options.

The options shortlisted by RHDHV (2018), and assessed further as part of this report, include those presented in the below table.

Option	Description
The Bends	
Option B1	*New levee*
Option B2	*New levee and removal of 1m depth of overbank sediment*
Option B3	*New levee, removal of 1m depth of overbank sediment and under-road culverts*
Option B4	*New levee, removal of 1m depth of overbank sediment, under road culverts, and top up of existing levee.*
Option B5	*Removal of overbank sediment (1m depth)*
Option B6	*Removal of overbank sediment (2m depth)*
Option B7	*New levee, under road culverts.*
Oxford Falls Road	
Option O1	*Culvert capacity increase*
Option O2	*Culvert capacity increase (additional to O1)*
Sydney Academy of Sport and Recreation	
Option S1	*Bunds and localised low point drainage*

Several additional assessments were commissioned by Council to inform this feasibility assessment. The additional assessments were undertaken concurrently and included:

- Geotechnical investigation;
- Acid Sulfate Soils and Contamination Assessment;
- Aboriginal Heritage Assessment;
- Further topographic survey; and
- Services search.

The flood mitigation options presented in the above table were assessed against key constraints. Each option was subject to the following assessment:

- Concept design;
- Planning and approvals assessment (environmental planning / permissibility);
- Constructability;
- Flood modelling;
- Cost estimation (all presented excluding GST); and
- Risk assessment.

The feasibility of each option is summarised in the below table.

Option	Description
Option B1	*New levee*
Overview The option is considered to be feasible, with the primary consideration the approval from NSW Roads and Maritime Services (RMS) for works within the road corridor. There would be a requirement for reduced travel speed limits during the anticipated 6-week construction period. ***Flood Impacts*** Flood impacts are minor positive, with some negative impacts at certain flood return periods. The option provides flood immunity up to 4 EY (3-month ARI). Key constraints include space within the existing road corridor to implement the works, however this is expected to be achievable with minor road shoulder alterations and the need to limit working time, hence traffic disruption. ***Environmental Impacts*** The option presents little significant environmental impact, due to works being confined to the existing road corridor. ***Estimated Capital Costs*** The option is estimated to cost $2M (excl. GST) (total project cost, including project management, design, offsets, construction and contingency), and could be implemented with relatively minor environmental impacts and approvals. No environmental offset costs are included.	
Option B2	*New levee and removal of 1m depth of overbank sediment*
Overview In addition to Option B1, the sediment removal adds significant additional works outside the road corridor. The removal of overbank sediment does not require any physical works within the road corridor, however it would require significant road traffic management during mobilisation and demobilisations, as well as an estimated period of 6 weeks of truck movements. RMS approvals would be required. The construction timeline is anticipated to exceed 25 weeks, not including the revegetation maintenance period.	

Flood Impacts
Flood impacts are moderate-positive, with some negatives. The option provides flood immunity up to 2 EY (6-month ARI). The addition of the sediment removal option reduces future risk of the flood situation being exacerbated through continued sedimentation.

Key constraints include access, traffic management, disturbance of existing valuable habitat and the need to dispose of excavated material.

Environmental Impacts
Environmental impacts are anticipated to be significant. There would be a direct impact to 2.88 ha of native vegetation and a further 0.45 ha of non-native vegetation would be impacted. Environmental offset costs estimated to be $670,000 (excl. GST).

The option is estimated to cost $5.8M (excl. GST) (total project cost, including project management, design, offsets, construction and contingency), and the implementation would be subject to significant additional environmental assessment and approvals. Council will be required to complete a Biodiversity Development Assessment Report (BDAR) or an SIS, as well as a Biodiversity Management Plan.

Option B3	*New levee, removal of 1m depth of overbank sediment and under-road culverts*

Overview
In addition to Option B2 (new levee and floodplain sediment removal), the addition of under road culverts significantly increases the disturbance footprint, capital works and presents significant temporary road closure / partial closures. The option is considered to be constructible through open trench methods, whilst maintaining two-way traffic.

Environmental Impacts
Direct impacts due to sediment removal works, consist of direct disturbance to native vegetation and habitat of 2.41 ha. Indirect impacts to native vegetation and habitat of 0.22 ha (minimum) are estimated due to culvert works.

The disturbance to sensitive and valuable habitat east of the road by culvert tail out channels, as well as the sediment removal is anticipated to cause significant environmental impacts. There is an estimated environmental offset cost of $738,000 (excl. GST) for the option as a total.

Flood Impacts
Flood impacts are significant positive. The option provides flood immunity up to 1 EY (1-year ARI).

Estimated Capital Costs
The option is estimated to cost $12.1M (excl. GST) (total project cost, including project management, design, offsets, construction and contingency), and the implementation would be subject to significant additional environmental assessment and approvals. Council will be required to complete a Biodiversity Development Assessment Report (BDAR) or an SIS, as well as a Biodiversity Management Plan.

Option B4	*New levee, removal of 1m depth of overbank sediment, under road culverts, and top up of existing levee.*

Overview
In addition to Option B3 (new levee, floodplain sediment removal and road culverts), the additional works associated with the existing levee 'top up' are considered relatively minor. Option B4 can therefore be considered similar to Option B3 in many aspects, whilst providing significant additional flood benefits.

Flood Impacts
Flood impacts are relatively significant positive. The option provides flood immunity up to 0.5 EY (2-year ARI).

Environmental Impacts
The disturbance to sensitive and valuable habitat east of the road by culvert tail out channels, as well as the sediment removal is anticipated to cause significant environmental impacts. There is an estimated environmental offset cost of $738,000 (excl. GST) for the option as a total.

Estimated Capital Costs
The option is estimated to cost $13.8M (excl. GST) (total project cost, including project management, design, offsets, construction and contingency). Like Option B3, the implementation would be subject to significant additional environmental assessment and approvals. Council will be required to complete a Biodiversity Development Assessment Report (BDAR) or a SIS, as well as a Biodiversity Management Plan.

Option B5	*Removal of overbank sediment (1m depth)*

Overview
The option does not require any physical works within the road corridor, however would require significant road traffic management, hence RMS approval. The option requires significant physical works outside the road corridor and would require significant road traffic management. The construction timeline is anticipated to exceed 25 weeks. Key constraints include access, existing valuable habitat, traffic management and the need to dispose of excavated material.

Flood Impacts
Flood Impacts are minor positive. Flood immunity up to 4 EY (3-month ARI).

Environmental Impacts
Environmental impacts are anticipated to be significant. There would be a direct impact to 2.88 ha of native vegetation and a further 0.45 ha of non-native vegetation would be impacted. Environmental offset costs estimated to be $670,000 (excl. GST).

Estimated Capital Costs
The option is estimated to cost $4.1M (excl. GST) (total project cost, including project management, design, offsets, construction and contingency), and the implementation would be subject to significant additional environmental assessment and approvals. Council will be required to complete a Biodiversity Development Assessment Report (BDAR) or a SIS, as well as a Biodiversity Management Plan.

Option B6	*Removal of overbank sediment (2m depth)*

Overview
The option is **considered unfeasible**. The creek is typically less than 1m below the overbank area, therefore the proposed 2m of floodplain excavation would result in significant lowering of the existing creek, resulting in an imbalance in the fluvial regime and a complete change to the morphology of the creek and floodplain. In addition, the entire vegetation and habitat would change and not be able to be readily rehabilitated.

Flood Impacts
Flood impacts would be significant-positive. Flood immunity up to 1 EY (1-year ARI).

Estimated Capital Costs
The option was not costed.

Option B7	*New levee, under road culverts.*

Overview
Option B7 is similar in nature to Option B3, less the requirement for floodplain sediment removal. The under-road culverts significantly increase the disturbance footprint, capital works and presents significant temporary road closure / partial closures. The option is considered to be constructible through open trench methods, whilst maintaining two-way traffic.

Environmental Impacts
The disturbance to sensitive and valuable habitat east of the road by culvert tail out channels is anticipated to cause significant environmental impacts. Indirect impacts to native vegetation and habitat of 0.22 ha (minimum) are estimated due to culvert works. There is an estimated environmental offset cost of $67k (excl. GST).

Flood Impacts
Flood impacts are significant positive. Flood immunity up to 1 EY (1-year ARI).

Estimated Capital Costs
The option is estimated to cost $8.1M (excl. GST) (total project cost, including project management, design, offsets, construction and contingency), and the implementation would be subject to moderate additional environmental assessment, impacts and approvals.

The option does not address the ongoing issue of creek and floodplain sedimentation (existing sediment within the creek and floodplain moving downstream), and the resulting flood impacts.

Option O1	*Culvert capacity increase*

Overview
Under road culverts would require significant capital works and presents significant temporary partial road closures. The option is considered to be constructible through open trench methods, whilst maintaining two-way traffic. There would be the need for full or partial road closures during construction, however it is anticipated that such partial road closures could be undertaken whilst maintaining two lanes of flowing traffic (one each way), albeit at a reduced speed limit temporarily.

The key constraint would be the buried Optus cable which would require protecting or temporary realignment during construction.

Environmental Impacts
Given the proposed utilisation of an existing culvert alignment, it would be likely to result in significant impacts. Environmental offset cost is estimated at $12k (excl. GST).

Flood Impacts
Flood impacts are significant-positive. Flood immunity up to 1 EY (1-year ARI).

Estimated Capital Costs
The option is estimated to cost $1.2M (excl. GST) (total project cost, including project management, design, offsets, construction and contingency).

Option O2	*Culvert capacity increase (additional to O1)*

Overview
The option would present similar considerations as Option O2, with only a slightly larger construction footprint due to the larger pipes.

Flood Impacts
Flood impacts are significant-positive. Flood immunity up to 0.5 EY (2-year ARI)

Environmental Impacts
Given the proposed utilisation of an existing culvert alignment, it would be likely to result in significant impacts. Environmental offset cost is estimated at $12k (excl. GST).

Estimated Capital Costs
The option is estimated to cost $1.6M (excl. GST) (total project cost, including project management, design, offsets, construction and contingency).

Option S1	*Bunds and localised low point drainage (i.e. flap-gated pipes)*

Overview
The option is considered to be feasible, with the primary consideration the approval from RMS for works within the road corridor. There would be a requirement for reduced travel speed limits during the anticipated 6-week construction period.

Flood Impacts
Flood impacts are significant-positive. Flood immunity up to 0.5 EY (2-year ARI).

Estimated Capital Costs
The option is estimated to cost $2.1M (exc. GST) (total project cost, including project management, design, offsets, construction and contingency).

If local drainage channels are required to offset local drainage impacts, an additional $126k (excl. GST) of environmental offsets may be required for 0.74ha of vegetation disturbance.

Based on the feasibility assessment, it is considered that all the proposed options, except for Option B6, are feasible to implement, subject to acceptance of environmental impacts and the perceived or actual cost/benefit. Due to the constraints posed, the estimated costs for most options are considerably higher than would be expected from a less constrained site.

Option B6 (2m sediment removal) is not considered feasible. The creek is typically less than 1m below the overbank (floodplain) area, therefore a 2m depth of floodplain excavation would result in a reduced creek profile, significant imbalance in the fluvial regime, as well as ponding. Such work would also make revegetation of the 'floodplain' unlikely.

Those options requiring physical works within the road corridor would require approval and possibly implementation by RMS. For such options, the primary consideration is available space for plant and equipment during construction, a need to limit road closures, in-ground services and traffic management / safety. Space constraints are a key consideration and impact significantly on the construction timeframe and cost.

Options requiring physical work outside the road corridor (i.e. floodplain sediment excavation, culvert tail out channels) present significant constructability constraints and particularly issues with environmental impacts. This is particularly relevant for options at The Bends, where direct disturbance of sensitive and valuable habitat would be likely.

It is understood that options outside the road corridor (i.e. floodplain sediment excavation) could be implemented by Council, with only approvals required from RMS (being required for temporary road closures / temporary changed traffic conditions). Other environmental approvals would be required.

Regarding staging, options outside the road corridor at The Bends (e.g. sediment excavation) can be implemented prior to other options within the road corridor and are not necessarily inter-dependant. Therefore, the sediment excavation option at the Bends could be implemented initially, with other options being implemented later.

Residual risks for option implementation include:

- The impact of localised pluvial flooding (ponding) remains a risk for options comprising levee construction or raising.
- further ongoing sediment infill and choking of the creek corridor could continue for options not including sediment removal. Further sedimentation could exacerbate the existing flooding issue.
- environmental approvals and the need for further assessment is required, primarily for sediment removal and road culvert options (at The Bends). Environmental impacts may not be considered acceptable.
- offset credit values are estimated at today's rates. It should be noted that these rates are changed every 3 months.
- RMS approvals regarding traffic management (for options outside the road corridor) or road closures and occupancy (for options within the road corridor) would be required. It is understood that limited consultation with RMS has taken place to date.
- the sediment contamination testing undertaken to inform this assessment was limited. To fully classify the sediment prior to removal would require significant additional testing. Should additional testing change the waste classification, then estimated disposal costs would increase significantly, and likely render the option unfeasible due to costs.

- the ability for the excavated sediment to be disposed of offsite (in the case of options involving sediment excavation) has been assumed.
- Several uncertainties remain regarding land ownership.
- Options have been tested based on present day conditions, including rainfall, site constraints and baseline environmental conditions. The present study has not taken account of climate change (potential increase in rainfall intensity) or sea level rise.
- A European Heritage Assessment has not been undertaken.

The feasibility assessment has identified several flood mitigation options, generally providing increasing flood immunity with increasing estimated costs. The best performing option(s) provide flood immunity up to 1 EY (1-year ARI) for the whole parkway. Such flood immunity is achieved with the combination of Option B3 (at The Bends) and Option O1 (at Oxford Falls), with estimated costs of $12.1M (excl. GST) and $1.2M (excl. GST), respectively ($13.3M in total).

Option B4 provides flood immunity up to 0.5 EY (2 year ARI) flood immunity at the Bends at an estimated cost of $13.8M (excl. GST), however the flood immunity of the whole parkway is not realised as it is limited by the Oxford Falls and Sports Academy sites.

Glossary of Terms

Annual Exceedance Probability (AEP)	The annual exceedance probability is a measure of the frequency of a rainfall event. It is the probability that a given rainfall total, accumulated in a given duration, will be exceeded in any one year. A one per cent AEP event is a rainfall event with a one per cent chance of being exceeded in magnitude in any year. The current Australian Rainfall and Runoff Guideline (Commonwealth of Australia, 2016) recommends the use of AEP terminology whereas historically, the term Average Recurrence Interval (ARI) was used. Where reference documents have used ARI, this has been converted to an equivalent AEP using the information below (Bureau of Meteorology, 2016).
Australian Height Datum (AHD)	A common reference level used in Australia which is similar to the height above sea level.
Average Recurrence Interval (ARI)	The average recurrence interval is a measure of the frequency of a rainfall event. It is the expected average value between exceedances of a given rainfall total accumulated over a given duration, e.g. 1 in 100 years. However, this sometimes resulted in the term being misinterpreted as implying the associated magnitude is only exceeded at regular intervals, and that it was referring to the elapsed time to the next exceedance. In fact, the time between events of a similar magnitude are random and unpredictable. For these reasons, the annual exceedance probability (AEP) is now the preferred terminology. The original flood studies referenced in this report were based used ARIs, and these have been converted to equivalent AEPs.
Catchment	The area drained by a stream or body of water or the area of land from which water is collected.
Design flood	A flood with a nominated probability or average recurrence interval.
Discharge	Quantity of water per unit of time flowing in a stream, for example cubic meters per second or megalitres per day.
Flash flooding	Flooding occurring within about six hours of rain, usually the result of intense local rain and characterised by rapid rises in water-levels (BOM, 2016a).

Flood	For the purposes of this report, a flood is defined as the inundation of normally dry land or infrastructure by water which escapes from, is released from, is unable to enter, or overflows from the normal confines of a natural body of water or watercourse such as rivers, creeks or lakes, or any altered or modified body of water, including dams, canals, reservoirs and stormwater channels.
Flood-prone land	Land which is within the extent of the probable maximum flood and therefore prone to flooding. See probable maximum flood.
Floodplain	The area of land subject to inundation by floods up to and including the probable maximum flood.
Flood storages	Those parts of the floodplain that are important for the temporary storage of floodwaters during the passage of a flood. The extent and behaviour of flood storage areas may change with flood severity, and loss of flood storage can increase the severity of flood impacts by reducing natural flood attenuation.
Floodway	The area of the floodplain where a significant portion of flow is conveyed during floods. Usually aligned with naturally defined channels.
Geographical Information Systems (GIS)	A geographic information system (GIS) is a system designed to capture, store, manipulate, analyse, manage, and present all types of geographical data.
Probable maximum flood	The probable maximum flood is the maximum flood which can theoretically occur based on the worst combination of the probable maximum precipitation (rainfall) and flood-producing catchment conditions that are reasonably possible at a given location.
Probability	The probability of an event (such as a flood) is the measure of the chance that the event will occur. It is a measure of the likelihood or unlikelihood of different outcomes.
Runoff	The amount of rainfall which ends up as streamflow, also known as rainfall excess.
Topography	Representation of the features and configuration of land surfaces.

1 Introduction

1.1 Purpose and Layout of this Report

Northern Beach Council (Council) engaged Royal HaskoningDHV (RHDHV) to undertake a flood mitigation options feasibility study to determine the appropriateness and effectiveness of measures to mitigate very frequent flooding of Wakehurst Parkway. Wakehurst Parkway is in the Northern Beaches Council LGA.

This report documents the review of available data, investigations and further data collection undertaken, the options feasibility assessment and presents a recommended approach to flood mitigation, for further assessment.

The study builds on the work undertaken by RHDHV in their 2018 Flood Mitigation Options Assessment Study (RHDHV, 2018).

The document is structured as follows:

- **Section 1 –** Introduction and Background (this section)
- **Section 2 –** Study Aims, Objectives and Scope
- **Section 3 –** Review of Available Data and Additional Studies
- **Section 4 –** Summary of Constraints
- **Section 5 –** Option Feasibility Assessment
- **Section 6 –** Residual Risks
- **Section 7 –** Conclusions and Recommendations

Further information is appended as follows:

- **Appendix A –** RHDHV Report (2018)
- **Appendix B –** Photo Record
- **Appendix C –** Existing Flood Mapping
- **Appendix D –** Heritage Assessment
- **Appendix E–** Ecological Constraints Report
- **Appendix F–** Sand Sheet Investigation Report
- **Appendix G –** Soil Contamination Report
- **Appendix H –** Services Search
- **Appendix I –** Flood Model Refinements
- **Appendix J –** Concept Design Plans
- **Appendix K** - Flood Impact Maps

1.2 Background

Wakehurst Parkway provides an important road connection in the Northern Beaches, linking Frenchs Forest with Narrabeen. Middle Creek runs alongside Wakehurst Parkway from Oxford Falls to Cromer, where it discharges to Narrabeen Lagoon.

Flooding from Middle Creek and its tributaries affects Wakehurst Parkway in this area, causing very frequent flooding. Very frequent flooding is defined in Australian Rainfall and Runoff (Geoscience Australia, 2016) as occurring more frequently than once a year. The very frequent flooding of the road causes the road to be regularly closed due to actual or anticipated flooding from Middle Creek during a range of rain events. The road is understood to be closed based on water level gauge readings and visual assessment. Due to the high volume of traffic present on the roadway, the impact of closure on the community is significant.

Ongoing and future requirements for flood mitigation is complicated by the local environment, a variety of constraints at the site and the involvement of a number of organisations and stakeholders.

The investigations undertaken by RHDHV (2018) confirmed the results of previous studies in 2013 (GHD for RMS) and 2017 (Cardno for Council), including that Wakehurst Parkway frequently floods (over road flooding) in three (3) key locations, namely:

1. The Sydney Academy of Sport and Recreation;
2. The Bends; and
3. Oxford Falls.

The location of the three (3) key flood-affected locations is shown below in **Figure 1**, along with the estimated extent of the 0.5 Exceedances per Year (EY) or 2 year Average Recurrence Interval (ARI) flood event.

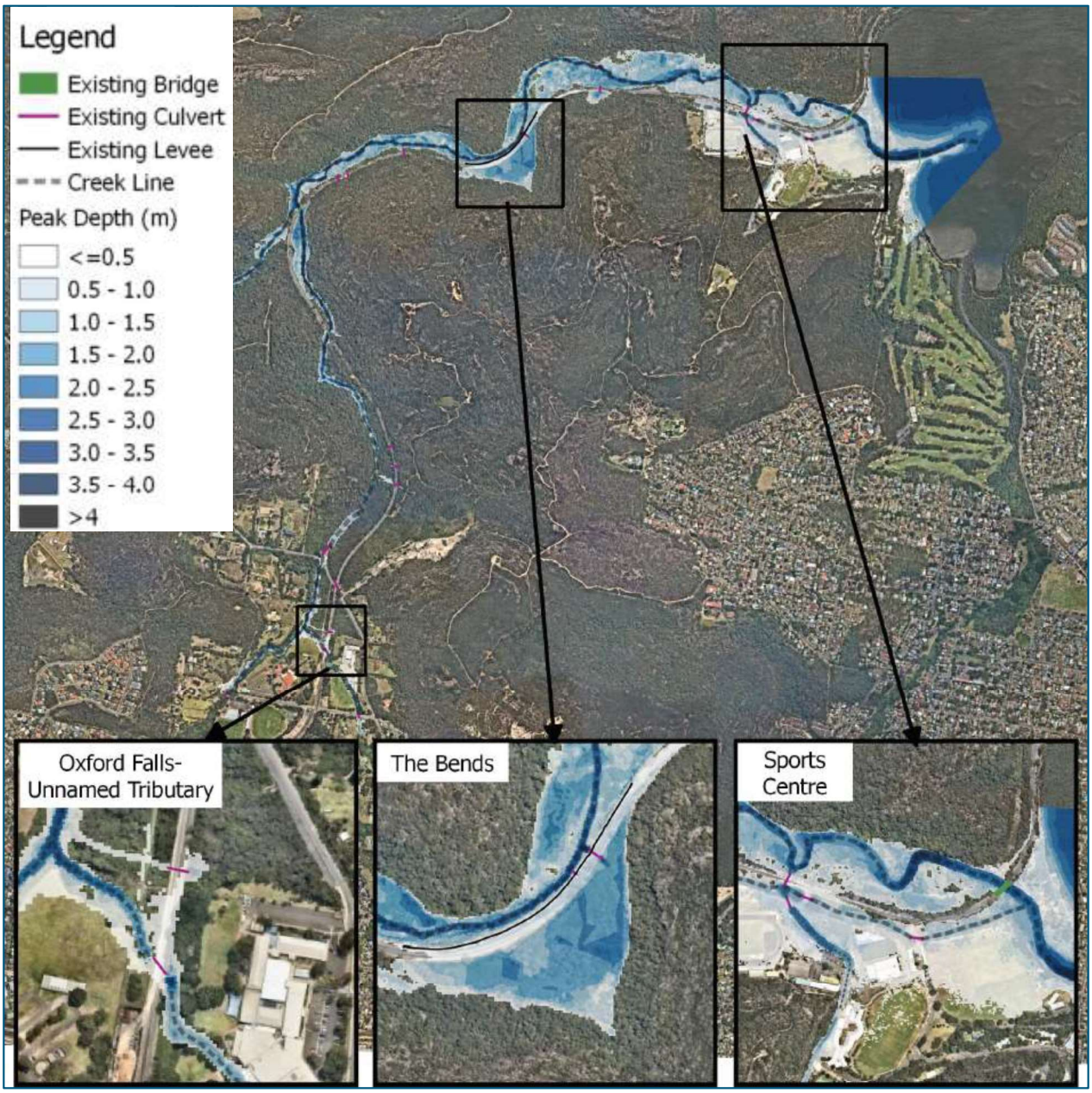

Figure 1: Modelled flood extent and depths in Middle Creek in the 0.5 EY (2 year ARI) flood event. The location of the three (3) key locations affected by over road flooding is shown by inserts (RHDHV, 2018).

The extent of flooding shown above in **Figure 1** defines the geographic extent of the study reported herein. Flood mapping for the existing situation, as a product of more current flood modelling by RHDHV, is presented in **Appendix C (Figure C1** to **C12)**.

1.3 Study Area

The general character of the study area is well described by Soil Conservation Service (2018) and repeated here (with minor additions) for context.

Middle Creek is located within the Narrabeen Lagoon Catchment and is a major tributary draining eastward toward Narrabeen Lagoon. The lower reaches of Middle Creek are brackish and subject to some tidal influence via Narrabeen Lagoon (when open to the sea).

NSW Department of Industry (DoI) Water classifies Middle Creek as a 3rd order stream with Snake Creek, Oxford Creek and Trefoil Creek feeding into this tributary. The upper reaches of the Middle Creek sub-catchment are dominated by the urban residential setting of Frenchs Forest and Oxford Falls with the study reach dominated by dense vegetation for the majority of its length.

The Middle Creek sub-catchment is approximately 10 km² in size and is prone to short duration 'flash flooding' due the steep surrounding topography. Middle Creek is defined by the valley margin which is made up of the Hawkesbury Sandstone formation (Geological Survey of NSW, 1983).

Below Oxford Falls, Middle Creek has a low gradient that flows along an alluvial floodplain. The channel is made up of intermittent benches and pool-riffle sequences with aquatic habitat attributes including large woody debris and overhanging vegetation. The banks and floodplain are densely vegetated with both native and exotic species with bank material dominated by course sand deposits. A delta formation is situated at the mouth of Middle Creek as it enters Narrabeen Lagoon.

The site is situated at approximately 10m AHD, with the top of the catchment located at approximately 150m AHD.

The riparian corridor is recognised as Key Fish Habitat by the Department of Primary Industries (DPI) Fisheries 2007.

1.4 Existing Flooding Problem

The existing flood problem has previously been documented in numerous reports, including most recently by Cardno (2017) and RHDHV (2018). Cardno (2017) reported that within the eight years of record analysed (2007 to 2014), the road was typically closed six to seven times per year as a result of flooding, with a median number of closure incidents of five per year.

The closing of the Parkway is understood to be initiated by mechanisms including the following:

- The water level gauge reading at The Bends (prior to 2017 a gauge further upstream was used),
- Reports by the public of over-road flooding; and
- NSW Police patrol observations.

CCTV monitoring of the roadway at Oxford Falls and visual inspections by NSW Police or RMS are then used to confirm flooding prior to closure of the road. A new CCTV camera is planned to be installed near the eastern gates, which are in the vicinity of the RMS heavy vehicle inspection station, west of Sydney Academy of Sport and Recreation. Following flooding, the road is re-opened following confirmation by NSW Police that flooding has subsided.

Flood modelling undertaken by RHDHV (2018) estimates that the roadway at the three key locations is inundated during the flood events as shown in **Table 1** below.

Table 1: Frequency of existing road inundation at the three (3) key locations, as estimated by flood modelling.

Case	Depth of road flooding from the Creek in the stated event (Excluding local effects from direct rainfall on road)			
	4 EY (3 month ARI)	2 EY (6 month ARI)	1 EY (1 year ARI)	0.5 EY (2 year ARI)
Academy of Sport	Not flooded	Not flooded	Not flooded	0.23m
The Bends	0.08m	0.35m	0.46m	0.88m
Oxford Falls	0.06m	0.09m	0.18m	0.21m

As can be seen from **Table 1**, The Bends is the most frequently inundated section of road along the Parkway and has therefore formed a primary focus of this study.

1.5 Previous Flood Mitigation Studies

Preliminary flood mitigation options were investigated by Cardno (2017). Options included sediment removal from Middle Creek, culvert upgrades, detention basins and the raising of Wakehurst Parkway. Results suggested that the removal of sediment from Middle Creek could provide minor reductions in flooding in the short term. The combination of vegetation removal with sediment removal showed greater flood benefits. However, no investigations of ongoing maintenance were undertaken.

The raising of Wakehurst Parkway in key locations and corresponding culvert upgrades appeared to provide a longer-term sustainable option to permanently reduce the incidence of flooding and road closures in larger flood events, however this would have a significant capital cost and would also likely have environmental impacts. The raising of Wakehurst Parkway is not under further investigation and was discounted as an option from this assessment.

The recent investigations for flood mitigation follow a previous history of investigations into rehabilitation and dredging of Middle Creek. Ecological rehabilitation (bush regeneration) has been undertaken, however no physical works on the creek have proceeded.

In 2018, RHDHV undertook a Flood Mitigation Options Assessment Study (RHDHV 2018) (refer **Appendix A**).

The following data collection and studies were undertaken in 2018 by Council to identify opportunities and constraints to potential flood mitigation, and informed the RHDHV (2018) study:

- Detailed creek / ground survey and bathymetric survey;
- Ecology and biodiversity study (GHD, 2018); and
- Sediment and geomorphic studies (Soil Conservation Service and Pietsch, 2018).

The aim of the RHDHV (2018) flood mitigation options assessment was to develop upon previous flood mitigation studies by refining and evaluating options and selecting a preferred option for mitigation of very frequent flood events on Wakehurst Parkway. Specifically, at the three key locations mentioned above.

The RHDHV (2018) study aimed to mitigate flooding on the road in events with a frequency of 2 to 4 exceedances per year (EY) on average. Specifically, the study objectives were to:

- Provide a detailed assessment of opportunities and constraints;
- Develop options (shortlist) in consideration of the opportunities and constraints;
- Provide a detailed assessment of each shortlisted options;
- Select and justify a preferred option; and
- Provide recommendations for further studies and data requirements, including briefing notes for selected further studies (Heritage and Contamination).

Following an options shortlisting process, nine (9) options were shortlisted for detailed assessment. These options comprised six (6) at The Bends, one (1) at the Academy of Sport, and two (2) at Oxford Falls Road. The shortlisted options and repeated below in **Table 2** for convenience.

Table 2: Options shortlisted for detailed assessment

Option	Description
The Bends	
Option B1	*New levee*
Option B2	*New levee and removal of 1m depth of overbank sediment*
Option B3	*New levee, removal of 1m depth of overbank sediment and under-road culverts*
Option B4	*New levee, removal of 1m depth of overbank sediment, under road culverts, and top up of existing levee.*
Option B5	*Removal of overbank sediment (1m depth)*
Option B6	*Removal of overbank sediment (2m depth)*
Option B7	*New levee, under road culverts.*
Oxford Falls Road	
Option O1	*Culvert capacity increase*
Option O2	*Culvert capacity increase (2 year ARI flood immunity)*
Sydney Academy of Sport and Recreation	
Option S1	*Bunds and localised low point drainage (i.e. flap-gated pipes)*

Through the findings of the RHDHV (2018) assessment, it was determined that the options be taken forward for further assessment by way of this feasibility study.

For the further assessment of the options, the following studies were considered to be required:

- Geotechnical investigation;
- Acid Sulfate Soils and Contamination Assessment;
- Aboriginal Heritage Assessment;
- Feasibility assessment (including preliminary costing and economic assessment, assessment of permissibility and risk assessment); and
- Services search, to locate (alignment and depth) of the sewer and gas mains.

2 Study Aims, Objectives and Scope

2.1 Study Aim

The aim of this study was to assess the feasibility or otherwise of the flood mitigation options previously developed by RHDHV (2018). The aim of flood mitigation options is to reduce the frequency of inundation without increasing the duration of inundation.

2.2 Scope and Objectives

2.2.1 Concept Design

The RHDHV (2018) derived preliminary options were progressed to preliminary concept designs, of sufficient for this assessment. The level of detail was suitable to identify physical constraints and assess feasibility in terms of constructability. Alternative concept designs were developed where considered necessary.

The preliminary concept design drawings (presented in Appendix J) accounted for:

- Safety;
- RMS requirements;
- Ausgrid requirements for the high voltage access track at Oxford Falls (west of northern pipe);
- Maintenance considerations;
- Long term sustainability, including renewed/new sediment deposits;
- Biodiversity (minimising extents);
- Soil conditions, including an investigation confirming of the sand sheet extent;
- Constructability and site considerations; and
- Any other considerations arising from the other aspects of the feasibility study e.g. permissibility, etc.

2.2.2 Planning and Approvals Assessment (Environmental Planning / Permissibility)

A planning and approvals assessment was undertaken to confirm the approval pathway, e.g. under SEPP infrastructure, and to confirm if an EIS or REF is required. Required permits were confirmed. In addition to planning and approvals, a preliminary environmental impact assessment was undertaken and the timing of works, including season variations and issues, was considered.

2.2.3 Constructability

Detail all relevant aspects of constructability, including but not limited to:

- Access;
- Methodology;
- Safety;
- Permitting and construction; and
- The degree of specialisation of the works and considerations regarding available resources and/or contractors.

2.2.4 Costing

A preliminary cost estimate was prepared for each option. High-level life cycle costings, considering long term aspects such as sedimentation, were provided qualitatively.

2.2.5 Risk Assessment

In addition to an assessment of feasibility, based on the aforementioned aspects, an assessment of residual of each option or option element was undertaken, including:

- Climate change and sea level rise;
- Stakeholder and community acceptance; and
- Consideration of the 'do nothing' option, including the potential for adverse impacts, e.g. on biodiversity, should works, e.g. sediment removal, not proceed; and
- Identification of key assumption or residual data gaps.

3 Data Review and Additional Studies

3.1 Previous Relevant Studies

Council provided a number of studies and investigations which have previously been carried out at and around the study area. A review of these studies was undertaken by RHDHV.

3.2 Data Received

A number of data were provided to RHDHV by Council (unless stated otherwise) at commencement or during the study. Data received and reviewed includes:

- Aboriginal Heritage Due Diligence assessment (Navin Officer Heritage Consultants, November 2018) (refer **Appendix D** for full report and below for summary);
- Aerial Photos (refer **Appendix B** for full selected photo record);
- Additional site inspections (refer **Appendix B** for full selected photo record);
- RMS Accident Report and Traffic counts (RMS, 2018) (refer below for summary);
- Land contamination report (SESL, December 2018) (refer **Appendix G** for full report and below for summary);
- Additional infill to the Topographic Survey; and
- Sand sheet extent investigation (Soil Conservation Services, 2018) (refer **Appendix F** for full report and below for summary).

The above, along with additional studies undertaken are summarised below in **Section 3.3**.

3.3 Summary of Additional Studies

3.3.1 RMS Traffic and Accident Counts

Accident Counts

A Summary Crash Report compiled by NSW Roads and Maritime Service (RMS) was provided for information. The Summary Crash Report comprises reported crashes along Wakehurst Parkway, between Dreadnought Road and Sydney Academy of Sport. The data was recorded between the 1st of January 2013 to the 31st of December 2017.

Crash/collision types: There were 29 crashes overall. The majority of crashes were car crashes (93.1%) followed by 10.3% involving a light truck crash. 62.1% of these crashes involved multiple vehicles while 37.9% involves single vehicles. 24.1% of these crashes were head on, primarily resulting from one car driving on the incorrect side of the road, 20.7% of the crashes resulted from the car losing control on the curve and hitting an object off road, 13.8% were rear end crashes, and 10.3% resulted from a vehicle leaving a driveway.

Contributing factors: Speeding was a large contributing factor involved in 51.7% of crashes and school travel time was involved in 27.6% of the collisions. 48.3% of these crashes occurred when the road surface condition was wet. The majority of these accidents (75.9%) occurred in the daylight while 17.2% occurred in darkness. The crashes all occurred whilst the speed limit was 80km/hr.

Injuries: There have been 32 casualties in total with 40.6% being moderately injured, 37.5% seriously injured and 21.9% with minor injuries. 31% of all crashes resulted in no causalities.

Occurrence: A large number (9) of these 29 accidents occurred in 2013 resulting in 10 casualties, whilst the safest year was 2014 with 3 crashes and 1 casualty. The rest of the collisions were spread fairly evenly over 2015-2017 with a peak in casualties occurring in 2017 (9). These collisions were most probable on Wednesday – Saturday with 2 occurring on Labour Day and 3 during the December and January holiday period.

Location: 93.1% of these crashes did not occur at an intersection and did not occur on a freeway, state highway or unclassified road.

Traffic Counts: Wakehurst Parkway typically experiences 8,000 trips in either direction per day (NSW Roads and Maritime Service, 2012), with some minor variation between weekdays and weekends. There is not current (up-to-date) traffic counts for Wakehurst Parkway, however, the RMS website (https://www.rms.nsw.gov.au/about/corporate-publications/statistics/traffic-volumes/aadt-map/index.html#/?z=15&lat=-33.73524848996451&lon=151.25303317582677), indicates that Pittwater Road north and south of Wakehurst Parkway, suggests ~20k per day in both directions (i.e. 40k).

Although specific and reliable data is lacking, it as a reasonable conclusion to characterise the road an extremely busy with a consistent flow of high speed (80kph) traffic for the majority of the day.

3.3.2 Sediment Characterisation and Sand Sheet Extent

In late 2018 and early 2019 Soil Conservation Services undertook an investigation into the extent and character of the existing sand sheet forming the in-creek and overbank sediment. Refer **Appendix F** for full findings. Specifically, the investigation aimed to determine the nature of the overbank (floodplain material) and establish to what extent the material comprised clean sand. The Soil Conservation Services investigation determined that the existing overbank material typically comprised sand with interbedded silts and clays. In the upper portion of the sand sheet, at The Bends, there was clean sand.

In addition, as part of the Acid Sulfate Soil (ASS) and Contamination Investigation (see Section 3.3.3 below and **Appendix G)**, SESL (2018) conducted a limited sediment characterisation at the proposed potential works areas (refer **Figure 2** and **Figure 3**). Selected results are presented in **Table 3** and **Table 4** below. The SESL (2018) result correlate with the Soil Conservation Services investigation.

A number of images taken during the SESL (2018) investigation and by RHDHV during various site investigations are presented below in **Figure 4** to **Figure 7**.

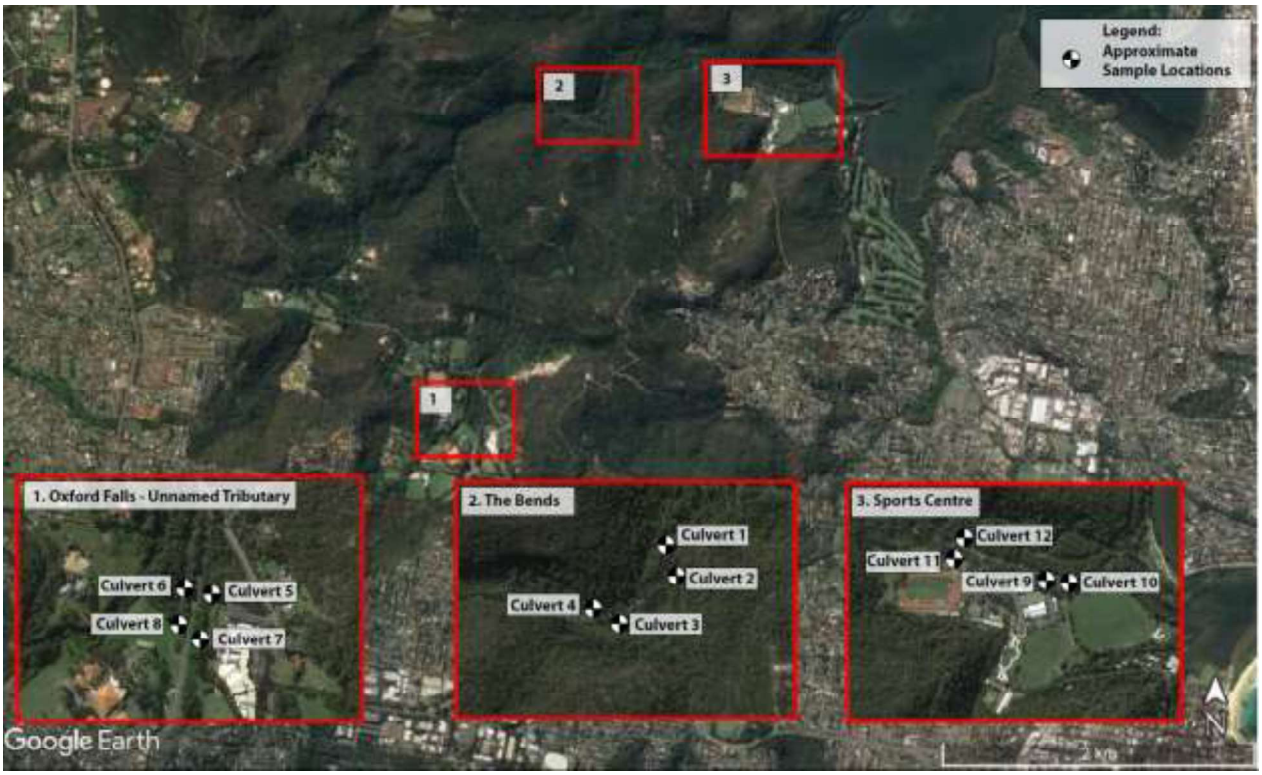

Figure 2: Sampling locations at proposed culvert sites (SESL, 2018)



Figure 3: Sampling locations within the creek (SESL, 2018)

Table 3: Results of sediment characterisation investigation at proposed culvert locations (SESL, 2018)

Sample Name	Sample Depth approx. (mm)	Sample Location Description
Culvert 1	800	Northern side of Wakehurst Parkway, within vegetation approximately 5-10 m from the road. 0-400: Brown sandy loam (topsoil) with organics 400-800: Brown sandy clay
Culvert 2	500	Southern side of Wakehurst Parkway, within bog-like area, approximately 5-10 m from the road. 0-500: Brown sandy clay (high moisture content)
Culvert 3	500	Southern side of Wakehurst Parkway, within bog-like area, approximately 5-10 m from the road. 0-500: Brown sandy clay
Culvert 4	500	Northern side of Wakehurst Parkway, within vegetation approximately 5-10 m from the road. 0-400: Brown loamy fill, with general rubbish and building wastes 400-500: Brown clayey sand
Culvert 5	500	Eastern side of Wakehurst Parkway, approximately 5 m from the road. 0-300: Road base/fill 300-500: Clayey sand/sandy clay
Culvert 6	500	Western side of Wakehurst Parkway, approximately 5 m from the road. 0-300: Road base/fill 300-500: Clayey sand/sandy clay
Culvert 7 – above Retaining Wall	500	Eastern side of Wakehurst Parkway, approximately 5 m from the road. Sample collected from above the retaining wall. Brown sandy clay
Culvert 8 – Midbank	500	Western side of Wakehurst Parkway, approximately 5 m from the road. Sample taken from halfway down the creek bank. Brown clayey sand
Culvert 9	500	Collected from the midbank adjacent to the existing culvert (western side). 0-300: Dark brown organic matter 300-500: Highly organic grey sandy clay
Culvert 10	500	Collected from the mid-bank adjacent to the existing culvert (eastern side). 0-300: Dark brown organic matter 300-500: Highly organic grey sandy clay
Culvert 11	300-700	Southern side of Wakehurst Parkway, halfway down embankment 5-10m from the road 0-400: Brown highly organic loam 400-700: Organic sandy clay/clayey sand
Culvert 12	300-700	Northern side of Wakehurst Parkway, halfway down embankment 5-10m from the road 0-400: Brown highly organic loam 400-700: Organic sandy clay/clayey sand

Table 4: Results of sediment characterisation investigation in floodplain (SESL, 2018)

Sample Name	Sample Depth approx. (mm)	Soil Profile Description
BH1	0-200 500-600 800-900	0-700: White/yellow coarse sand 700-800: Dark brown sandy loam
BH2	0-200 500-600 1100-1200	0-200: Coarse sand with significant organics 200-800: Coarse sand 800-1200: Loamy sand
BH3	0-200 200-300 800-900	0-250: Coarse sand 250-300: Brown sandy loam 300-1000: Coarse sand
BH4	0-200 300-400 500-700	0-500: Coarse sand 500-800: Dark brown sandy clay loam
BH5	0-200 500-600 700-800	0-700: Coarse sand with minor loam inclusions 700-800: Dark brown sandy clay loam, plastic inclusions
BH6	0-200 300-400 550-700	0-550: Coarse sand with minor loam inclusions 550-700: Dark brown sandy clay loam
BH7	0-200 400-600 800-1000	0-600: Coarse sand with minor loam inclusions 600-1000: Dark brown sandy clay loam



Figure 4: Profile of the material augured at BH1 (SESL, 2018). Phot taken 31/10/2018.



Figure 5: Profile of the material at BH5 (SESL, 2018). Photo taken 31/10/2018.



Figure 6: (a) and (b) upper horizon. approximate location of BH1 on LHB (looking downstream) floodplain 21/11/18



Figure 7: In-creek sand at approximate location of the SESL (2018) BH7. Photo taken looking downstream.

3.3.3 Acid Sulfate Soil (ASS) and Contamination Investigation

SESL (2018) conducted an Acid Sulfate Soil (ASS) and Contamination Investigation at the site of expected soil disturbance. This investigation included the assessment of soils within the vicinity of six (6) proposed culvert upgrades and creek sediment removal, adjacent to Wakehurst Parkway (refer **Figure 2** and **Figure 3** above).

The environmental assessment works undertaken during this ASS investigation comprised of the following:

- Visual inspection of the locations of proposed site works on 3/10/2018, 26/10/2018 and 31/10/2018;
- Collection and analysis of 19 soil samples for sPOCAS analysis;
- Collection and analysis of 22 soil samples for acid sulfate screens;
- Collection and analysis of 33 soil samples for contamination analysis;
- Preparation of this report detailing methodologies used during this investigation, results, management strategies and conclusions regarding the acid sulfate soil risk associated with the proposed development at the site.

Investigative work was conducted in accordance with the following applicable guidelines:

- Acid Sulfate Soils Manual (NSW Acid Sulfate Soils Management Advisory Committee, 1998); and
- Assessing and Managing Acid Sulfate Soils - Guidelines for and Management in NSW Coastal Areas (EPA, 1995).
- NSW EPA Waste Classification Guidelines – Part 1: Classifying Waste (2014);

The report was based on the field data obtained from samples collected from the proposed inlet and outlet locations of six (6) culverts in the investigation area and material collected from the subject sediments at Middle Creek (the Bends).

Based on the findings of the assessment, the soils within the proximity of some of the proposed culvert locations are considered to be potential and actual acid sulfate soil. SESL recommends that the proposed excavation works must be managed under the site-specific Acid Sulfate Soil Management Plan (ASSMP).

Based on limited assessment and in accordance with the NSW EPA Waste Classification Guidelines – Part 1: Classifying Waste (2014), the soils proposed for excavation within the proximity of the culverts meet the criteria for General Solid Waste. In accordance with landfill's Environmental Protection Licenses (EPL), the material is not considered suitable for recycling due to elevated benzo(a)pyrene, nickel and lead.

Soils proposed for excavation within the subject area of Middle Creek (The Bends) are considered to not be Acid Sulfate Soils, and do not require management under an ASSMP. SESL suggests that the observed acidity is likely the result of extensive organic matter within the subject materials, and not the result of present sulfur.

In accordance with the NSW EPA Waste Classification Guidelines – Part 1: Classifying Waste (2014), all samples collected from within creek sediments meet the criteria for General Solid Waste. However, based on the results of this limited assessment, SESL recommends that the subject soils proposed for excavation will meet the requirements for classification as Excavated Natural Material (ENM), and that consideration should be given to further assessment for the classification of these soils as ENM, to reduce the cost of offsite disposal.

3.3.4 Aboriginal Heritage Due Diligence Assessment

An Aboriginal Heritage Due Diligence assessment was undertaken by Navin Officer Heritage Consultants (November 2018).

58 Aboriginal site recordings and an Aboriginal place are listed on the OEH AHIMS for the area around the Wakehurst Parkway study area. None are located within the current study area.

Two locally listed historic sites sit in close proximity to the study area. Middle Creek Bridge No. 2 (I151) sits 10 metres away from the sediment removal area at The Bends, and Bridge No. 3 over Middle Creek (I146) sits 25 metres away from the proposed channel at the Sports Academy. There are no plans for the heritage sites to be impacted by the proposal.

Background research and field inspection of the study area did not identify any Aboriginal sites or potential archaeological deposits (PADs) in the study area. The area has been disturbed since European exploration of the area. The construction of Wakehurst Parkway and sediment build-up have had a massive impact on the area in particular.

It is recommended that:

1. No further archaeological assessment is required for the Wakehurst Parkway Flood Mitigation project.
2. The unanticipated discovery protocols included in Appendix 2 should be put in place for the project.
3. A copy of this report should be provided to the Metro Local Aboriginal Land Council.

3.3.5 Services and Utility Location

A Dial Before You Dig (DBYD) search was undertaken by RHDHV in June 2018 (Job:14213377 SEQ:71440601 - Wakehurst Parkway Allambie Heights NSW 2100). Results of the DBYD searches provide a useful overview of the services within the area and are summarised below. In addition, Council commissioned Land Surveys and Utility Mapping to undertake services locating at the three key areas. The results of the services locating are presented in **Appendix H**.

The Bends and Sydney Academy of Sport and Recreation

Two services / utilities were identified within the potential works area(s), namely:

- Gas (Jemena); and
- Sewer (Sydney Water Corporation).

The gas main is shown on the DBYD plans to be a 15 inch cast iron pressurised gas main ('Secondary Main') at 1050 kPa. The alignment of the gas main appears to generally follow the alignment of the road and to be contained within the road reserve, western road shoulder (refer **Figure 8** and **Figure 9**). The Land Surveys and Utility Mapping plans indicate that the depth to the gas pipe at The Bends is typically 750mm.

At the Academy of Sport, the gas main crosses the creek, either within the road bridge superstructure or under the creek. The depth of the gas main is indicated on the Land Surveys and Utility Mapping plans to be between 1.8m and 1.25 m below the road surface.

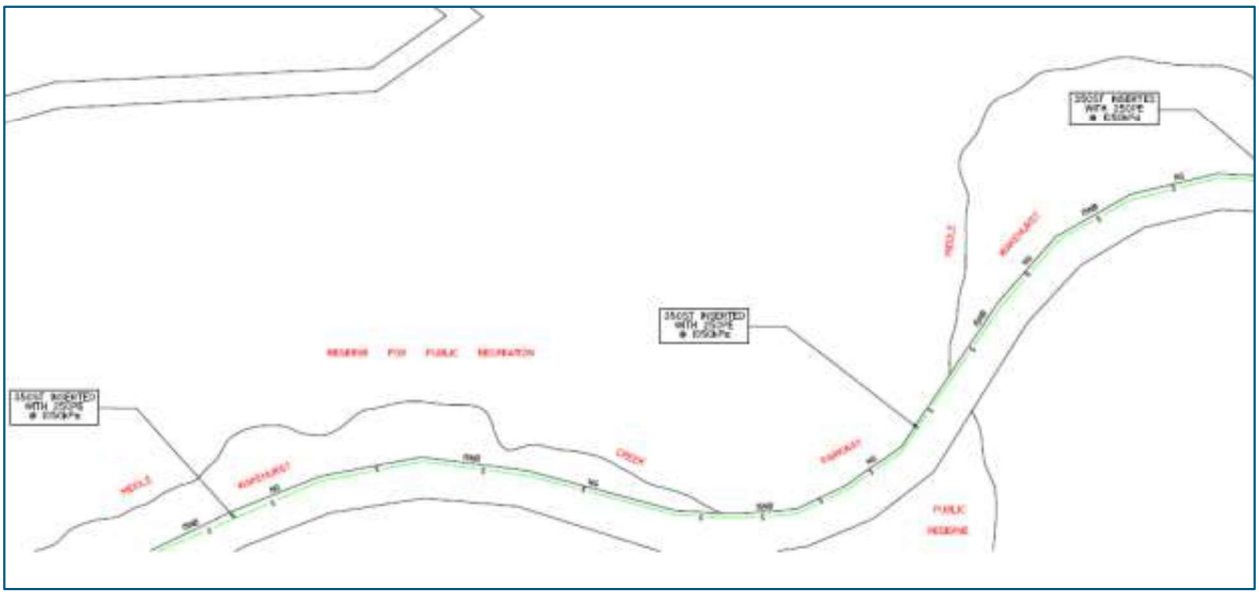

Figure 8: Gas main at The Bends.

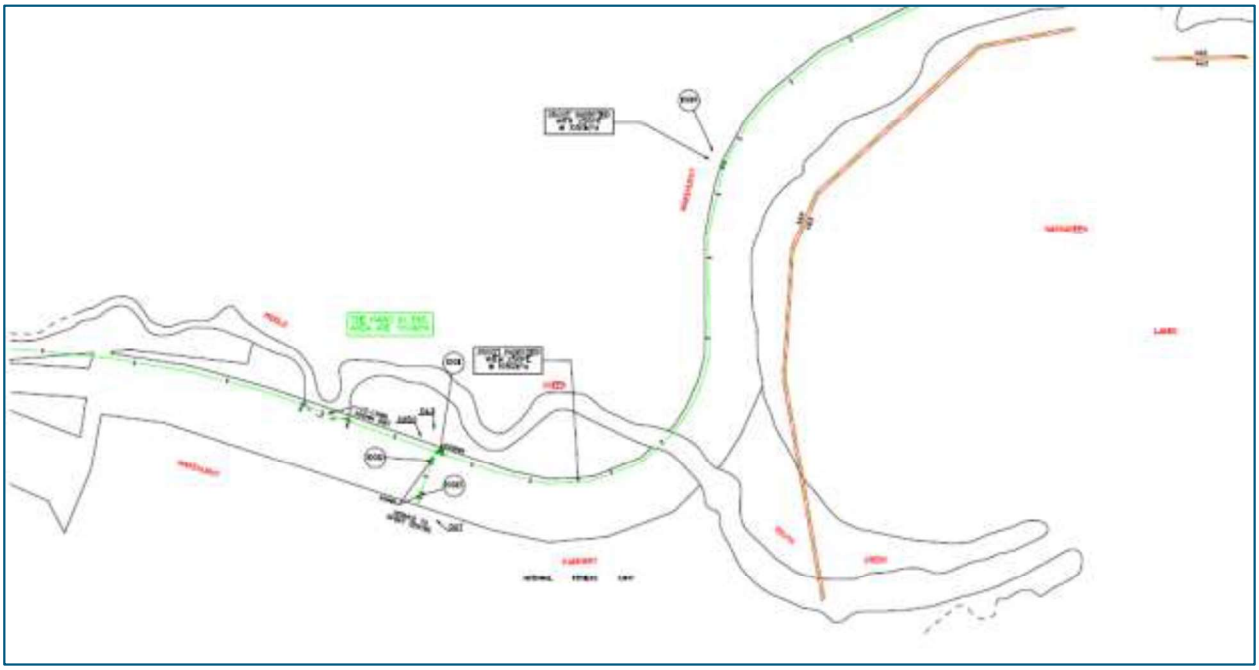

Figure 9: Gas main at the Sydney Academy of Sport and Recreation.

At The Bends and the Academy of Sport areas, the sewer main is shown on the DBYD plans to be a 375 mm diameter Ductile Iron Cement (mortar) Lined pipe. The sewer appears to run down the centreline of the road, before heading north away from the road alignment after The Bends (refer **Figure 10**). As the sewer heads north away from the road, it crosses the creek.

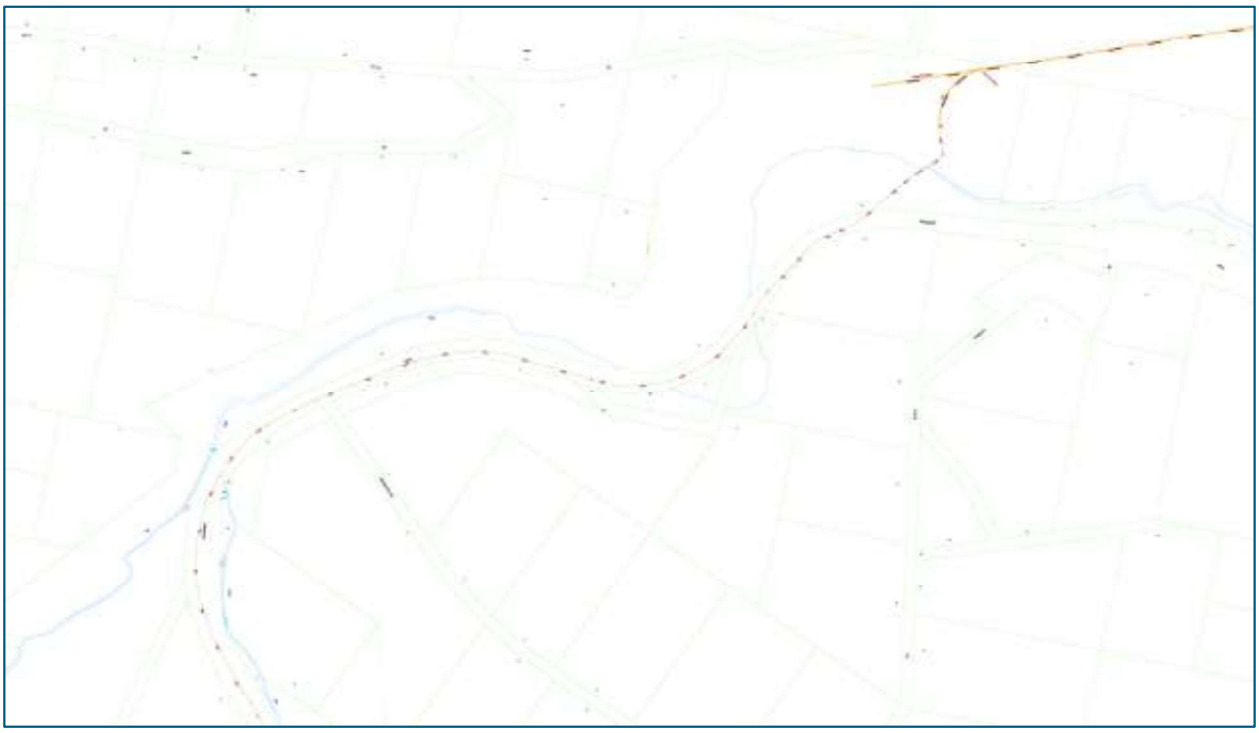

Figure 10: Sewer main at The Bends and Sydney Academy of Sport and Recreation.

According to the Land Surveys and Utility Mapping, the depth of the sewer at The Bends ranges between 500mm and 700mm below the road surface (refer **Appendix H**). The service is likely a gravity main running south to north until the access track.

From the Sydney Water Access Track, the main passes through the hill cut in rock. From there it crosses Deep Creek above ground (visible on aerial photo) goes through Elanora Heights to the Warriewood sewerage treatment plant, via at least one pumping station (Northern Beaches Council pers. Comms).

Oxford Falls

At Oxford Falls, a sewer main is shown on the DBYD plans to be a 375 mm diameter Vitrified Clay pipe running parallel to Middle Creek (refer **Figure 11**). The pipe is buried typically to a depth greater than 3m. The sewer pipe is not located in the road footprint, therefore is not expected to conflict with potential flood mitigation options (e.g. road culvert augmentation).

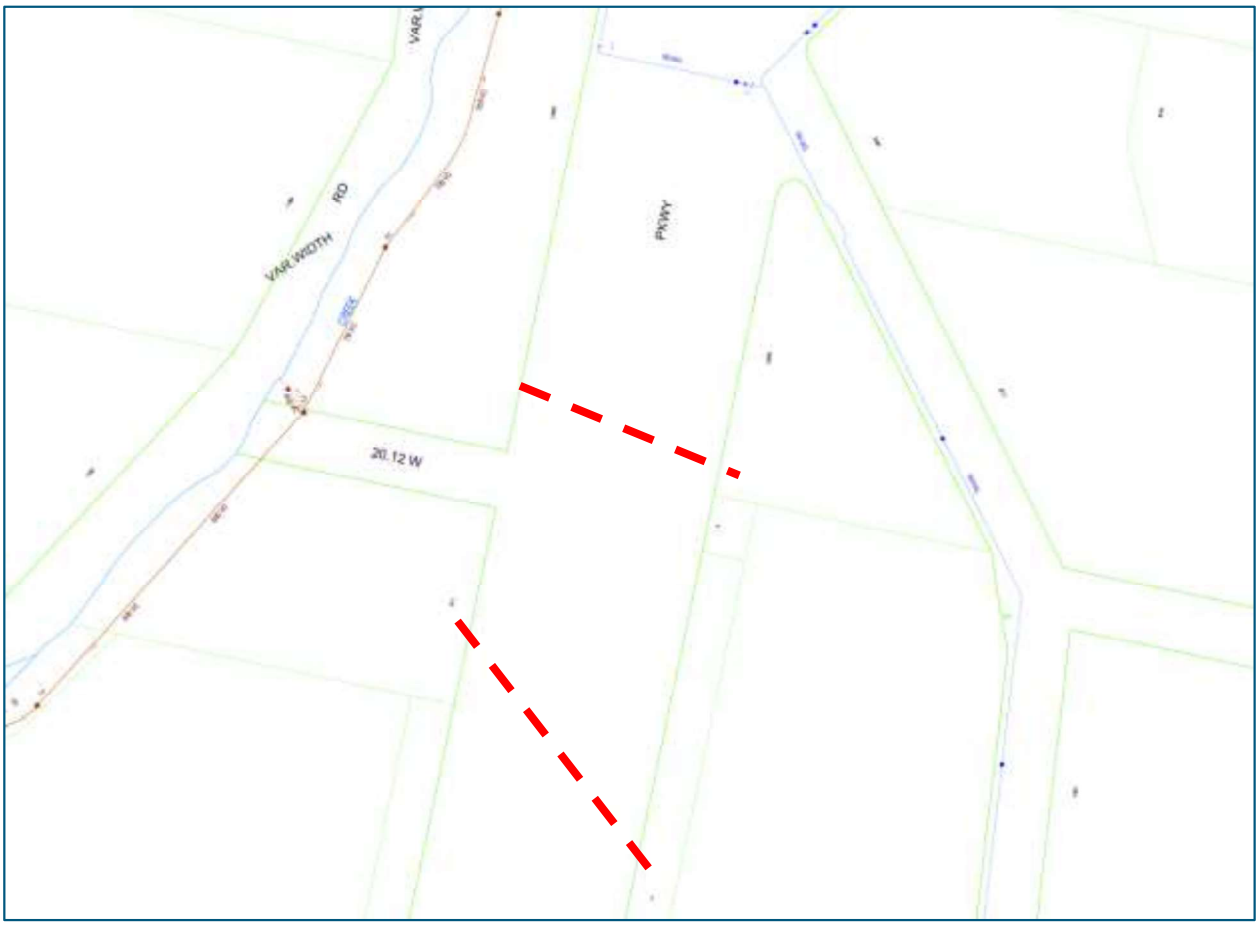

Figure 11: Sydney Water Corporation sewer main adjacent to Middle Creek. The approximate location of existing culverts is shown by red dashed lines.

There are Telstra services contained within the road corridor south of the southern set of culverts at Oxford Falls. These do not appear to cross the existing culverts. In addition, there is an Optus underground optic fibre cable (a major optic fibre telecommunications asset) within the Wakehurst Parkway road corridor, running generally parallel with the road alignment. These services have not been located by the Land Surveys and Utility Mapping services search.

A gas main is shown on the DBYD plans to be a 250mm polyethylene pressurised gas main ('Secondary Main') at 1050kPA. The alignment of the gas main appears to generally follow the alignment of the road and appears to be contained within the road reserve (centreline) (refer **Figure 12**).

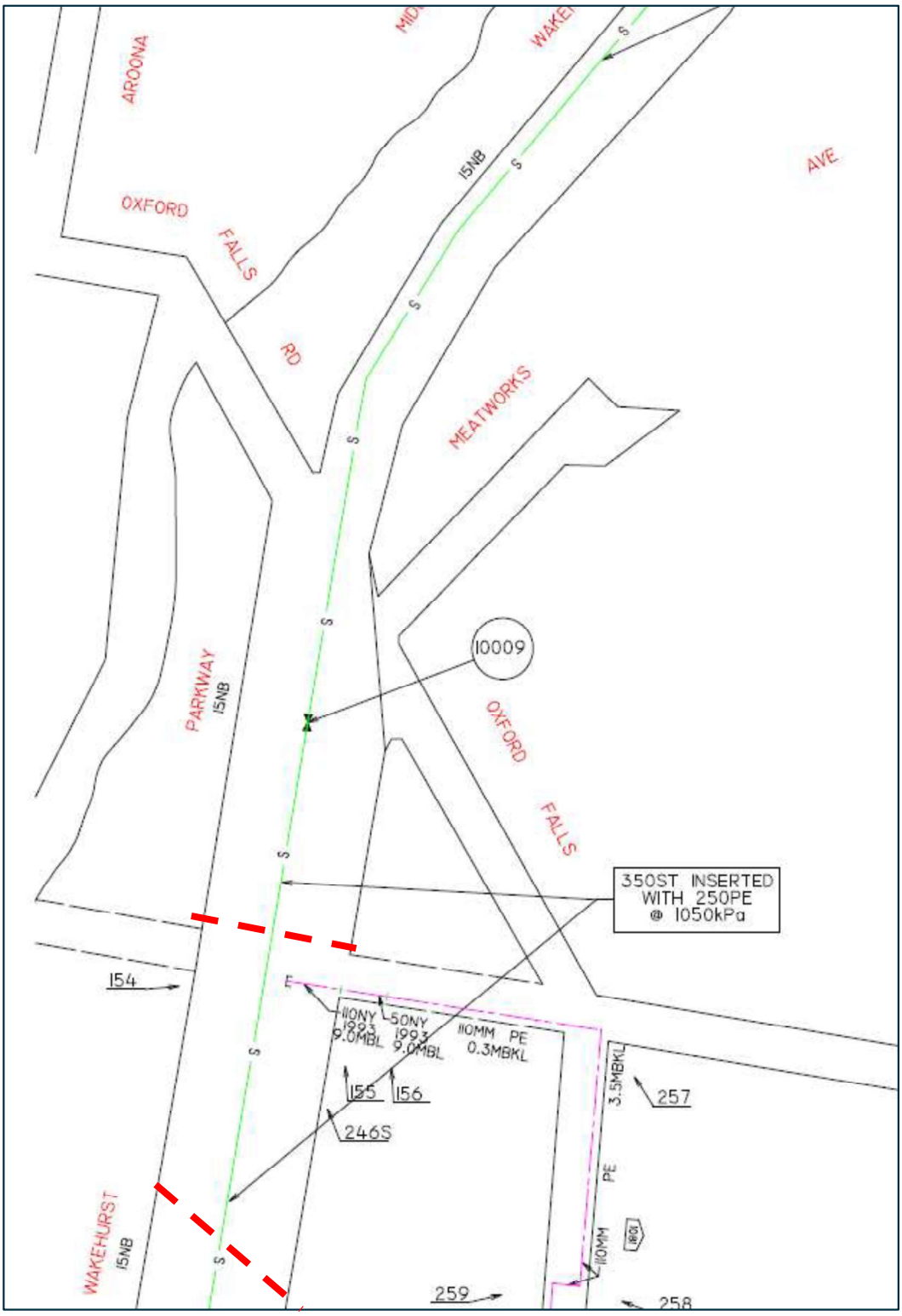

Figure 12: Gas main at Oxford Falls. The approximate locations of the two existing culvert road crossings are shown by dashed red lines.

3.3.6 Flood Modelling

Following refinement of the concept designs, the flood hydraulic model was updated by RHDHV and re-run. Refinements made to the model are detailed in **Appendix I**, whilst the mapped results of flood modelling are presented in **Appendix K**.

3.3.7 Constructability Workshop

A constructability workshop was held between Council and RHDHV on the 16th November 2018. The workshop included input from various Council officers, as well as external specialists. Attendees are listed below in **Table 5**.

Table 5: Constructability workshop attendees.

Name	Position	Organisation
Fiona Coe Adrian Turnbull Brendan Smith Andrew Camarsh (Michael England) Phil	Engineering Project Manager Manager Coasts and Catchments Team Leader Biodiversity & Planning Manager Major Infrastructure Projects (Manager Major Building Projects)	Northern Beaches Council
Nick Lewis Ben Patterson	Senior Scientist, Rivers & Coasts Associate Director – Rivers & Water Management	Haskoning Australia
Stephen Mitchell	Pre-Contracts Manager	Waterway Constructions
Dan Owens	Senior Project Manager	Soil Conservation Service

Key findings of the constructability workshop were as follow:

Under road culverts

- Under boring ruled out due to space requirements.
- Open trenching for culvert installation preferred.
- Two lanes required at all times. No full or partial road closures would be acceptable. Minimum lanes width should be provided.
- Require widening the road temporarily.
- Provision should be made for access to new culvert aprons for maintenance and inspection.

Sand extraction

- Pumping ruled out due to distance.

Reducing environmental impacts

- Key habitat to east of road at bends.
- Key habitat to west of creek at bends.

4 Summary of Constraints

4.1 Ecology

Constraints Summary

The GHD (2018) report highlighted a number of key constraints relating to ecology within the study area which may limit proposals for flood mitigation works. These include:

- Impacts on Coastal Wetlands – should be avoided or minimised as far as possible. Potential for impacts may trigger the requirement for an EIS, potentially increasing assessment and offset requirements
- Impacts on Endangered Ecological Communities – should be avoided as far as possible or minimised. Assessments of significance in accordance with section 7.3 of the BC Act and the EPBC Act significant impact guidelines would be required where threatened biota or their habitat would be affected.
- Impacts on twelve (12) identified threatened faunal species (feeding, breeding and roosting sites) should be avoided as far as possible or minimised. Assessments of significance in accordance with section 7.3 of the BC Act and the EPBC Act significant impact guidelines would be required where threatened biota or their habitat would be affected.
- Impacts on native trees – should be avoided as far as possible.

Further detail on these constraints is set out in the sections below and described further in the report.

Habitat Constraints

Proposed works have the potential to affect four (4) habitats identified as endangered ecological communities (EECs) under the Biodiversity Conservation Act 2017. These are:

- Swamp Sclerophyll Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South-east Corner Bioregions.
- Freshwater Wetlands on Coastal Floodplains of the NSW North Coast, Sydney Basin and South-east Corner Bioregions.
- Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions.
- Coastal Saltmarsh in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions.

The majority of vegetation along Middle Creek comprises of EEC habitat with Swamp Sclerophyll Forest comprising the majority of the vegetation. A significant impact on this habitat is possible depending on the location and extent of the works. There is potential for impacts on other EEC habitats depending on the location and extent of the proposed works.

Impacts of works on habitats close to the road edges at The Bends may be lower as habitat here tends to be of a poorer quality due to high occurrence of weed species.

Species Constraints

Ecological survey work was undertaken in 2018 to build on existing data from a number of historic surveys (including a 2015 study of the Narrabeen Lagoon catchment and surveys from a Species Impact Statement for the Narrabeen Lagoon multi-use trail (2007 & 2009).

The proposed works have the potential to impact on twelve (12) faunal species identified as threatened under the Biodiversity Conservation Act 2017. These are:

- Black Bittern – foraging and potential breeding habitat
- Eastern Osprey – breeding habitat and known nest site (restrictions on works timings in location of nest sites)
- Glossy Black Cockatoo – breeding and foraging habitat
- Powerful Owl – breeding habitat and known nest site (restrictions on works timings in location of nest site)
- Sooty Owl – breeding and foraging habitat
- Southern Myotis – breeding, foraging and roosting habitat
- Eastern Freetail Bat – foraging and breeding habitat
- Eastern Bentwing bat – foraging habitat
- Grey Headed Flying Fox – foraging habitat
- Red Crowned Toadlet
- Little Bentwing Bat – foraging habitat
- Large Eared Pied Bat – foraging habitat
- Greater Broad Nosed Bat – foraging and potential breeding habitat

For most of the species identified, potential impacts would be from removal of small areas of foraging habitat or disturbance of roosting sites. Significant effects on species are unlikely to occur from these impacts. Known nest locations for Eastern Osprey should not be removed and there is potential for noise disturbance impacts during the nesting season. There is potential for significant effects on Black Bittern from clearance of breeding habitat.

Whilst no threatened species of fish have been recorded there are constraints relating to potential fish habitat within Middle Creek. The riparian corridor is recognised as Key Fish Habitat by the Department of Primary Industries (DPI) Fisheries 2007. For works within the watercourse, Permit would-be required from NSW DPI Fishieries under Parts 2 & 7 of the Fisheries Management Act 1994.

Depending upon the level of in-stream disturbance required during modification works, removal or alteration of the quantity and quality of the woody debris within the creek channel may occur. In-stream woody debris provides important habitat structure for aquatic fauna and alterations to this habitat may potentially impact upon the fish communities within Middle Creek.

No threatened species of flora were recorded during the survey, and there are no previous records in the study area, however consideration should be given to the possible occurrence of the following plant species in areas of specific habitat:

- Along the creekline:
  Callistemon linearifolius, Deyeuxia appressa, Grevillea shiressii, Triplarina imbricata, Haloragodendron lucasii, Leptospermum deanei, Melaleuca biconvexa and Persoonia mollis subsp. maxima are species that have been recorded close to creeklines and within 10 km of the study area.

  Terrestrial orchid species including Caladenia tessellata, Diuris bracteata and Cryptostylis hunteriana have been recorded within 10 km in similar habitat to that within Bangalay-Smooth Barked Apple forest in the study area. No individuals of these species would have been detectable at the time of the survey.

- Escarpment slopes:
  Asterolasia elegans, *Acacia bynoena*, *Cynanchum elegans* and *Acacia terminalis subsp. terminalis* are threatened species that have been recorded within 10 km of the study area. The most likely habitats for these species are located on the escarpment slopes within the study area, and therefore unlikely to be affected by the proposed works.

4.2 Geomorphology

The geomorphology and sediment regime of Middle Creek is a highly dynamic environment, and one which has changed rapidly over the past 80 years (Pietsch and Soil Conservation Service, 2018).

The creek is a sediment transport and deposition zone.

Within the central reaches of the creek (immediately upstream and downstream of The Bends), significant over bank sedimentation has occurred. Ongoing accelerated aggradation on the floodplain derived from diffuse surface erosion upstream has occurred over an area of approximately 83,000 m^2 in the vicinity of the junction of Middle Creek and Oxford Creek, since approximately AD 1940. The scale of the deposit (~166,000 m3) occupies a significantly large proportion of the floodplain cross section that it is considered to be a contributor to elevated flood heights recorded at key locations on Wakehurst Parkway affected by frequent flooding.

Pietsch and Soil Conservation Service (2018) were of the opinion that dredging of the channel is not recommended, as it could cause upstream instability and remobilisation of the store of sediment on the floodplain. It may also cause a proportion of the sediment discharge currently being directed to the floodplain sink, to be retained within the channel and transported downstream. As the annual aggradation of the floodplain is estimated to be 2075 m^3, the danger the dredged channel could simply infill if some or all of this was retained within the channel, is high.

4.3 Heritage

As determined by the Aboriginal Heritage Due Diligence assessment (Navin Officer Heritage Consultants, November 2018), no Aboriginal site recordings or Aboriginal places are located within the current study area. In addition, no heritage sites are anticipated to be impacted by the proposal. Background research and field inspection of the study area did not identify any Aboriginal sites or potential archaeological deposits (PADs) in the study area.

The area has been disturbed since European exploration of the area. The construction of Wakehurst Parkway and sediment build-up have had a massive impact on the area in particular.

(Navin Officer Heritage Consultants, November (2018) considered that no further archaeological assessment is required for the Wakehurst Parkway Flood Mitigation project, however the Unanticipated Discovery Protocols should be put in place for the project.

4.4 Traffic and Access

Wakehurst Parkway typically experiences 8,000 trips in either direction per day (NSW Roads and Maritime Service, 2012), with some minor variation between weekdays and weekends.

The site between Oxford Falls Road and Narrabeen is accessible only by Wakehurst Parkway. Access to the subject site is restricted by the limited pullover capacity of Wakehurst Parkway (refer **Figure 13**,

Figure 14 and **Figure 15**). In addition, access to the channel is restricted by the dense vegetation of the floodplain and riparian zone.

A Sydney Water access track exists within the lower reaches of the Study Area and forms the only access track to the channel of Middle Creek. Access to the channel and floodplain, would be a key contributing factor to any flood mitigation works at Middle Creek.



Figure 13: Wakehurst Parkway looking northbound from upstream of The Bends (Source Google Street View).



Figure 14: Wakehurst Parkway looking northbound at The Bends (Photo taken on 10th May by RHDHV personnel).



Figure 15: Wakehurst Parkway looking southbound at The Bends (Photo taken on 10th May by RHDHV personnel).

4.5 Land Contamination

Land contamination presents a major consideration.

Based on the findings of this assessment undertaken by SESL, the soils within the proximity of some of the proposed culvert locations are considered to be potential and actual acid sulfate soil. SESL recommends that the proposed excavation works must be managed under the site-specific Acid Sulfate Soil Management Plan (ASSMP).

Based on limited assessment and in accordance with the NSW EPA Waste Classification Guidelines – Part 1: Classifying Waste (2014), the soils proposed for excavation within the proximity of the culverts meet the criteria for General Solid Waste. In accordance with landfill's Environmental Protection Licenses (EPL), the material is not considered suitable for recycling due to elevated benzo(a)pyrene, nickel and lead.

Soils proposed for excavation within the subject area of Middle Creek (The Bends) are considered to not be Acid Sulfate Soils, and do not require management under an ASSMP. SESL suggests that the observed acidity is likely the result of extensive organic matter within the subject materials, and not the result of present sulfur.

In accordance with the NSW EPA Waste Classification Guidelines – Part 1: Classifying Waste (2014), all samples collected from within creek sediments meet the criteria for General Solid Waste. However, based on the results of this limited assessment, SESL recommends that the subject soils proposed for excavation will meet the requirements for classification as Excavated Natural Material (ENM), and that consideration should be given to further assessment for the classification of these soils as ENM, to reduce the cost of offsite disposal.

4.6 Land Ownership

Selected land tenure maps were provided to RHDHV by Council. The maps are presented in RHDHV (2018). The maps demonstrate that for the majority of the potential works area, including the creek and immediate creek banks and floodplain are under either Crown or Council ownership. The road corridor is understood to be under RMS ownership.

Parts of the potential works area at The Bends, including portions of the floodplain to the south of Wakehurst Parkway and the left hand bank (looking downstream) of the main channel, are under ownership of the Metropolitan Local Aboriginal Land Council.

5 Option Feasibility Assessment

5.1 Preamble

Following the options shortlisting process, documented in the above section (Section 5), nine (9) options were shortlisted for detailed assessment.

The options comprised seven (7) at The Bends, one (1) at the Sydney Academy of Sport and Recreation, and two (2) at Oxford Falls Road. The shortlisted options are presented below in **Table 6**, along with an ID (Option B1, 2 ….etc.) and a brief description.

Table 6: Options shortlisted for detailed assessment

Option ID	Description
The Bends	
Option B1	*New levee*
Option B2	*New levee and removal of 1m depth of overbank sediment*
Option B3	*New levee, removal of 1m depth of overbank sediment and under-road culverts*
Option B4	*New levee, removal of 1m depth of overbank sediment, under road culverts, and top up of existing levee.*
Option B5	*Removal of overbank sediment (1m depth)*
Option B6	*Removal of overbank sediment (2m depth)*
Option B7	*New levee and under road culverts.*
Oxford Falls Road	
Option O1	*Culvert capacity increase*
Option O2	*Culvert capacity increase (2 year ARI flood immunity)*
Sydney Academy of Sport and Recreation	
Option S1	*Bunds and localised low point drainage (i.e. flap-gated pipes)*

5.2 Option B1

5.2.1 Option Description & Intended Hydraulic Performance

Option B1 comprises construction of a **new levee** on the south eastern side of the road at The Bends.

The aim of this option is to relieve flooding of the roadway at The Bends by containing flood water (up to a certain depth/elevation) to the floodplain on the east of the road and restrict overtopping of the road from the south side of the road. Flood water currently passes under the road culverts from the creek (west to east), enters the south eastern floodplain (where it is added to by a southern tributary) and rises above the road level. The maximum new levee height would be as per the existing levee on the western side of the road at The Bends, which is approximately 1m above road level.

5.2.2 Concept Design

Due to space constraints, the levee is considered to be best constructed using a bund wall to limit the footprint and contain the works to within the road corridor. There is not considered sufficient space for a more conventional earth embankment. A design has been developed to RMS standards using a concrete barrier. For concept design sketches of Option B1 please refer to **Appendix J.**

A summary of the concept design is as follows:

- 365m long 1100mm high barrier kerb (RMS standard drawing MD.R132.D02.A.1) on concrete footings.
- Located within the existing road shoulder with some minor should improvements.
- Provision is made for a 2.8m wide shoulder between existing road pavement end and proposed barrier, comprising 300mm structure offset, 1m 'cycle lane' and 1.5m cyclist buffer.
- A 700mm horizontal zone is allowed for the barrier.
- The barrier is required to transition into existing surface in the west and into the existing embankment in the north east.
- There is expected to be minor requirements for road embankment widening.
- It is assumed that the installation of the levee wall negates the need for a separate crash barrier.
- Fencing has been allowed for.

5.2.3 Constructability

Access
Access is only afforded directly off the existing road verge. There is little space for site compound and laydown areas. Construction plant would be required to be located within the existing road shoulder. Accordingly, road speed limit and lane modifications would be required during construction.

Methodology
The construction methodology would require where practical the use of pre-cast road barrier units to limit installation time. Anticipated temporary lane adjustments would be required to maintain one lane each way. It is assumed that a temporary 'jersey kerb' be constructed to segregate the construction zone and road traffic.

Services

Jemena pipe on west side of road, under road verge. Any excavation within the road corridor will need to be mindful of the presence of buried services.

Safety
The following health and safety considerations have been identified for Option B1:

- Safety considerations during construction, with the requirement for working within and adjacent to open roads.
- The introduction of a levee to the south side of the road at The Bends would create a pressurised system during flooding. That is, as water levels elevate during flooding, water levels both sides of the road would increase to up to 1m above road level before overtopping the levees. Such a process would cause rapid inundation of the road once the levees overtopped, as opposed to the current situation in which road inundation occurs gradually.
- Failure of the levee(s) during hydraulic loading would also cause rapid and uncontrolled inundation of the road, potentially posing a greater risk than the above point.
- Increased depth of inundation in some events.

Timeframe
A likely construction timeframe has been estimated at 12 weeks, and is as follows:

- Mobilisation, site setup and environmental controls - 3 weeks
- Construction of road shoulder improvements – 4 weeks
- Construction of levee, shoulder resurfacing and line marking 3 weeks
- Demobilisation 2 weeks.
- **Total – 12 weeks**

The estimated time of road occupancy and traffic control (reduced speed limits) is 6 weeks.

Operation & Maintenance
The structural character of the proposed option would be expected to provide a 50 year design life.

The following operation and maintenance considerations have been identified for Option B1:

- The levee wall would be a passive structure, therefore would not require any additional operational requirements.
- The levee wall would require structural inspection (say once every 5 years) and following moderate flood events, particularly overtopping, as part of Council's or RMS's asset management programme.

5.2.4 Environmental Impacts and Approvals

Construction
The existing floodplain area on the south side of Wakehurst Parkway is potentially important for the protected red-crowned toadlet. Construction of the levee would involve earthworks and construction activities along the southern edge of the road which is adjacent to this habitat and there is potential for direct disturbance of habitat during construction, as well as indirect disturbance. Best practice working methods, that are sensitive to the presence of this habitat, would need to be employed to avoid any potential impact during construction.

As the works would be contained within the road reserve, there is little potential for exposure/release of contaminants. Any material excavated for the levee requiring offsite disposal will need to be waste classified.

Operation
The presence of a levee could potentially affect inundation of the flood plain area to the south and impact on suitability of the habitat for red-crowned toadlet. It is important to note, however, that this area of habitat is located next to a tributary of Middle Creek which would be unaffected by the proposed flood alleviation works and would still allow the regular inundation of this habitat as experienced at present.

Approvals are expected to be dealt with by a Review of Environmental Effects (REF), along with specific construction and road occupancy approvals from RMS.

5.2.5 Impacts on Flooding

Option B1 is estimated to provide flood immunity at The Bends for the 4 EY (3 month ARI) flood event and improve the flood situation for the 2 EY (6 month ARI) flood event (refer **Table 7** below). It should be noted that Option B1 increases flood depths on the road in the 1 EY (1 year ARI) and 0.5 EY (2 year ARI) flood events. Flood impact maps are presented in **Appendix K**.

Table 7: Results of flood modelling and respective road flood immunity for a number of events (Option B1).

Case	Is the road at the Bends flooded from the Creek in the stated event? (Excluding local effects from direct rainfall on road with poor drainage)			
	4 EY (3 month ARI)	2 EY (6 month ARI)	1 EY (1 year ARI)	0.5 EY (2 year ARI)
Existing	Y	Y	Y	Y
Option B1	N	Y (shallower)	Y (deeper)	Y (deeper)

The road is no longer inundated for the 4 EY (3 month ARI) design event at the Bends. Flood modelling shows a reduced duration of road inundation at the Bends for the 2 EY (6 month), 1 EY (1 year ARI) and the 0.5 AEP (2 year ARI) flood events.

During detailed design, care should be taken to ensure that unidirectional (e.g. flap-gated) road drainage is provided through both levees to drain the road corridor and local drainage at a rate that does not increase the duration of road closure.

5.2.6 Overall Feasibility

No significant feasibility 'red flags' have been encountered during the assessment of Option B1. The option is considered to be constructible, however traffic management during construction would be a key consideration.

The option is considered to be feasible, with the primary consideration the approval from RMS for works within the road corridor. There would be a requirement for reduced travel speed limits during the anticipated 6 week (road occupancy) construction period.

Key constraints include space within the existing road corridor to implement the new levee, however this is expected to be achievable with minor road shoulder alterations and temporary lane width reductions. The option presents little environmental impact and could be implemented with minor environmental approvals.

5.3 Option B2

5.3.1 Option Description & Intended Hydraulic Performance

Option B2 comprises construction of a **new levee** at The Bends on the southern side of the road (as discussed in Option B1) together with **removal of an area of overbank sediment** adjacent to the creek. No excavation from within the creek is proposed.

The additional inclusion of the sediment removal aims to improve the general conveyance capacity of the creek and floodplain, as well as removing specific choke points.

5.3.2 Concept Design

A sediment excavation option was developed based on an average of 1m excavation of overbank (floodplain) sediment. The design includes an achievable excavation footprint within the floodplain and riparian zone, as well as enabling works (work areas, access tracks, ramps, etc.). Two points of off-road access are proposed, each with access on/off ramps.

The approximate volume of material to be removed is 28,000m^3. Refer **Appendix I** for concept design plans. It should be noted however that the disturbed footprint (hence that considered for ecological impact assessment) is greater than the corresponding area of sediment extraction, due to the temporary requirement for access ramps and working areas. Due to the low quality of the topographic data used (being LiDAR for the vast majority of the profile), it is highly recommended that detailed topographic survey informs any future design development.

This excavation assumes the full profile is taken out, and that it is acceptable to excavate mixed (not clean sand) materials. If a significant number of trees within the excavation zone at The Bends constriction are to be retained with soil mounds (for tree health and stability), the flooding outcomes may be less favourable due to reduced flow conveyance.

The extent of sediment removal has been proposed to extend upstream of the immediate areas of The Bends. The proposed sediment removal extent has been directed by the findings of the Soil Conservation Service's floodplain sediment characterization, as well refinements to extents based on the practicalities of physical works and inclusion of temporary works areas, such as sorting pads and access ramps (refer **Appendix F**). It should be noted that the extent has been modified from that previously proposed (RHDHV, 2018) and accounted for in contemporary environmental assessments.

The extent of proposed excavation upstream is to provide creek stability and reduce the risk of rapid infill following excavation. The area for vegetation clearance has been selected to avoid the areas of wetland habitat, as far as possible, whilst maintaining benefits for flood alleviation along Wakehurst Parkway.

The removal of sediment would simultaneously involve the removal of vegetation in the same footprint. However, significant trees such as ancient Cabbage Tree Palms could be retained by careful excavation and all disturbed areas would be revegetated following completion of the works. Vegetation removal would be required and replanting would be undertaken with appropriate native species following excavation of sediment.

For reasons of access and safety, it is assumed that turning boxes would need to be constructed to allow for safe truck access and egress, as well as access tracks. Access tracks to the south of the extent require large falls between the road and floodplain.

5.3.3 Impacts on Flooding

Option B2 provides flood immunity at the Bends up to the 2 EY (6 month ARI) flood event and improves flood depths for the 1 EY (1 year ARI) flood event (refer **Table 8** below). Option B2 increases flood depths on the road 0.5 EY (2 year ARI). Flood Maps are presented in **Appendix G**.

Table 8: Results of flood modelling and respective road flood immunity for a number of events (Option B2).

Case	Is the road at the Bends flooded from the Creek in the stated event? (Excluding local effects from direct rainfall on road with poor drainage)			
	4 EY (3 month ARI)	2 EY (6 month ARI)	1 EY (1 year ARI)	0.5 EY (2 year ARI)
Existing	Y	Y	Y	Y
Option B2	N	N	Y (shallower)	Y (deeper)

The road would no longer be inundated for design flood events up to and including the 2 EY (6 month ARI) at the Bends. Flood modelling predicts a reduced duration of road inundation at the Bends for the 1 EY (1 year ARI) and the 0.5 AEP (2 year ARI) flood event.

During detailed design, care should be taken to ensure that unidirectional (e.g. flap-gated) road drainage is provided through both levees to drain the road corridor and local drainage at a rate that does not increase the duration of road closure.

5.3.4 Constructability

Access

Access points to the overbank areas from the Wakehurst Parkway are restricted by the limited pullover capacity. Road runoff ramps would also need to be constructed. As mentioned above, two points of off-road access are proposed, each with access on/off ramps. Access tracks to the south of the extent require large falls between the road and floodplain. It is assumed that left in left out access would be essential.

Access for plant for the excavation of overbank sediment in the locations proposed would be highly constrained by the lack of access tracks and the dense vegetation. A number of access tracks would need to be constructed off the road, with plant traversing the overbank areas along these paths. Small plant would be required. It is proposed that tracked trucks (such as the Morooka MST-2200 VD) are used to limit the provision of access tracks.

Significant vegetation would need to be cleared. However, this vegetation may need to be disturbed anyway.

There are no appropriate locations at present for site compounds and stockpile areas. Truck parking would need to be in the limited run-off areas, off which site compounds and stockpile areas would be constructed.

Access is considered a significant constraint and would render the vegetation removal and sediment excavation process a laborious and relatively inefficient process, with much vegetation disturbance in addition to the sediment extraction footprint.

Methodology

A preliminary anticipated construction methodology is as follows:

- **Site Setup** - For reasons of access and safety, it is assumed that access ramps and turning boxes would need to be constructed to allow for safe truck access and egress. In addition, internal access tracks would be required.
- Significant **vegetation clearing** would be required. Vegetation clearing in the area has proven not to be a significant issue during the clearing of cross sections for additional topographic survey access. It would be most appropriate for cleared vegetation to be mulched on site and used in re-vegetation.
- **Excavation** - sand pumping, vacuum removal and machine excavation for sediment removal were considered. During the constructability workshop it was determined that sand pumping and vacuum removal were not practical. Machine excavation would be required.
- In places, sediment removal will need to be undertaken in a sensitive manner, as well as likely needing to avoid localised areas, so not to cause excessive environmental impacts. The assumed volume and extent are considered achievable but would need to be confirmed following further studies.
- To avoid the need for extensive access tracks, it is proposed that excavation is undertaken by track excavators and transported to stockpile areas via tracked trucks (such as Morooka MST-2200 VD). The Morooka MST-2200 VD is effectively a tracked tipper with rubber track, which cause no damage to fragile soils and maintain traction on any kind of ground. Use of such vehicles would negate the need for creek crossing infrastructure and substantial access tracks.
- In addition, or alternatively, multi-terrain vehicles such as 40t Moxy or 6t tippers could be used.
- **Sorting** - Sediment is a mix, with high organic content towards the top. There would only be limited opportunity to target excavation of clean sand. It is assumed that excavated material is able to be stockpiled and sorted offsite, then re-used at no cost.
- **Carting offsite –** An excavated volume of 28,000m^3 would require carting off site. At 10m^3 per truck, there would be a requirement for 2,800 truck movements using 12t bogy trucks. Assuming 100 truck movements a day, there would be an estimated 28 days of truck movements. Trucking off site would be preceded by excavation and stockpiling.
- **Material Reuse –** The material has been preliminarily determined as Excavated Natural Material (ENM) (SESL, 2018). It is considered that the overbank material would not be suitable for beach renourishment due to the high organic content, without significant sorting.
- **Re-vegetation** - Replanting would be undertaken with appropriate native species following excavation of sediment.
- **Maintenance –** There would be a requirement for intensive maintenance of approximately 2.4 hectares of revegetation.

Safety

The following health and safety considerations have been identified for the removal of overbank sediment:

- The removal of overbank sediment will require extensive periods of working close to the creek and within the floodplain. Construction health and safety with regard to flood risk therefore is a significant consideration.
- The ongoing need for people to be undertaking vegetation management within the creek and floodplain.

- The significant amount of work can be undertaken offline of the road network, including vegetation removal, excavation, sediment sorting and replanting. However, the above-mentioned truck movements will require significant traffic management.
- This would likely require periods of reduced speed limit for working times throughout the trucking period (5 weeks).
- In addition, daily access to the site for workers will require initial pull in zones.

Services
There are no significant considerations with regard to services.

Timeframe
A likely construction timeframe has been estimated at 27 weeks, and is as follows:

- Site setup - 1 week
- Environmental controls – 1 week
- Vegetation clearing and stockpiling – 4 weeks
- Vegetation carting offsite – 1 week
- Construction of access tracks – 1 week
- Sediment excavation, sorting and stockpiling – 125 Days (25m^3 / hour, 119 days (17 weeks))
- Trucking 5 weeks + 2 weeks contingency (23,800m^3 – 10m^3 per truck, 100 truck movements a day. 23 days (5 weeks) of truck movements). Concurrent to excavation.
- Revegetation – 6 weeks.
- Demobilisation 2 weeks.
- **Total – 33 weeks**

Operation & Maintenance
The following operation and maintenance considerations have been identified for Option B2, in addition to those identified for Option B1:

- The removal of overbank sediment and associated clearing of vegetation would require a relatively long and extensive re-vegetation programme and ongoing maintenance.

The structural elements of the proposed option (the levee) would be expected to provide a 50 year design life. The nature of sediment removal and the potential for sediment infill is a key consideration. The removal of sediment from upstream of The Bends is proposed to limit influx from the sediment layer upstream, as per recommendations made in Pietsch and Soil Conservation Services (2018). Regardless, the option presents the need of ongoing vegetation management.

5.3.5 Environmental Impacts and Approvals

Environmental impacts and required approvals associated with Option B2 are summarised below and presented in full in **Appendix E**.

Assessment and Approvals
Self-determining authorities such as Northern Beaches Council can assess impacts of Part 5 developments on threatened biota listed under the BC Act via Part 7 of the BC Act.
An assessment of significance (5 part Test) must be prepared for those threatened biota that have the potential to be impacted by the proposal. If a significant impact is likely, then either a Species Impact Statement (SIS) or a Biodiversity Development Assessment Report (BDAR) must be prepared.

Alternatively, the self-determining authority can decide to 'opt into' the BDAR or SIS once a Assessment of Significance has been undertaken.

Impacts to threatened biota listed on the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) would need to be addressed in the reports and referred to the Commonwealth if a significant impact is likely.

Vegetation Impacts
Based on the mapping provided and the validated GHD vegetation mapping and existing vegetation mapping, the direct disturbance to native vegetation is 2.41 ha. A further 0.45 ha of non-native vegetation would be impacted.

No TECs listed under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) would be impacted by the Project.

A 5-Part Test under the BC Act has not been completed for the impacts to 2.30 ha of Swamp Sclerophyll Forest TEC. However, it is likely that a significant impact to this TEC would occur.

Given the likely significant impacts to Swamp Sclerophyll Forest TEC, either a SIS or BDAR would need to be prepared and thus require offsetting for impacts to native vegetation, and threatened biodiversity regarded as 'species credits'.

It is possible that a significant impact to the Red-crowned Toadlet, Large-eared Pied Bat, Southern Myotis and Giant Burrowing Frog may also occur given the impact to 2.41 ha of habitat and indirect impacts to the species.

Indirect impacts are not known at this stage and would need to be incorporated in the impact assessment for the project.

Environmental offsetting would likely be required for

- PCT659 Bangalay - Old-man Banksia open forest on coastal sands, Sydney Basin Bioregion and South East Corner Bioregion
- PCT781 Coastal freshwater lagoons of the Sydney Basin and South East Corner
- PCT1841 Smooth-barked Apple - Turpentine - Blackbutt tall open forest on enriched sandstone slopes and gullies of the Sydney region
- Red-crowned Toadlet habitat
- Giant Burrowing Frog habitat
- Southern Myotis habitat
- Large-eared Pied Bat habitat

Key Assumptions
1. Environmental Impacts will be accepted.
2. Offset credit values are at today's rates. It should be noted that these rates are changed every 3 months.
3. There was a possible animal den sighting by SCS personnel, with the likely inhabitant remaining unidentified (water rat, platypus, etc). To date, requested information (location) have not been provided. Although not listed, this species is iconic and therefore may have public perception implications. In addition, a plan for relocation is likely.

5.3.6 Overall Feasibility

Access is considered a significant constraint and would turn the vegetation removal and sediment excavation process into a laborious and relatively inefficient process. There would be the need to create off road corridor site compounds, access tracks and loading areas. Small plant would be required for excavation.

In addition, many trucks needing to pull in and off the road presents a significant safety issue. There would be an estimated truck movement period of 6 weeks, comprising 100 truck movements per day.

The option does not require any physical works within the road corridor, however would require significant road traffic management, hence RMS approval.

Environmental impacts are anticipated to be significant and the option implementation would be subject to significant additional environmental assessment and approvals. The total construction timeline is anticipated to exceed 28 weeks, not including the revegetation maintenance period. Council will be required to complete a Biodiversity Development Assessment Report (BDAR) or an SIS, as well as a Biodiversity Management Plan.

5.4 Option B3

5.4.1 Option Description & Intended Hydraulic Performance

Option B3 comprises construction of a **new levee** at The Bends (as per Option B1), **removal of overbank sediment** (including vegetation) (as discussed in Option B2), with the addition of two sets of **new culverts under the road**.

The additional inclusion of the culverts aims to improve the conveyance of flow from within the creek to the southern floodplain, maximising floodplain conveyance and storage.

5.4.2 Concept Design

For the purposes of this assessment, the following concept design elements have been assumed for the culverts (the levee and sediment excavation are discussed elsewhere):

- two (2) culvert banks would be constructed with pre-cast concrete box culvert units and base slab;
- 9 x 900H x 2700W RCBC with link slabs (constructed to AS1597.2-2013);
- The two culvert banks would have similar inverts as the existing culverts;
- Concrete headwalls and rock scour protection would be required, with appropriate tail out channels;
- There will be a requirement for excavation on the eastern floodplain to form tail-outs, to account for increased flows; and
- a pad or ramped access to the culverts for maintenance and blockage removal to take place.

For concept design sketches of Option B3 please refer to **Appendix J.**

The size and extent of the culvert banks may warrant consideration for bridges, as an alternate approach.

5.4.3 Impacts on Flooding

Option B3 provides flood immunity at the Bends up to the 1 EY (1 year ARI) flood event and improves the flood situation for the 0.5 EY (2 year ARI) flood event (refer **Table 9** below). Flood Maps are presented in **Appendix K**.

Table 9: Results of flood modelling and respective road flood immunity for a number of events (Option B3).

Case	Is the road at the Bends flooded from the Creek in the stated event? (Excluding local effects from direct rainfall on road with poor drainage)			
	4 EY (3 month ARI)	2 EY (6 month ARI)	1 EY (1 year ARI)	0.5 EY (2 year ARI)
Existing	Y	Y	Y	Y
Option B3	N	N	N	Y (shallower)

The road is no longer inundated for design events up to and including the 1 EY (1 year ARI) at the Bends. Flood modelling shows a reduced duration of road inundation at the Bends 0.5 AEP (2 year ARI) event. During detailed design, care should be taken to ensure that unidirectional (e.g. flap-gated) road drainage

is provided through both levees to drain the road corridor and local drainage at a rate that does not increase the duration of road closure.

5.4.4 Constructability

Constructability of the culverts is discussed below. See Option B1 and option B2 for discussion of other elements, such as new levee and sediment extraction.

Access

- The inherent nature of the culverts being under the road require direct access to the road.
- There is little access either side of the culverts to construct from an off-road position or shoulder.
- Access for construction is limited, with little room for construction plant and site compound.
- The inability to close the road completely limits access. Road occupancy is suggested to include a temporary jersey barrier between the road and works area.
- Access is considered to be best achieved by constructing a temporary road widening along the northern shoulder, with associated works to the creek to maintain flow conveyance.

Methodology

- The most likely construction method would be open-cut trench through the road and backfilled to restore the road pavement surface. Culvert units can therefore be placed directly following excavation and foundation improvements.
- Thrust boring was considered, however, discounted due to the space requirements at either end of the culverts (see minutes form Constructability Workshop).
- The limited space available for plant and working areas would require double handling of culvert units.
- It is considered unacceptable to close the road during construction (communicated by Council during constructability workshop). It is therefore required and expected that the road would temporarily be widened locally to allow for only partial road opening and allowing continuity of traffic flow (continuous two lanes).
- To provide two lanes, the road will require to be widened locally. This would be achieved via a berm constructed along the northern side of the road, between the existing levee and the creek.
- Works would then be undertaken in the southern culverts, working back along the access track, removing as you go.
- At each culvert crossing, the following actions would be required:
    - Close road
    - Excavate and shore
    - Prepare foundations
    - Place culverts
    - Backfill
    - Form pavement
- The need for reduced lane widths is likely.
- The need for temporary speed limit reductions are almost certain.
- Night working would not be expected to significantly reduce impacts to traffic, as the reduced lane widths will require a speed limit throughout the works.
- There is a significant need for disposal off site of excavated material – primarily road fill, however potentially some ASS.

As mentioned above, the size and extent of the culvert banks may warrant consideration for bridges, as an alternate approach.

Services

There is a sewer pipe down the centre of road. DBYD indicated 0.7m cover. A Jemena pipe is located on the west side of road, under road verge.

Depending on the depth of both the sewer and gas mains that are generally aligned parallel with the road, the construction of the new culverts has the potential to interact with both services. However, as there are existing pipes under the road, the services conduit depths are assumed to be sufficient to avoid direct conflicts. More likely is the need for consideration during construction and maybe temporary and / or permanent services protection measures, such as bridging slabs or concrete encasement. Regardless, both these services will be required to be protected during construction.

Safety

The following health and safety considerations have been identified:

- The anticipated road closures and traffic management pose a risk to both construction personnel and the general public.
- There are no additional health and safety implications foreseen for the general public following construction.
- The ongoing need for people to be undertaking culvert maintenance and sedimentation management within the road corridor poses an operational consideration.

Timeframe

A likely construction timeframe has been estimated and is as follows:

- site setup including environmental controls and traffic management - 1 week
- construction of localised road widening – 5 weeks
- excavation of road and placement of southern culverts (1 week per side) – 6 weeks – down to 40 k/h
- remove southern section of access track – 4 weeks
- excavation of road and placement of southern culverts (1 week per side) – 6 weeks – down to 40 k/h
- demobilisation 1 week.
- **Total** – 23 weeks

Operation & Maintenance

The following operation and maintenance considerations have been identified for Option B3, in addition to those stated above for Option B1 and B2:

- The structural aspects of the proposed option (levee, culverts) would be expected to provide a 50 year design life if designed and constructed correctly.
- The culverts are passive structures therefore would not require any operation.
- Routine (1/2 times every year and after moderate rain events) inspection of the culverts would be required to ensure no blockage and would be recommended as part of Council's or RMS's asset management programme.

- Should the culverts become partially blocked with sediment or other debris, then there would be a need to clear the blockage to ensure functionality.

5.4.5 Environmental Impacts and Approvals

Environmental Impacts and Permits

Key environmental constraints for this option are:

- Proximity to red-crowned toadlet habitat.
- Potential for direct impact on EEC habitats adjacent to Middle Creek.
- Vegetation clearance within the Oxford Falls Landscape Conservation Area.
- Risk of exposing acid sulphate soils.
- Appropriate disposal of cleared sediment.
- Ongoing management of cleared vegetation.

Key environmental benefits for this option are:

- No direct clearance of sediments from within the creek channel, which would avoid potential impacts to fish habitat.
- Some areas where vegetation may need to be cleared is mapped as non-native weeds. Removal of these species and replanting with native species is potentially beneficial.

Construction
The existing floodplain area on the south side of Wakehurst Parkway is potentially important for the protected red-crowned toadlet. Construction of the levee and culverts would involve earthworks along the southern edge of the road which is adjacent to this habitat and there is potential for direct disturbance of habitat during construction. Best practice working methods, that are sensitive to the presence of this habitat, would need to be employed to avoid any potential impact during construction.

Clearance of vegetation would be required for the removal of sediment. The habitats that would primarily be affected are Swamp Sclerophyll Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and Southeast Corner Bioregions and Freshwater Wetlands on Coastal Floodplains of the NSW North Coast, Sydney Basin and Southeast Corner Bioregions.

There is a risk that excavation of sediment below the road fill surface, to construct the culvert and bedding, could expose acid sulphate soils (ASS). Northern Beaches Council mapping shows that some soils in the area of proposed sediment removal are listed as 'Class 3 – ASS likely to be present 1m below the natural ground surface'. This is below the likely depth of excavation required for construction of the culverts however ground investigations and soils testing, in accordance with the ASS Manual, would need to be undertaken to confirm the soil classification and ensure there is no risk of uncovering ASS from the proposed works. SESL (2018) recommends that the proposed excavation works must be managed under the site-specific Acid Sulfate Soil Management Plan (ASSMP).

Operation

The installation of new culverts will affect the inundation regime of the floodplain area to the south and potentially impact on suitability of the habitat for red-crowned toadlet. Modelling work will need to be undertaken to look at new flow regimes and any increased levels of inundation in the area to assess potential impacts to habitat.

Removal of vegetation has the potential to increase sedimentation downstream at Narrabeen Lagoon potentially impacting on water quality there through increased turbidity and settling of sediments.

It is unclear if biodiversity offsetting would be required, as no Assessments of Significance have been completed as part of this assessment. However, it seems likely that based on the area of direct and indirect impacts associated with Option B3, that a significant impact may be concluded. Environmental Vegetation impacts consist of the following:

- Direct impacts due to sediment removal works, consisting of direct disturbance to native vegetation and habitat of 2.41 ha, as per Option B2 including:
    - Impacts to approximately 2.3 ha of Swamp Sclerophyll Forest TEC.
    - Impacts to approximately 0.06 ha of Freshwater Wetlands on Coastal Floodplains TEC.
    - Impacts to approximately 0.05 ha of Smooth-barked Apple - Turpentine - Blackbutt tall open forest (not listed).
    - Impacts to approximately 2.41 ha of Red-crowned Toadlet habitat.
    - Impacts to approximately 2.41 ha of Giant Burrowing Frog habitat (note this needs to be confirmed via targeted survey).
    - Impacts to approximately 2.41 ha of Southern Myotis habitat.
    - Impacts to approximately 2.41 ha of Large-eared Pied Bat habitat.
- Indirect impacts to native vegetation and habitat of 0.22 ha (minimum), due to culvert works, consisting of (at a minimum assuming 5m culvert tail-in and tail-out):
    - Impacts to approximately 0.15 ha of Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions TEC.
    - Impacts to approximately 0.04 ha of Freshwater Wetlands on Coastal Floodplains TEC.
    - Impacts to approximately 0.02 ha of Swamp Sclerophyll Forest TEC.
    - Impacts to approximately 0.22 ha of Red-crowned Toadlet habitat.
    - Impacts to approximately 0.22 ha of Powerful owl foraging habitat.
    - Impacts to approximately 0.22 ha of Bittern habitat.

5.4.6 Overall Feasibility

In addition to Option B2 (new levee and floodplain sediment removal), the addition of under road culverts significantly increases the disturbance footprint, capital works and presents significant temporary road closure / partial closures. The option is considered to be constructible through open trench methods, whilst maintaining two-way traffic.

Appropriate staging and traffic management would need to be considered to limit road closures during culvert construction. Some form of partial or full temporary road closure would be expected.

The disturbance to sensitive and valuable habitat east of the road by culvert tail out channels is anticipated to cause significant environmental impacts. There is an estimated environmental offset cost of $738k (excl. GST) for the option as a total. Council will be required to complete a Biodiversity Development Assessment Report (BDAR) or an SIS, as well as a Biodiversity Management Plan.

5.5 Option B4

5.5.1 Option Description & Intended Hydraulic Performance

This option would comprise a **new levee** (southern levee) at The Bends, **removal of overbank sediment** (including vegetation) and **installation of culverts** under the road (as discussed in Option B3), with the addition of **topping up the existing northern levee**.

Option B4 (this option) differs from Option B3 with only the topping up the existing northern levee.

The topping up of the northern levee provides a consistent crest level of the levee (relative to the water profile) and removes the existing low points.

5.5.2 Concept Design

The approach to the concept design of the top up of the northern levee would be consistent with option B1, i.e. a new concrete barrier.

- 1100mm HIGH BARRIER KERB (RMS STD DRAWING MD.R132.D02.A.1)
- Located within the existing road shoulder
- Provision is made for a 2.8m wide shoulder between existing pavement and barrier, comprising 300mm structure offset, 1m cycle lane and 1.5m cyclist buffer.
- A 700mm horizontal zone is allowed for the barrier.
- The barrier is required to transition into existing surface at each terminal.

For concept design sketches of Option B4 please refer to **Appendix J.**

5.5.3 Impacts of Flooding

Option B4 provides flood immunity at the Bends up to the 0.5 EY (2 year ARI) flood event (refer **Table 10** below). Flood Maps are presented in **Appendix K**.

Table 10: Results of flood modelling and respective road flood immunity for a number of events (Option B4).

Case	Is the road at the Bends flooded from the Creek in the stated event? (Excluding local effects from direct rainfall on road with poor drainage)			
	4 EY (3 month ARI)	2 EY (6 month ARI)	1 EY (1 year ARI)	0.5 EY (2 year ARI)
Existing	Y	Y	Y	Y
Option B4	N	N	N	N

The road is no longer inundated for design events up to and including the 0.5 EY (2 year ARI) at the Bends.

5.5.4 Constructability

No different to Option B3.

5.5.5 Environmental Impacts and Approvals

No different to Option B3.

5.5.6 Overall Feasibility

In addition to Option B3 (new levee, floodplain sediment removal and road culverts), the additional works associated with the existing levee top up are considered relatively minor. Option B4 can therefore be considered similar to Option B3 in many aspects, whilst providing significant additional flood benefits.

The option is estimated to cost $13.8M (excl. GST) and, similarly to Option B4, the implementation would be subject to significant additional environmental assessment and approvals. Council will be required to complete a Biodiversity Development Assessment Report (BDAR) or an SIS, as well as a Biodiversity Management Plan.

5.6 Option B5

5.6.1 Option Description & Intended Hydraulic Performance

This option would involve the removal of an area of overbank sediment only, as per Option B2, B3 and B4 above.

5.6.2 Concept Design

For the purposes of this assessment, the conceptual design and the feasibility assessment of the sediment removal for Option B5 is as described initially above for Option B2.

5.6.3 Impacts on Flooding

Option B5 provides flood immunity at the Bends up to the 4 EY (3 month ARI) flood event (refer **Table 11** below). The flood level within Middle Creek, adjacent to the Bend delivers approximately 260mm of peak flood level reduction for the 3month, 12hr event, and hence it does not overtop the road for this design case. There is a decrease in duration of road inundation for the 2 EY (6 month ARI) to the 0.5 EY (2 year ARI) flood event. Flood Maps are presented in **Appendix G**.

Table 11: Results of flood modelling and respective road flood immunity for a number of events (Option B5).

Case	Is the road at the Bends flooded from the Creek in the stated event? (Excluding local effects from direct rainfall on road with poor drainage)			
	4 EY (3 month ARI)	2 EY (6 month ARI)	1 EY (1 year ARI)	0.5 EY (2 year ARI)
Existing	Y	Y	Y	Y
Option B5	N	Y	Y	Y

5.6.4 Environmental Impacts and Approvals

For the purposes of this assessment, environmental impacts and approvals for the sediment removal for Option B5 is as described initially above for Option B2.

5.6.5 Overall Feasibility

The option does not require any physical works within the road corridor, however would require significant road traffic management, hence RMS approval. The option requires significant physical works outside the road corridor and would require significant road traffic management. The total construction timeline is anticipated to exceed 25 weeks.

Key constraints include access, existing valuable habitat, traffic management and the need to dispose of excavated material.

Environmental impacts are anticipated to be significant. Significant environmental offset cost is estimated at $671k (excl. GST).

Flood Impacts are minor positive. Flood immunity up to 4 EY (3 month ARI).

The option is estimated to cost $4.M (excl. GST) and the implementation would be subject to significant additional environmental assessment and approvals. Council will be required to complete a Biodiversity Development Assessment Report (BDAR) or an SIS, as well as a Biodiversity Management Plan.

5.7 Option B6

5.7.1 Option Description & Intended Hydraulic Performance

This option would involve the removal of an area of overbank sediment only with a similar extent of Option B5 above (also as per Options 2, 3 and 4 above), but to an increased depth of 2m.

5.7.2 Concept Design

For the purposes of this assessment, the conceptual design of the sediment removal for Option B6 is as described above for Options B5, but with the additional removal of 1 m depth of sediment, i.e., to 2 m depth in total.

The resulting volume of sand to be removed is estimated as 51,200m^3.

5.7.3 Impacts on Flooding

Option B6 provides flood immunity at the Bends up to the 4 EY (3 month ARI) flood event, with 1 lane flood free in the 2 EY (6 month ARI) flood event (refer **Table 12** below). Flood Maps are presented in **Appendix G**.

Table 12: Results of flood modelling and respective road flood immunity for a number of events (Option B6).

Case	Is the road at the Bends flooded from the Creek in the stated event? (Excluding local effects from direct rainfall on road with poor drainage)			
	4 EY (3 month ARI)	2 EY (6 month ARI)	1 EY (1 year ARI)	0.5 EY (2 year ARI)
Existing	Y	Y	Y	Y
Option B6	N	Y, 1 lane	Y	Y

The road is no longer inundated for the 4 EY (3 month ARI) at the Bends.
There is a decrease in duration of road inundation for the 2 EY (6 month ARI) to the 0.5 EY (2 year ARI) flood event.

5.7.4 Overall Feasibility

The option is considered **unfeasible**. The creek is typically less than 1m below the overbank area, therefore the proposed 2m of floodplain excavation would result in significant lowering of the existing creek, resulting in an imbalance in the fluvial regime, as well as ponding. In addition, the entire vegetation and habitat would change and not able to be readily rehabilitated.

5.8 Option B7

5.8.1 Option Description & Intended Hydraulic Performance

This option would involve construction of the southern levee at The Bends and installation of culverts under the road (as discussed in Option B3).

5.8.2 Concept Design

For concept design sketches of Option B7 please refer to **Appendix F.**

5.8.3 Impacts of Flooding

Option B7 provides flood immunity at the Bends up to the 1 EY (1 year ARI) flood event (refer **Table 10** below). Flood Maps are presented in **Appendix G**.

Table 13: Results of flood modelling and respective road flood immunity for a number of events (Option B7).

Case	Is the road at the Bends flooded from the Creek in the stated event? (Excluding local effects from direct rainfall on road with poor drainage)			
	4 EY (3-month ARI)	2 EY (6-month ARI)	1 EY (1-year ARI)	0.5 EY (2-year ARI)
Existing	Y	Y	Y	Y
Option B7	N	N	N	Y

The road is no longer inundated for design events up to and including the 1 EY (1-year ARI) at the Bends.

5.8.4 Overall Feasibility

This option provides a feasible alternative to Option B3, due to the high level of flood performance without the need for sediment removal.

The under-road culverts require a significant disturbance footprint, capital works and presents significant temporary road closure / partial closures. The option is considered to be constructible through open trench methods, whilst maintaining two-way traffic.

The disturbance to sensitive and valuable habitat east of the road by culvert tail out channels is anticipated to cause significant environmental impacts. There is an estimated environmental offset cost of $67k (excl. GST).

The option is estimated to cost $8.1M (excl. GST) and the implementation would be subject to significant additional environmental assessment and approvals.

The option does not address the ongoing issue of creek and floodplain sedimentation, and the resulting flood impacts.

5.9 Option O1

5.9.1 Option Description & Intended Hydraulic Performance

Option O1 comprises the amplification of the two (2) existing road pipe crossings under the Parkway at Oxford Falls at two locations. The aim of this option is to increase the conveyance of flood water under the road and contain water within the channel.

5.9.2 Concept Design

It is assumed that the pipes would be constructed by an open trench excavation. The existing northern crossing (2 x 1.8m diameter pipes) would be replaced by 3 x 1.8m diameter pipes (one additional pipe). The existing southern crossing (1 x 0.375m diameter pipe) would be replaced by 3 x 0.6m diameter pipes (two additional pipes)

Although the option involves additional pipes, it is expected and therefore assumed that the existing pipes would be replaced, whilst the trenches are open.

For concept design sketches of Option O1 please refer to **Appendix J**.

The structural nature of the proposed option would be expected to provide a 50 year design life.

5.9.3 Impacts on Flooding

Option O1 provides flood immunity of the road at the culvert crossing for flood events up to the 1 EY (1 year ARI) flood event (refer **Table 14** below). Flood Maps are presented in **Appendix K**.

Table 14: Results of flood modelling and respective road flood immunity for a number of events (Option O1).

Case	Is the road flooded from the Creek in the stated event? (Excluding local effects from direct rainfall on road with poor drainage)			
	4 EY (3 month ARI)	2 EY (6 month ARI)	1 EY (1 year ARI)	0.5 EY (2 year ARI)
Existing	Y	Y	Y	Y
Option O1	N	N	N	Y

The road is no longer inundated for design events up to and including the 1 EY (1 year ARI) at Oxford Falls.
There is a decrease in duration of road inundation for the 0.5 EY (2 year ARI) flood event.

5.9.4 Constructability

Health & Safety
The following health and safety considerations have been identified for Option O1:

- The anticipated road closures and traffic management pose a risk to both construction personnel and the general public.
- There are no additional health and safety implications for the general public following construction.

- The ongoing need for people to be undertaking pipe maintenance and sedimentation management within the road corridor poses an operational consideration but is similar to current regimes.

Operation & Maintenance
The following operation and maintenance considerations have been identified for Option O1:

- The pipes are passive structures therefore would not require any operation.
- Routine (1/2 times every year and possibly after moderate rain) inspection of the culverts would be required to ensure no blockage and would be recommended as part of Council's or RMS's asset management programme.
- Should the pipes become partially blocked with sediment, then there would be a need to clear the blockage.

Existing Services
At Oxford Falls Road, a sewer main runs parallel to Middle Creek. The sewer pipe is not located in the road footprint, therefore is not expected to conflict with the potential works of Option O1.

There are Telstra services contained within the road corridor south of the southern set of pipes. These do not appear to cross the existing pipes, therefore are not expected to conflict with potential works.

The Optus underground cable, located within the road corridor, would be impacted by the potential works. It is assumed that the buried cable runs over the top of the existing pipes each of the two crossings. This cable would require protecting, or more likely temporary realignment during construction.

5.9.5 Environmental Constraints

Option O1 seems less likely to result is significant impacts due to the following:

- Only 0.07 ha of native vegetation and habitat would be direct impacted.
- It is unlikely that any TECs would be impacted.
- No Red-crowned Toadlet habitat has been mapped within the site
- No threatened flora or fauna have been recorded within the site.

5.9.6 Overall Feasibility

No significant 'red flags' have been encountered during the assessment.

There would be the need for full or partial road closures during construction, however it is anticipated that such partial road closure could be undertaken whilst maintaining 2 lanes of flowing traffic (one each way), albeit at a reduced speed temporarily.

The buried Optus cable would require protecting or temporary realignment during construction.

5.10 Option O2

5.10.1 Option Description & Intended Hydraulic Performance

Option O2 comprises the further amplification of the two existing road culvert crossings under the Parkway per Option O1 above, although for Option O2 the pipe augmentations provide 0.5 EY (2 year ARI) immunity from road flooding. The aim of this option is to increase the conveyance of flood water under the road and contain water within the channel within a 0.5 EY (2 year ARI) flood event.

5.10.2 Concept Design

It is assumed that the pipes would be constructed by an open trench excavation.

The existing southern pipes (2 x 1.8m diameter pipes) would be replaced by 4 x 1.8m diameter pipes (one additional pipe). The existing northern crossing (1 x 0.375m diameter pipe) would be replaced by 6 x 0.6m diameter pipes (five additional pipes).

Although the option involves the addition of one pipe, it is expected and therefore assumed that the two existing pipes would be replaced, whilst the trench is open.

For concept design sketches of Option O2 please refer to **Appendix J**.

The structural nature of the proposed option would be expected to provide a 50 year design life.

5.10.3 Environmental Impacts

Option O2 seems less likely to result is significant impacts due to the following:

- Only 0.07 ha of native vegetation and habitat would be direct impacted.
- It is unlikely that any TECs would be impacted.
- No Red-crowned Toadlet habitat has been mapped within the site
- No threatened flora or fauna have been recorded within the site.

5.10.4 Impacts on Flooding

Option O2 provides flood immunity of the road at the culvert crossing for flood events up to the 0.5 EY (2 year ARI) flood event as designed (refer **Table 15** below). Flood Maps are presented in **Appendix K**.

Table 15: Results of flood modelling and respective road flood immunity for a number of events (Option O2).

Case	Is the road flooded from the Creek in the stated event? (Excluding local effects from direct rainfall on road with poor drainage)			
	4 EY (3 month ARI)	2 EY (6 month ARI)	1 EY (1 year ARI)	0.5 EY (2 year ARI)
Existing	Y	Y	Y	Y
Option O2	N	N	N	N

The road is no longer inundated for design events up to and including the 0.5 EY (2 year ARI) at the Bends.

5.10.5 Overall Feasibility

No significant 'red flags' have been encountered during the assessment.

There would be the need for full or partial road closures during construction, however it is anticipated that such partial road closure could be undertaken whilst maintaining 2 lanes of flowing traffic (one each way), albeit at a reduced speed temporarily.

The buried Optus cable would require protecting or temporary realignment during construction.

5.11 Option S1

5.11.1 Option Description & Intended Hydraulic Performance

Option S1 comprises the provision of two bunds adjacent to the **Sydney Academy of Sport and Recreation**, to restrict the movement of overland flow across the low point of Wakehurst Parkway.

5.11.2 Concept Design

Due to space constraints, the levee is considered to be best constructed using a bund wall to limit the footprint and contain the works to within the road corridor, similar to Option B1. There is not considered sufficient space for a more conventional earth embankment. A design has been developed to RMS standards using a concrete barrier.

For concept design sketches of Option S1 please refer to **Appendix J**.

The structural elements of the proposed option would be expected to provide a 50 year design life.

A summary of the concept design is as follows:

- 1100mm high barrier kerb (RMS standard drawing MD.R132.D02.A.1) on concrete footings.
- Located within the existing road shoulder with some minor should improvements.
- Provision is made for a 2.8m wide shoulder between existing road pavement end and proposed barrier, comprising 300mm structure offset, 1m 'cycle lane' and 1.5m cyclist buffer.
- A 700mm horizontal zone is allowed for the barrier.
- The barrier is required to transition into existing surface in the west and east.
- There is expected to be minor requirements for road embankment widening.
- It is assumed that the installation of the levee wall negates the need for a separate crash barrier.

5.11.3 Constructability

Access
Access is only afforded directly off the existing road verge. There is little space for site compound and laydown areas. Construction plant would be required to be located within the existing road shoulder. Accordingly, road speed limit and lane modifications would be required during construction.

Methodology
The construction methodology would require where practical the use of pre-cast road barrier units to limit installation time. Anticipated temporary lane adjustments would be required to maintain one lane each

way. It is assumed that a temporary 'jersey kerb' be constructed to segregate the construction zone and road traffic.

Services
Jemena pipe on west side of road, under road verge. Any excavation within the road corridor will need to be mindful of the presence of buried services.

Safety
The following health and safety considerations have been identified for Option S1:

- Safety considerations during construction, with the requirement for working within and adjacent to open roads.
- The introduction of a levee would create a pressurised system during flooding. That is, as water levels elevate during flooding, water levels both sides of the road would increase to up to 1m above road level before overtopping the levees. Such a process would cause rapid inundation of the road once the levees overtopped, as opposed to the current situation in which road inundation occurs gradually.
- Failure of the levee(s) during hydraulic loading would also cause rapid and uncontrolled inundation of the road, potentially posing a greater risk than the above point.
- Increased depth of inundation in some events.

Timeframe
A likely construction timeframe has been estimated at 4 weeks, and is as follows:

- Mobilisation, site setup and environmental controls - 3 weeks
- Construction of road shoulder improvements – 3 weeks
- Construction of levee, shoulder resurfacing and line marking 3 weeks
- Demobilisation 2 weeks.
- **Total – 11 weeks**

The estimated time of road occupancy and traffic control (reduced speed limits) is 6 weeks.

Operation & Maintenance
The structural character of the proposed option would be expected to provide a 50 year design life.

The following operation and maintenance considerations have been identified for Option B1:

- The levee wall would be a passive structure, therefore would not require any additional operational requirements.
- The levee wall would require structural inspection (say once every 5 years) and following moderate flood events, particularly overtopping, as part of Council's or RMS's asset management programme.

5.11.4 Environmental Impacts

Works within the road corridor would not require offsets. Due to localised drainage impacts, works within the adjacent channel may be required to improve local drainage, and if so biodiversity offsetting would be required due to the following disturbance footprint:

- Impacts to approximately 0.74 ha of Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions TEC.
- Impacts to approximately 0.04 ha of Freshwater Wetlands on Coastal Floodplains TEC.
- Impacts to approximately 0.74 ha of Red-crowned Toadet habitat
- Impacted to approximately 0.74 ha of Powerful owl foraging habitat
- Impacts to approximately 0.74 ha of Black Bittern habitat.
- Impacts to approximately 0.74 ha of Glossy Black Cockatoo habitat.

5.11.5 Impacts on Flooding

This option achieves the 0.5 EY (2 year ARI) flood immunity of the road (refer **Table 16** below). Flood Maps are presented in **Appendix K**.

Table 16: Results of flood modelling and respective road flood immunity for a number of events (Option S1).

Case	Is the road flooded from the Creek in the stated event? (Excluding local effects from direct rainfall on road with poor drainage)			
	4 EY (3 month ARI)	2 EY (6 month ARI)	1 EY (1 year ARI)	0.5 EY (2 year ARI)
Existing	N	N	N	Y
Option S1	N	N	N	N

5.11.6 Overall Feasibility

No significant 'red flags' have been encountered during the assessment, however the risk of blockage and flooding from local runoff is high if this option is implemented, hence the 'do nothing' case may be considered preferable.

5.12 Summary of Feasibility Assessment

*A summary of the feasibility assessment is presented below in **Table 17** to*

***Table 19**.*

Table 17: Multi-Criteria Analysis, flood mitigation options for The Bends

Assessment Criteria	Option B1	Option B2	Option B3	Option B4	Option B5	Option B6	Option B7
Environmental Constraints	No significant impact expected	Significant Impacts	Significant Impacts	Significant Impacts	Significant Impacts	Significant Impacts	Significant Impacts
Approximate Area of Native Vegetation Impacted	Insignificant	2.41 ha	2.63 ha (2.41 ha + 0.22* ha)	2.63 ha (2.41 ha + 0.22* ha)	2.41 ha		0.22* ha
Impact to Services and Utilities	None expected	None expected	Potential conflicts with services / need for protection	Potential conflicts with services	None expected	None expected	Potential conflicts with services
Maintenance	Low: Routine inspection.	Ongoing maintenance. Vegetation and channel.	Ongoing maintenance. Vegetation and channel.	Routine maintenance of new culverts to prevent debris build up and blockage. Ongoing maintenance. Vegetation and channel.	Ongoing maintenance. Vegetation and channel.	Ongoing maintenance. Vegetation and channel.	Routine maintenance of new culverts to prevent debris build up and blockage. Ongoing maintenance.
Health & Safety	Construction safety with traffic. Public safety risk reduced	Construction safety with traffic. Public safety risk reduced	Construction safety with traffic. Public safety risk reduced	Construction safety with traffic. Public safety risk reduced	Construction safety with traffic. Public safety risk reduced	Construction safety with traffic. Public safety risk reduced	Construction safety with traffic. Public safety risk reduced
Construction Feasibility	No significant 'red flags'. Moderate; work within road reserve.	Difficult; overbank sediment excavation.	Difficult; overbank sediment excavation. Temporary road closures for culverts.	Difficult; overbank sediment excavation. Temporary road closures for culverts.	Difficult; overbank sediment excavation.	**Not feasible**	Moderate; Temporary road closures for culverts. Work within road reserve.
Costs (excl. GST)	$2M	$5.8M	$12.1M	$13.8M	$4.1M	-	$8.1M

* 0.22 ha for 5 m culvert tail-in and tail-out. This area may increase up to 0.44 ha if larger tail-outs required.

Table 18: Multi-Criteria Analysis, flood mitigation options for Oxford Fall Road

Assessment Criteria	Option O1	Option O2
Environmental Constraints	No significant impact expected	No significant impact expected
Approximate Area of Native Vegetation Impacted	0.07 ha	0.07 ha
Impact to Services and Utilities	None expected. Services protection required during construction	None expected. Services protection required during construction
Maintenance	Low: Routine maintenance of new culverts to prevent debris build up and blockage.	Low: Routine maintenance of new culverts to prevent debris build up and blockage.
Health & Safety	Construction safety with traffic. Public safety risk reduced	Construction safety with traffic. Public safety risk reduced
Construction Feasibility	Moderate; Temporary road closures for culverts	Moderate; Temporary road closures for culverts
Costs (excl. GST)	$1.2M	$1.6M

Table 19: Multi-Criteria Analysis, flood mitigation options for Academy of Sport

Assessment Criteria	Option S1
Environmental Constraints	No significant impact expected unless concurrent local drainage improvements required.
Approximate Area of Native Vegetation Impacted	0 ha (0.74 ha if local drainage improvements required)
Impact to Services and Utilities	None expected. Services protection required during construction
Maintenance	Medium: Routine maintenance of new flap-gate drainage pipes to prevent debris build up and blockage.
Health & Safety	Construction safety with traffic. Public safety risk reduced. Increased risk of drainage issues from pipe blockage.
Construction Feasibility	Moderate; Temporary road closures for culverts. Land ownership Issues.
Costs (excl. GST)	$2.1M

6 Residual Risks

Residual risks for option implementation include:

- The impact of localised pluvial flooding (ponding) remains a risk for options comprising levee construction or raising.
- further ongoing sediment infill and choking of the creek corridor could continue for options not including sediment removal. Further sedimentation could exacerbate the existing flooding issue.
- environmental approvals and the need for further assessment is required, primarily for sediment removal and road culvert options (at The Bends). Environmental impacts may not be considered acceptable.
- offset credit values are estimated at today's rates. It should be noted that these rates are changed every 3 months.
- RMS approvals regarding traffic management (for options outside the road corridor) or road closures and occupancy (for options within the road corridor) would be required. It is understood that limited consultation with RMS has taken place to date.
- the sediment contamination testing undertaken to inform this assessment was limited. To fully classify the sediment prior to removal would require significant additional testing. Should additional testing change the waste classification, then estimated disposal costs would increase significantly, and likely render the option unfeasible due to costs.
- In the case of options involving sediment excavation, it has been assumed that excavated sediment (to be disposed of offsite)) is able to be beneficially reused elsewhere.
- There remains a number of uncertainties regarding land ownership.
- Options have been tested based on present day conditions, including rainfall, site constraints and baseline environmental conditions. The present study has not taken account of climate change (potential increase in rainfall intensity) or sea level rise.
- A European Heritage Assessment has not been undertaken.

7 Conclusions and Recommendations

7.1 Conclusions of the Study

Based on the feasibility assessment, it is considered that all proposed options are feasible subject to funding, except for Option B6. Option B6 (2m sediment removal) is not considered feasible, as the creek is typically less than 1m below the overbank (floodplain) area, therefore 2m depth of floodplain excavation would result in a reduced creek profile, significant imbalance in the fluvial regime, as well as ponding. Such work would also make revegetation of the 'floodplain' unlikely.

Those options within the road corridor would require approval and possibly implementation by RMS. For these options, the primary consideration is in-ground services and traffic management / road closures.

Options outside the road corridor (i.e. floodplain sediment excavation) present significant constructability constraints and particularly issues with environmental impacts. This is particularly relevant for options at The Bends, where direct disturbance of sensitive and valuable habitat would occur.

Options outside the road corridor (i.e. floodplain sediment excavation) could be implemented by Council with only approvals from RMS being required for temporary road closures / temporary changed traffic conditions. Other environmental approvals would be required.

Regarding staging, options outside the road corridor at The Bends (sediment excavation) are able to be implemented prior to other options within the road corridor and are not necessarily inter-dependant. Therefore, the sediment excavation option at the Bends could be implemented initially, with other options being implemented at a later date.

Residual risks for option implementation include:

- The impact of localised pluvial flooding (ponding) remains a risk for options comprising levee construction or raising.
- further ongoing sediment infill and choking of the creek corridor could continue for options not including sediment removal. Further sedimentation could exacerbate the existing flooding issue.
- environmental approvals and the need for further assessment is required, primarily for sediment removal and road culvert options (at The Bends).
- RMS approvals regarding traffic management (for options outside the road corridor) or road closures and occupancy (for options within the road corridor) would be required. It is understood that limited consultation with RMS has taken place to date.
- the sediment contamination testing undertaken to inform this assessment was limited. To fully classify the sediment prior to removal would require significant additional testing. Should additional testing change the waste classification, then estimated disposal costs would increase significantly, and likely render the option unfeasible due to costs.
- The ability for the excavated sediment to be disposed of offsite (in the case of options involving sediment excavation) has been assumed.
- Several uncertainties remain regarding land ownership.
- Options have been tested based on present day conditions, including rainfall, site constraints and baseline environmental conditions. The present study has not taken account of climate change (potential increase in rainfall intensity) or sea level rise.
- A European Heritage Assessment has not been undertaken.

The feasibility assessment has identified several flood mitigation options, generally providing increasing flood immunity with increasing estimated costs. The best performing option(s) provide flood immunity up to 1 EY (1-year ARI) for the whole parkway. Such flood immunity is achieved with the combination of Option B3 (at The Bends) and Option O1 (at Oxford Falls), with estimated costs of $12.1M (excl. GST) and $1.2M (excl. GST) respectively ($13.3M in total).

Option B4 provides flood immunity up to 0.5 EY (2 year ARI) flood immunity at the Bends at an estimated cost of $13.8M (excl. GST), however the flood immunity of the whole parkway is not realised as it is limited by the Oxford Falls and Sports Academy sites.

7.2 Recommendations

Prior to the progression of one or more options, the following are recommended:

- Geotechnical investigation;
- Waste classification;
- Detailed design; and
- Environmental assessment, including biodiversity assessment.

In addition, the other more catchment management-based options should continue to be considered. As mentioned previously, these have not been assessed as part of the study, but could include:

- Stabilisation of fire trails;
- Construction of additional sediment control measures in the urban areas e.g. GPTs;
- Creek restoration to minimise sediment generation; and;
- Improvements to road drainage.

8 References

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Soil Conservation Service, May 2018. Stage One Investigation Wakehurst Parkway, Cromer, NSW.

SESL Australia, 2018, Wakehurst Parkway Flood Mitigation Acid Sulfate Soil and Contamination Assessment 2.0

Tim Pietsch and Soil Conservation Services, June 2018. Middle Creek Sediment Study Middle Creek Floodplain Sediment Characterization.

APPENDIX A – RHDHV (2018) Flood Options Assessment

PROVIDED UNDER SEPARATE COVER

APPENDIX B – Photo Record

Note / Memo

Haskoning Australia PTY Ltd.
Maritime & Aviation

To: Click to enter "Recipient"
From: Click to enter "Sender"
Date: 05 April 2019
Copy:
Our reference: PA1943
Classification: Click to enter "Classification Text"

Subject: **Photgraphic Record**

Aerial Images

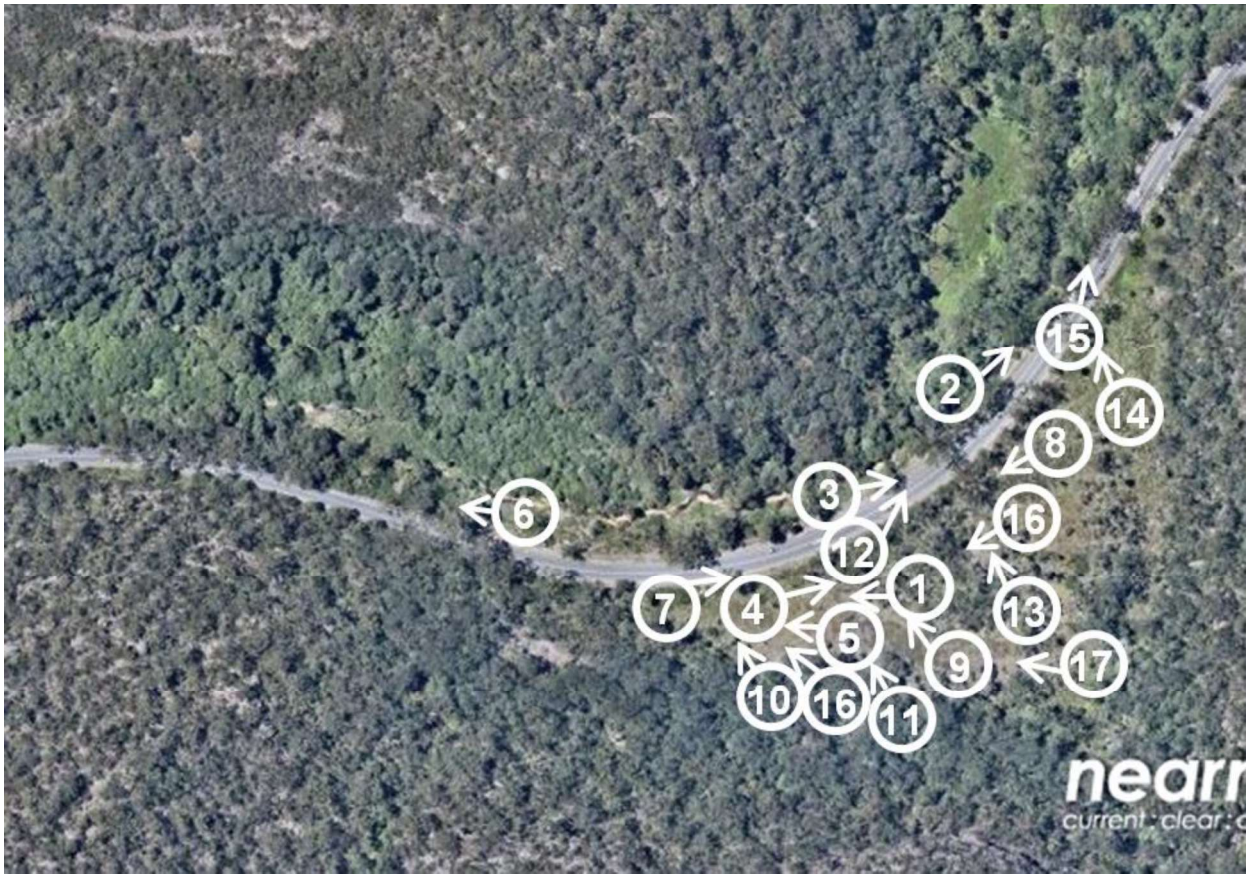
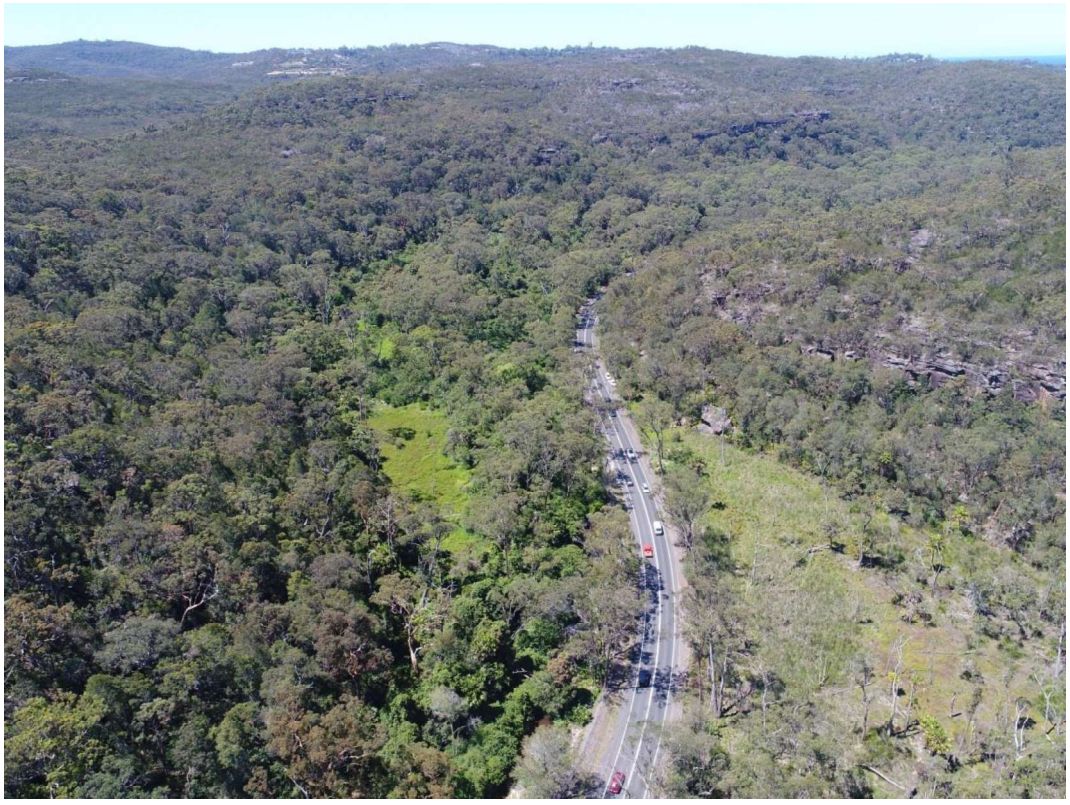


Figure 1: Location of Aerial Images from Appendix A (Nearmap, 2017)



Aerial Image #1



Aerial Image #2



Aerial Image #3



Aerial Image #4



Aerial Image #5



Aerial Image #6



Aerial Image #7



Aerial Image #8



Aerial Image #9



Aerial Image #10



Aerial Image #11



Aerial Image #12



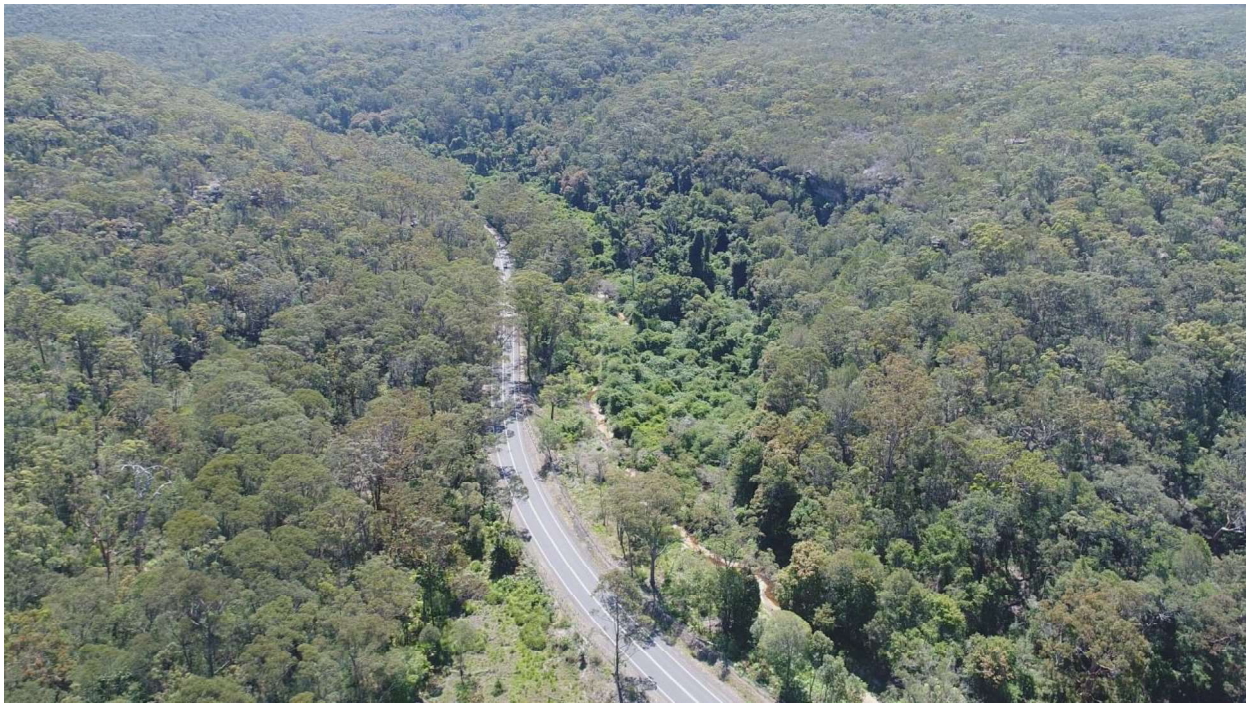
Aerial Image #13



Aerial Image #14



Aerial Image #15



Aerial Image #16



Aerial Image #17

Site Photos (16.11.18 and 21.11.19)



Location of Site Images (Nearmap, 2017)



Site Photo at Location #1 (16.11.18)



Site Photo at Location #1 (16.11.18)



Figure 2: Site Photo at Location #1 (16.11.18)



Figure 3: Site Photo at Location #1 (16.11.18)



Figure 4: Site Photo at Location #1 (16.11.18)



Figure 5: Site Photo at Location #2 (16.11.18)



Site Photo at Location #2 (16.11.18)



Site Photo at Location #2 (16.11.18)



Site Photo at Location #3 (16.11.18)



Site Photo at Location #3 (16.11.18)



Site Photo at Location #3 (16.11.18)



Site Photo at Location #4 (16.11.18)



Site Photo at Location #4 (16.11.18)



Site Photo at Location #5 (21.11.18)



Figure 6: Site Photo at Location #5 (21.11.18)



Figure 7: Site Photo at Location #5 (21.11.18)



Figure 8: Site Photo at Location #5 (21.11.18)



Figure 9: Site Photo at Location #5 (21.11.18)



Figure 10: Site Photo at Location #5 (21.11.18)



Figure 11: Site Photo at Location #5 (21.11.18)



Figure 12: Site Photo at Location #5 (21.11.18)



Figure 13: Site Photo at Location #5 (21.11.18)



Figure 14: Site Photo at Location #5 (21.11.18)



Figure 15: Site Photo at Location #5 (21.11.18)



Figure 16: Site Photo at Location #6 (21.11.18)

Site Photos (28.11.18)



Figure 17: Site Photo at Location # (28-11-18)



Figure 18: Site Photo at Location # (28-11-18)



Figure 19: Site Photo at Location # (28-11-18)



Figure 20: Site Photo at Location # (28-11-18)



Figure 21: Site Photo at Location # (28-11-18)



Figure 22: Site Photo at Location # (28-11-18)



Figure 23: Site Photo at Location # (28-11-18)



Figure 24: Site Photo at Location # (28-11-18)



Figure 25: Site Photo at Location # (28-11-18)



Figure 26: Site Photo at Location # (28-11-18)



Figure 27: Site Photo at Location # (28-11-18)

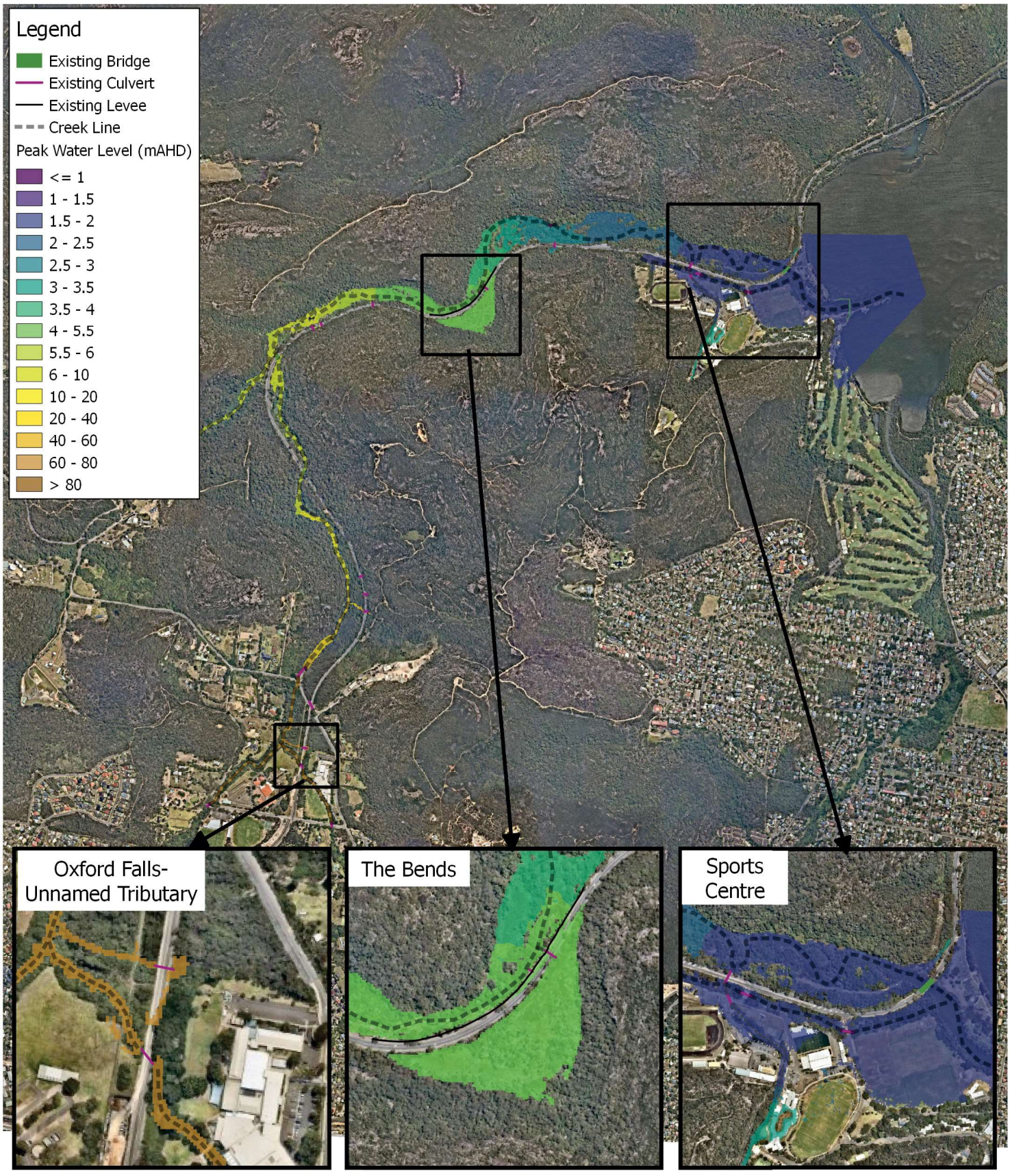


Figure 28: Site Photo at Location # (28-11-18)



Figure 29: Site Photo at Location # (28-11-18)

APPENDIX C – Existing Flood Mapping



Title: Existing Water Level- 4 EY

Figure: A1

Rev: 1

Project: Wakehurst Parkway- Options Analysis

Disclaimer: While all reasonable care has been taken to ensure the information contained on this map is up to date and accurate, this map contains data from a number of sources - no warranty is given that the information contained on this is free from error or omission. Any reliance placed on such information shall be at the sole risk of the user. Please verify the accuracy of all information prior to using it. This map is not a design document.

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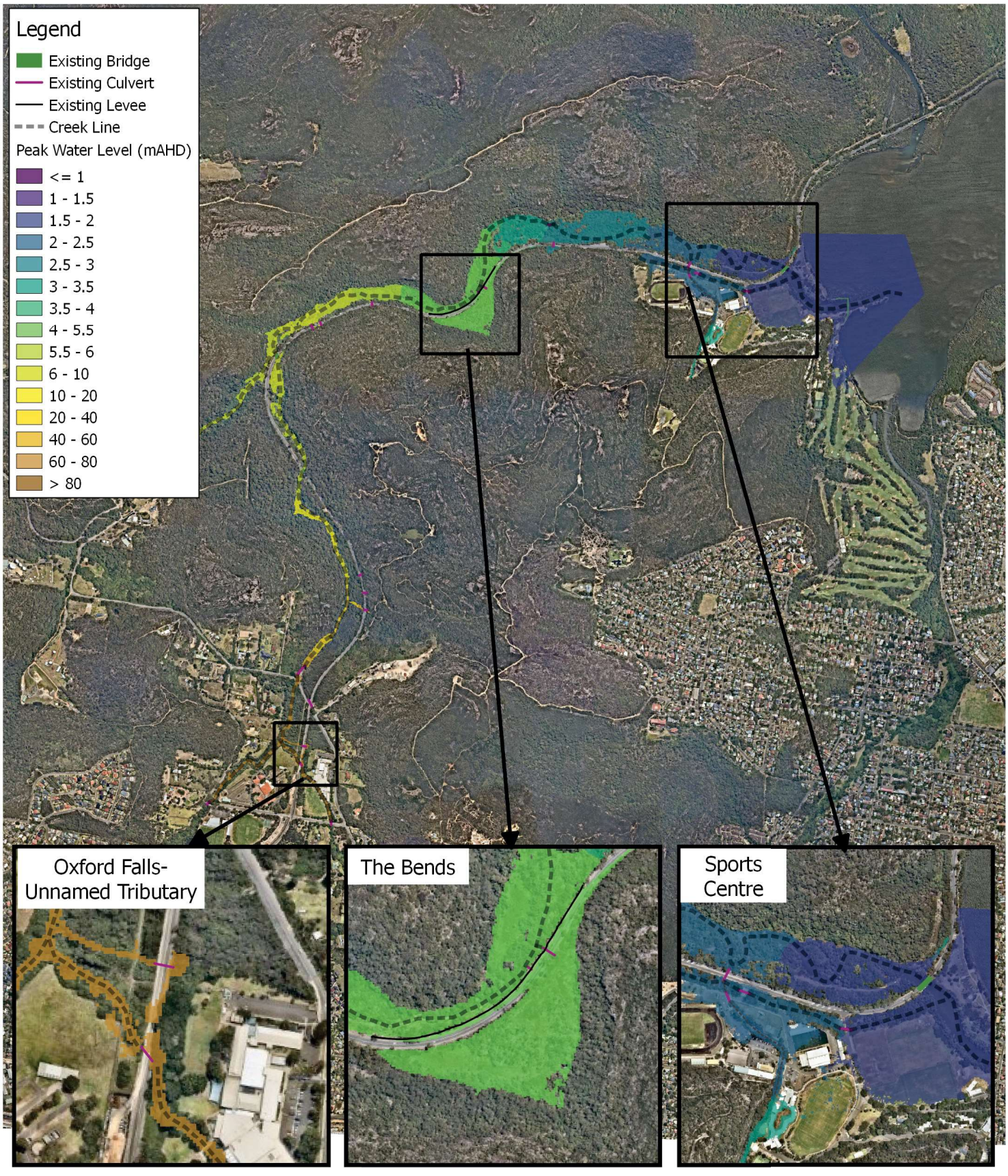
Main Map Only

TUFLOW ID: WP_()_GPU_EXG_011

Royal HaskoningDHV
Enhancing Society Together



Title: Existing Water Level- 2 EY

Figure: A2

Rev: 1

Project: Wakehurst Parkway- Options Analysis

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Main Map Only

TUFLOW ID: WP_()_GPU_EXG_011

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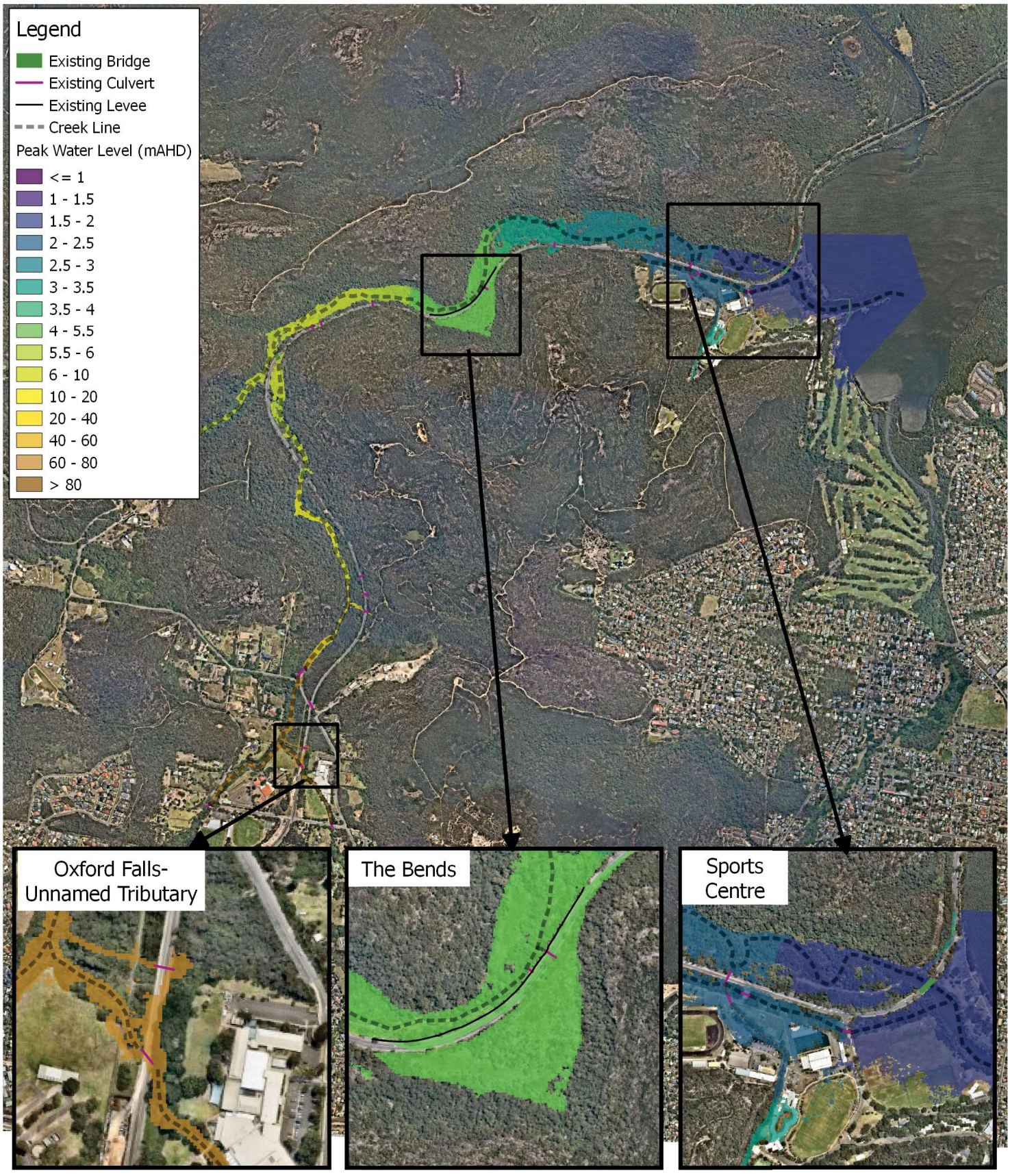

Title: Existing Water Level- 1 EY

Figure: A3

Rev: 1

Project: Wakehurst Parkway- Options Analysis

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Main Map Only

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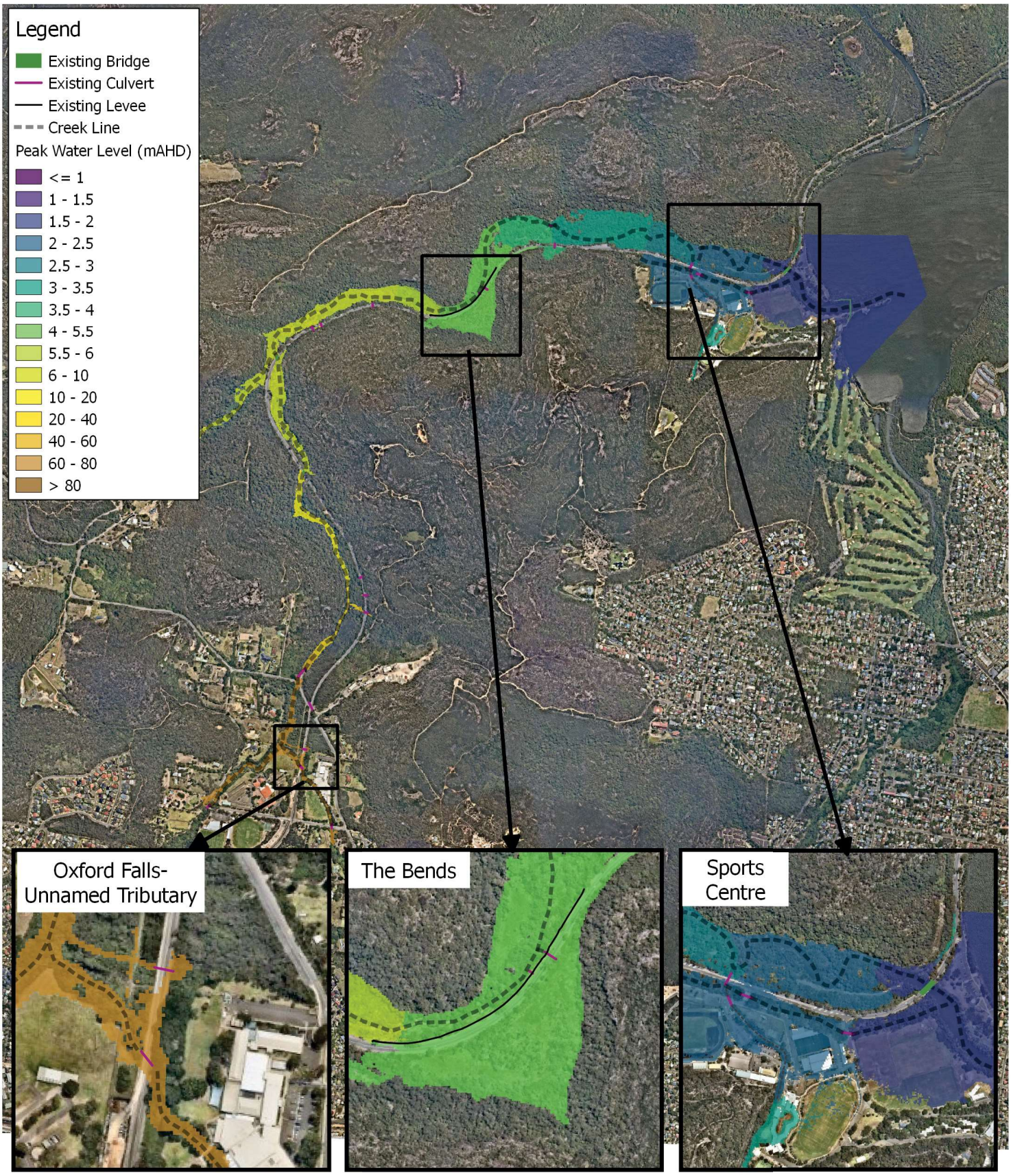

Title: Existing Water Level- 0.5 EY

Figure:	Rev:
A4	1

Project: Wakehurst Parkway- Options Analysis

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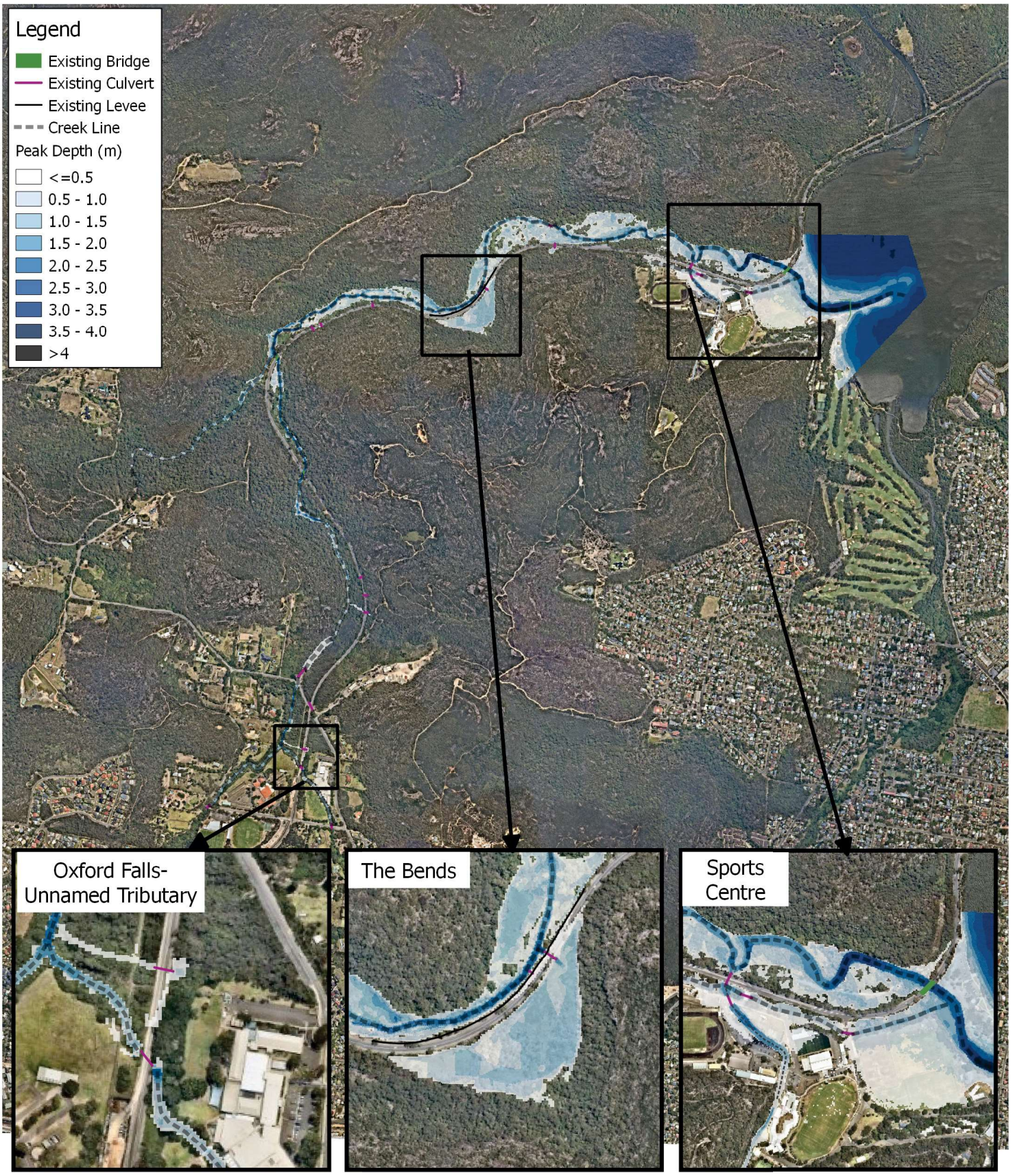

Title: Existing Depth- 4 EY

Figure:	Rev:
A5	1

Project: Wakehurst Parkway- Options Analysis

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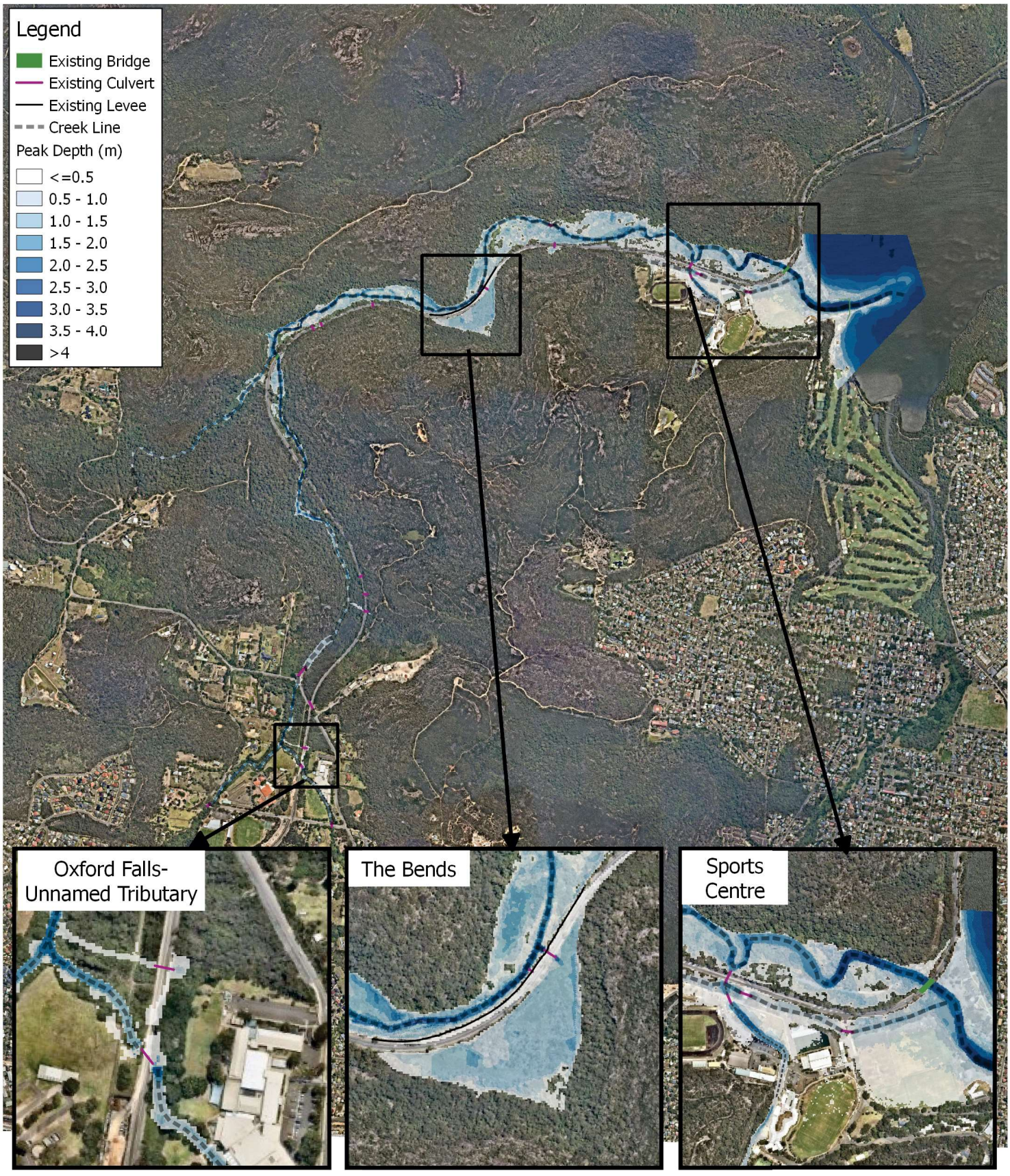

Title: Existing Depth- 2 EY

Figure:	Rev:
A6	1

Project: Wakehurst Parkway- Options Analysis

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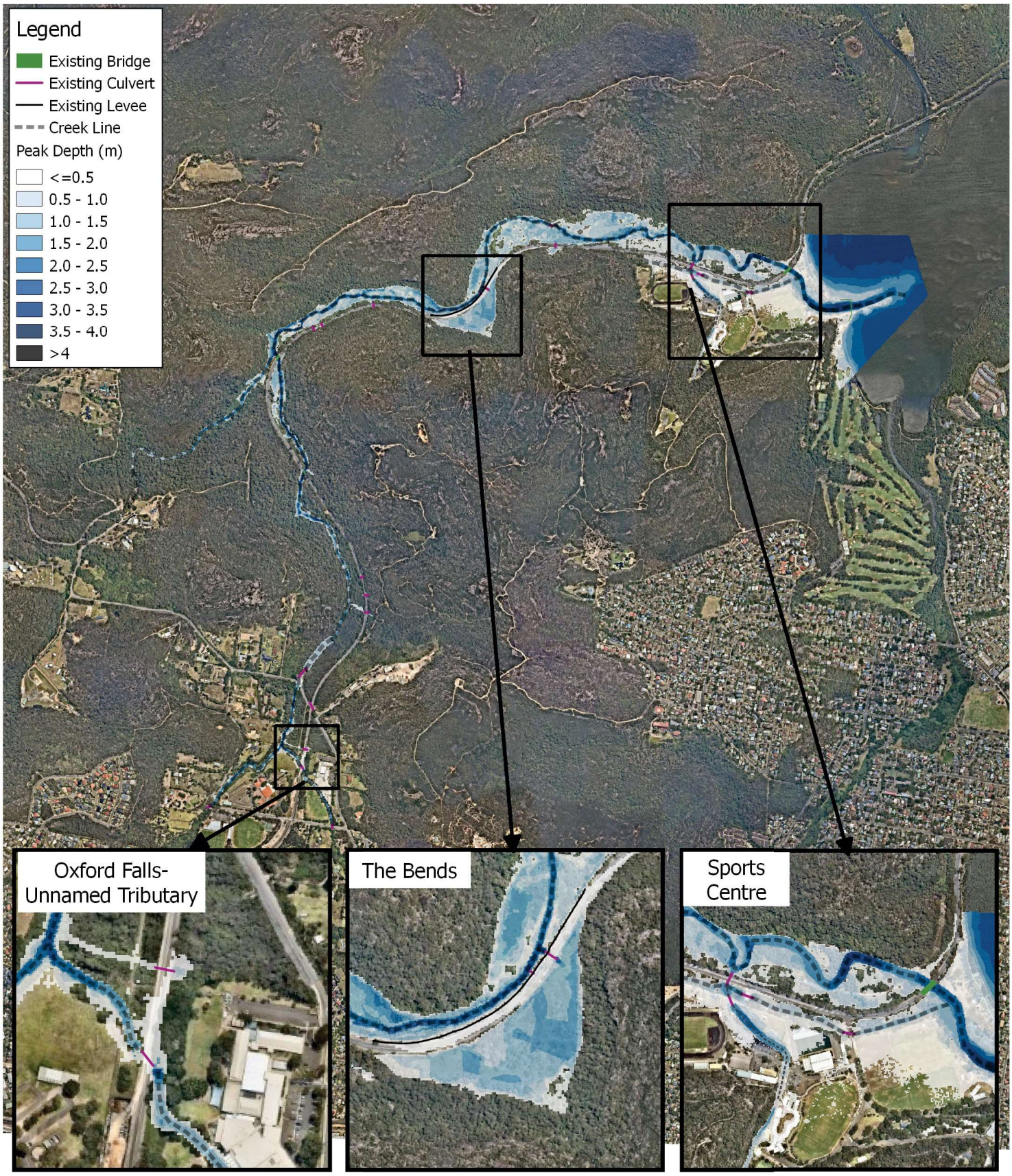

Title: Existing Depth- 1 EY

Figure:	Rev:
A7	1

Project: Wakehurst Parkway- Options Analysis

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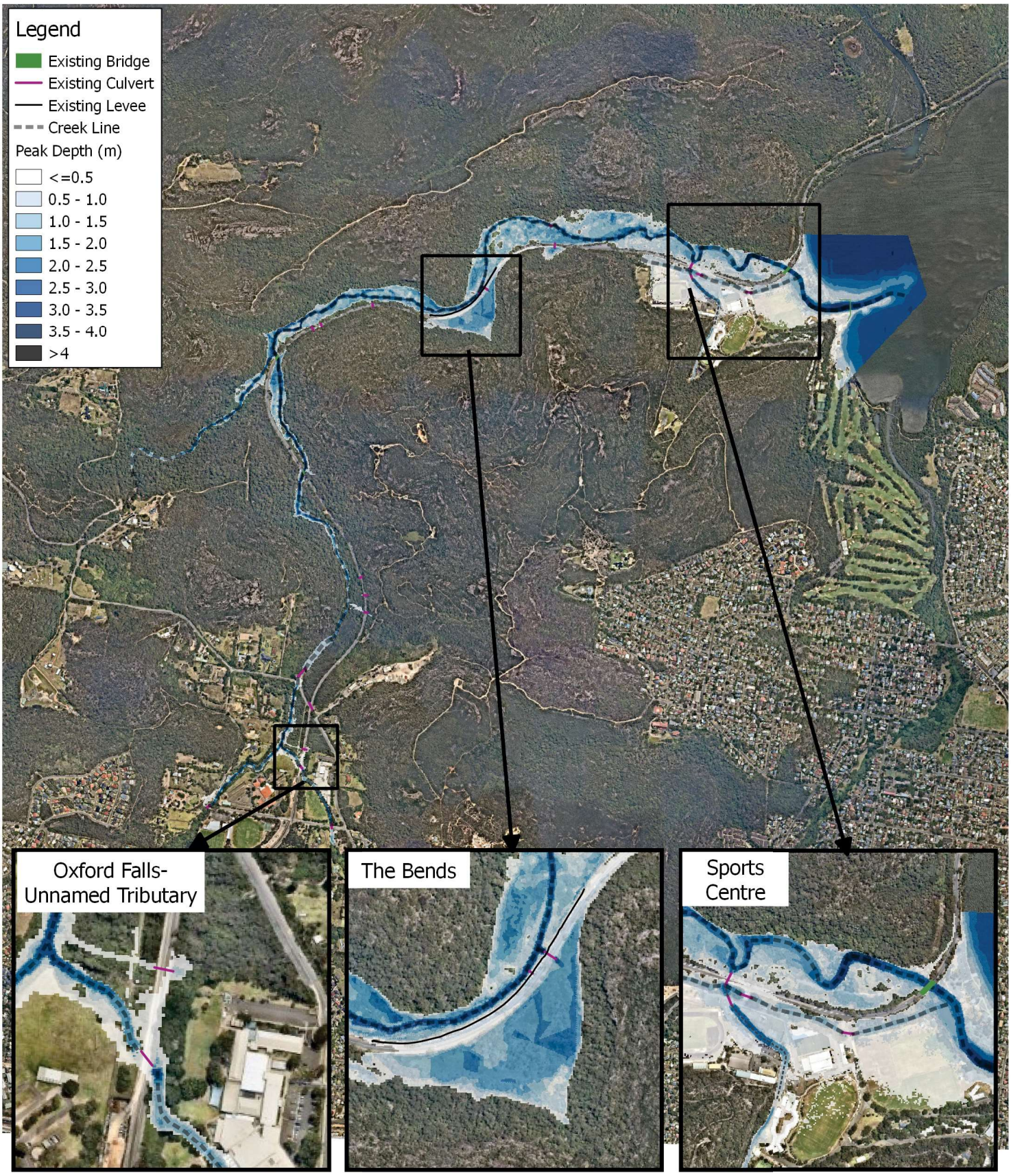

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Figure:	Rev:
A8	1

Project: Wakehurst Parkway- Options Analysis

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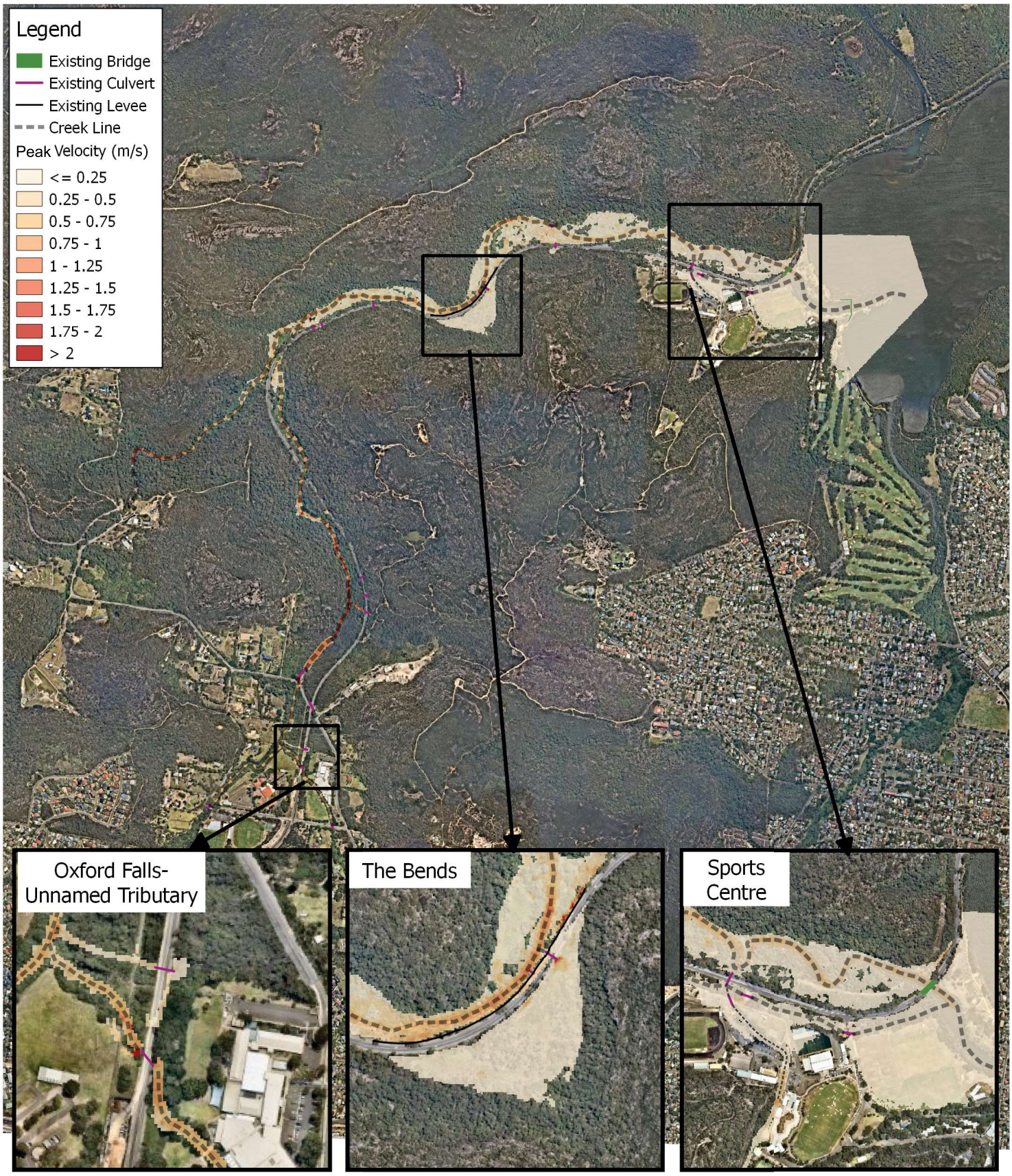

Title: Existing Depth- 4 EY

Figure:	Rev:
A9	1

Project: Wakehurst Parkway- Options Analysis

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Main Map Only

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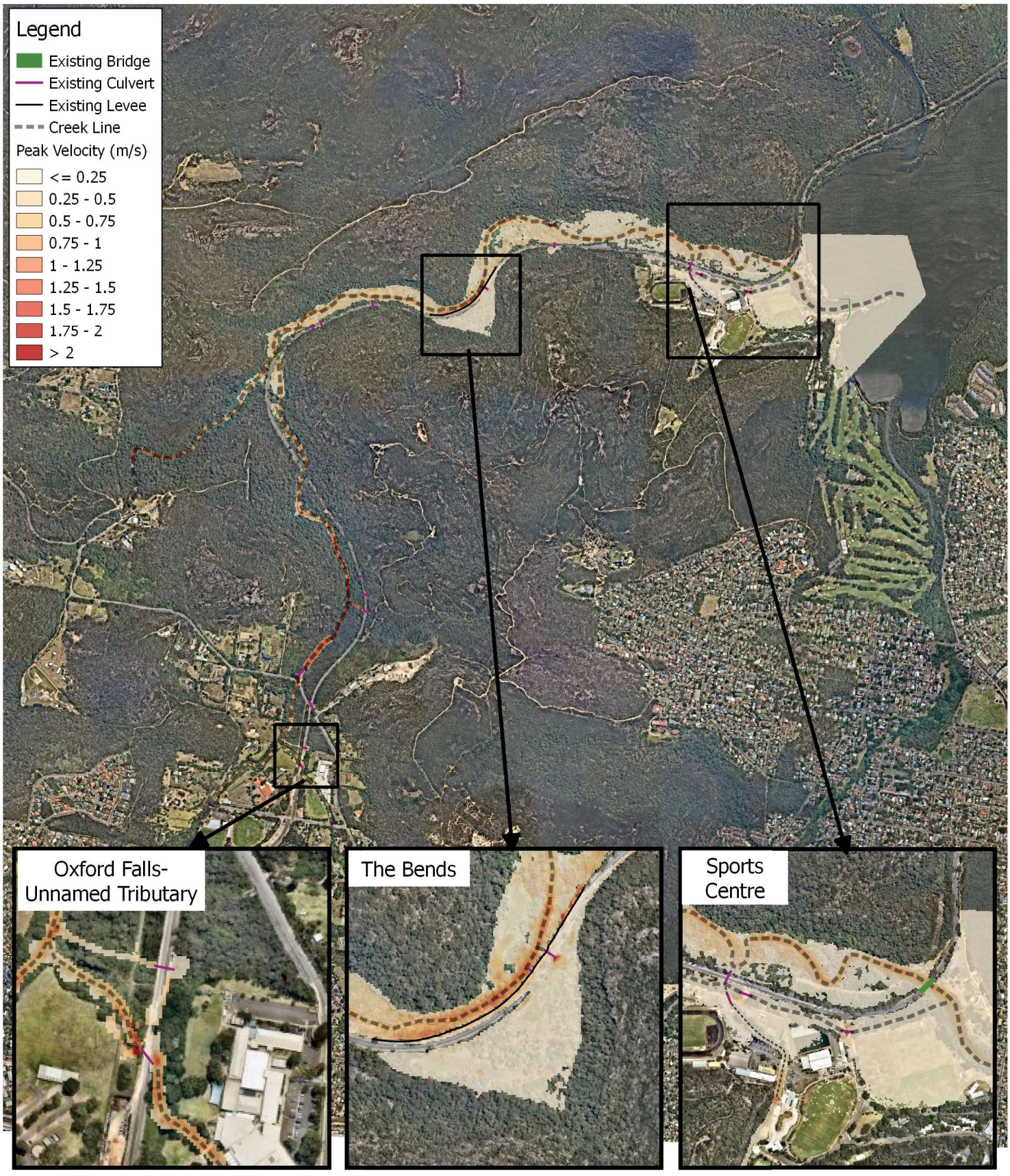

Title: Existing Depth- 2 EY

Figure:	Rev:
A10	1

Project: Wakehurst Parkway- Options Analysis

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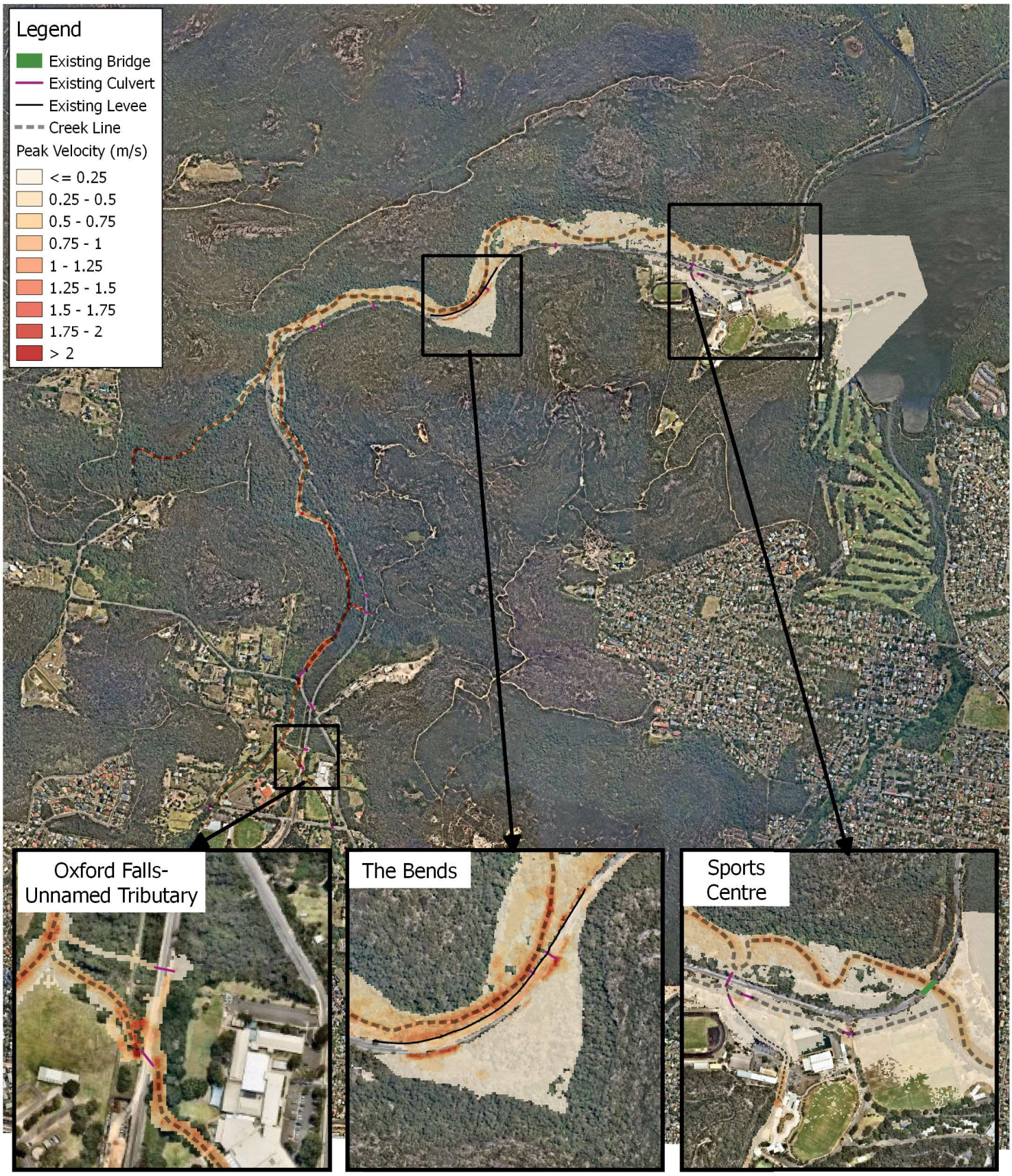

Title: Existing Depth- 1 EY

Figure:	Rev:
A11	1

Project: Wakehurst Parkway- Options Analysis

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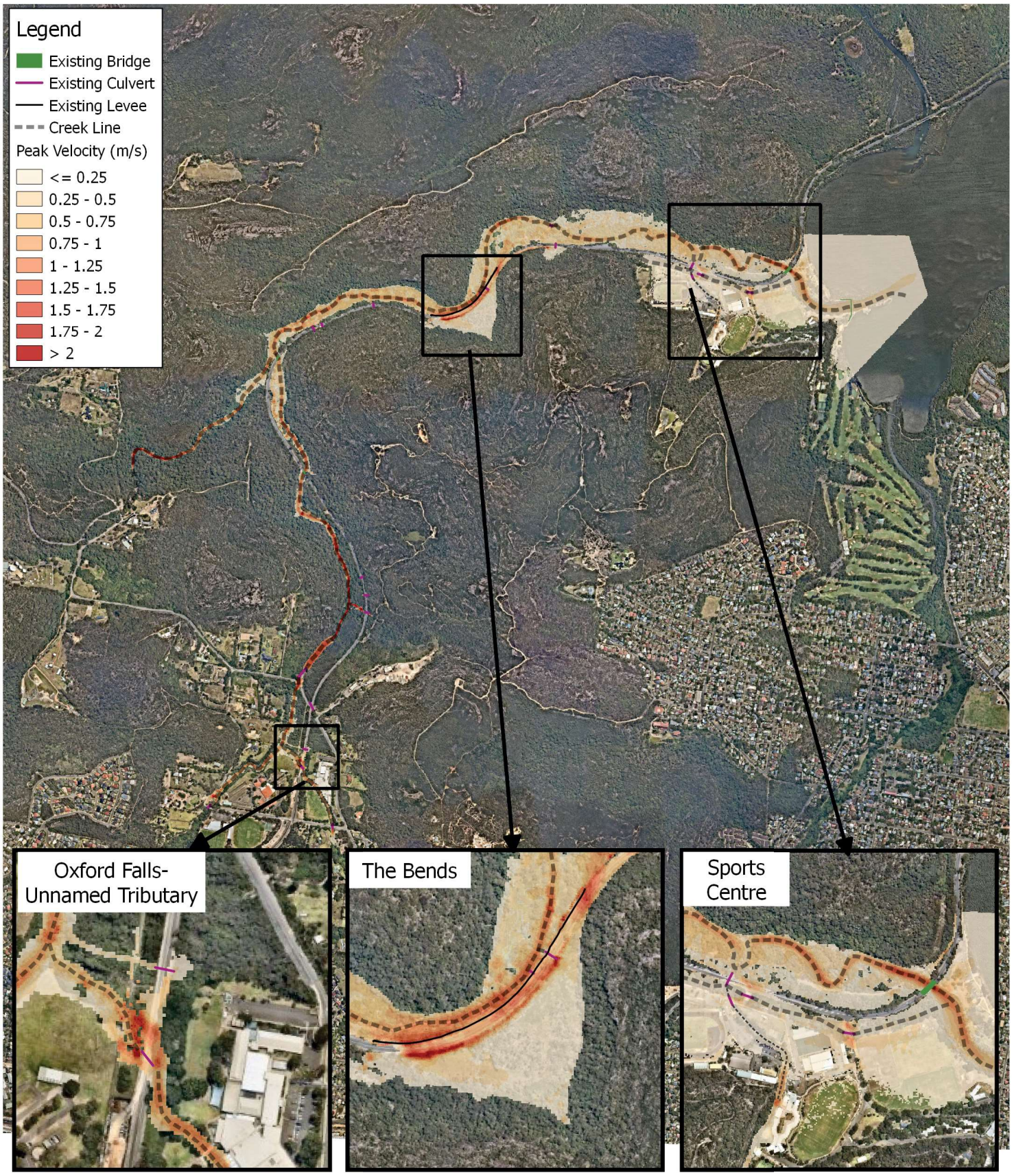

Title: Existing Depth- 0.5 EY

Figure:	Rev:
A12	1

Project: Wakehurst Parkway- Options Analysis

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Main Map Only

TUFLOW ID: WP_()_GPU_EXG_011

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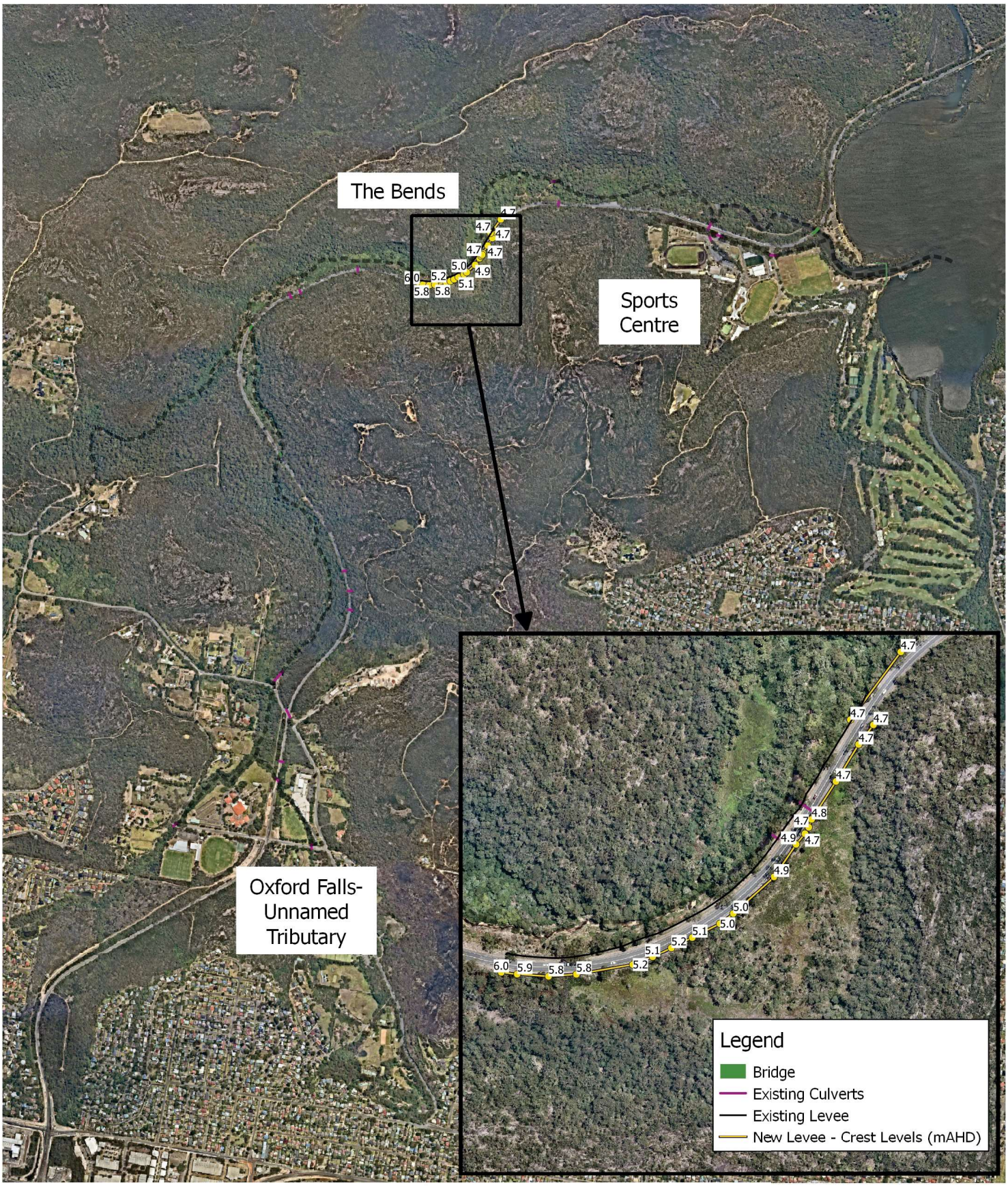

Title: Option B1- New Levee

Figure: F1

Rev: 1

Project: Wakehurst Parkway- Options Analysis

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Main Map Only

TUFLOW ID: WP_()_GPU_Po1_010

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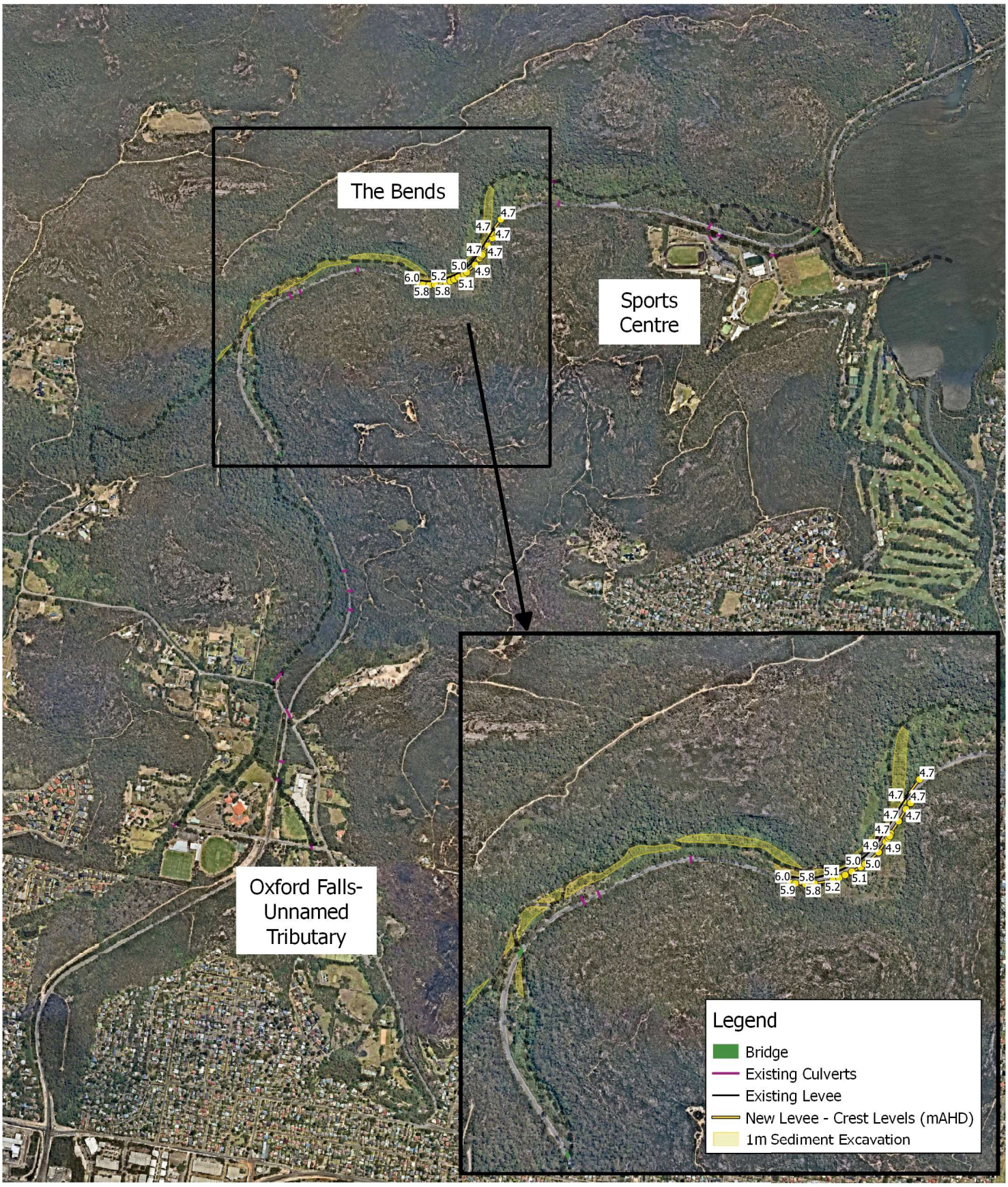

Title: Option B2 - New Levee and Removal of Overbank Sediment

Figure:	Rev:
F2	1

Project: Wakehurst Parkway- Options Analysis

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N

0 200 400 600 800 1000 m

Main Map Only

TUFLOW ID: WP_()_GPU_Po2_010

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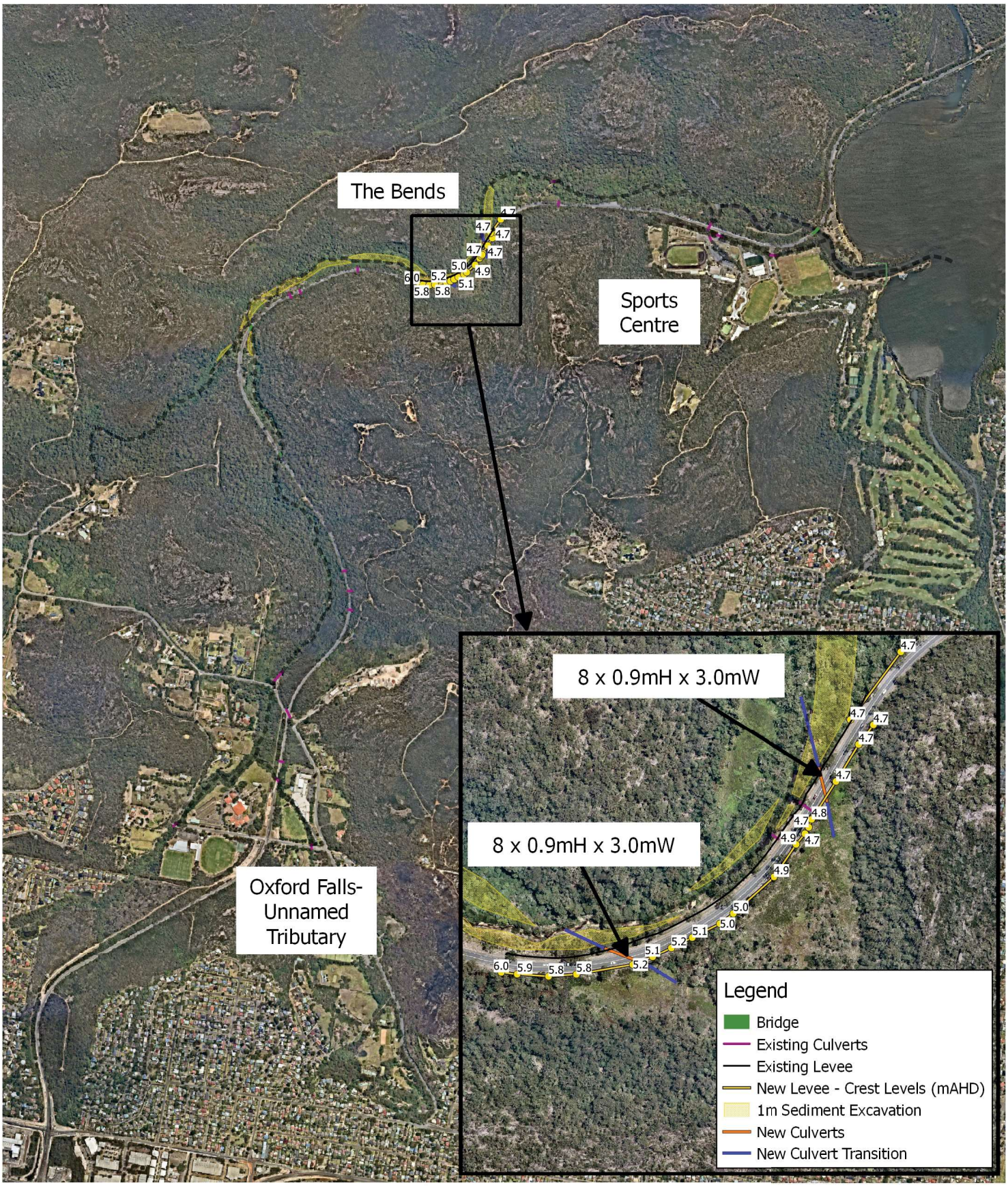

Title: Option B3 - New Levee, Removal of Overbank Sediment & Culverts Under Road

Figure: F3

Rev: 1

Project: Wakehurst Parkway- Options Analysis

Disclaimer: While all reasonable care has been taken to ensure the information contained on this map is up to date and accurate, this map contains data from a number of sources - no warranty is given that the information contained on this is free from error or omission. Any reliance placed on such information shall be at the sole risk of the user. Please verify the accuracy of all information prior to using it. This map is not a design document.

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Main Map Only

TUFLOW ID: WP_()_GPU_Po3_010

Royal HaskoningDHV
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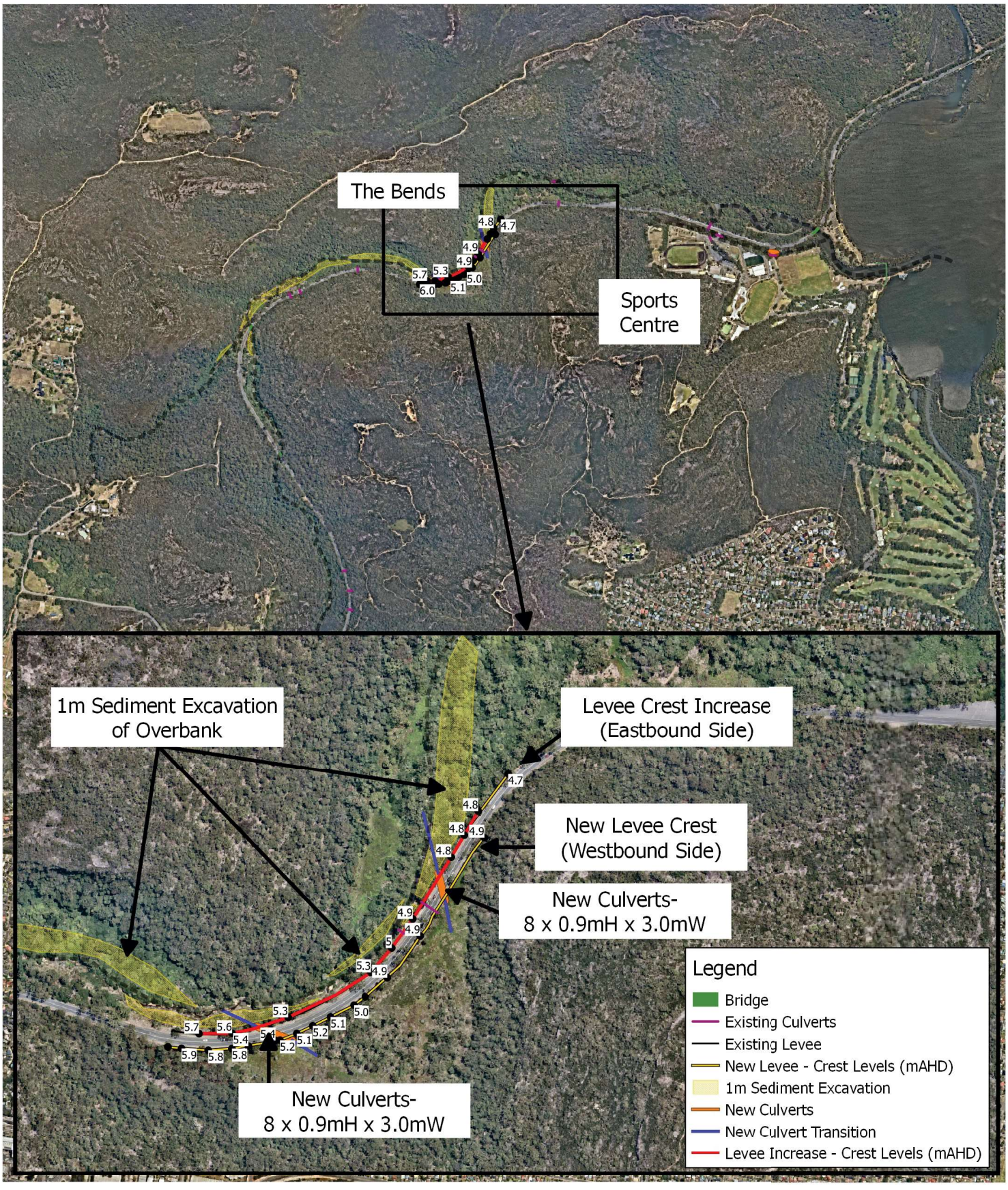

Title: Option B4 - New Levee, Removal of Overbank Sediment, Culverts Under Road & Top-up of Existing Levee

Figure: F4

Rev: 1

Project: Wakehurst Parkway- Options Analysis

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0 200 400 600 800 1000 m

Main Map Only

Royal HaskoningDHV
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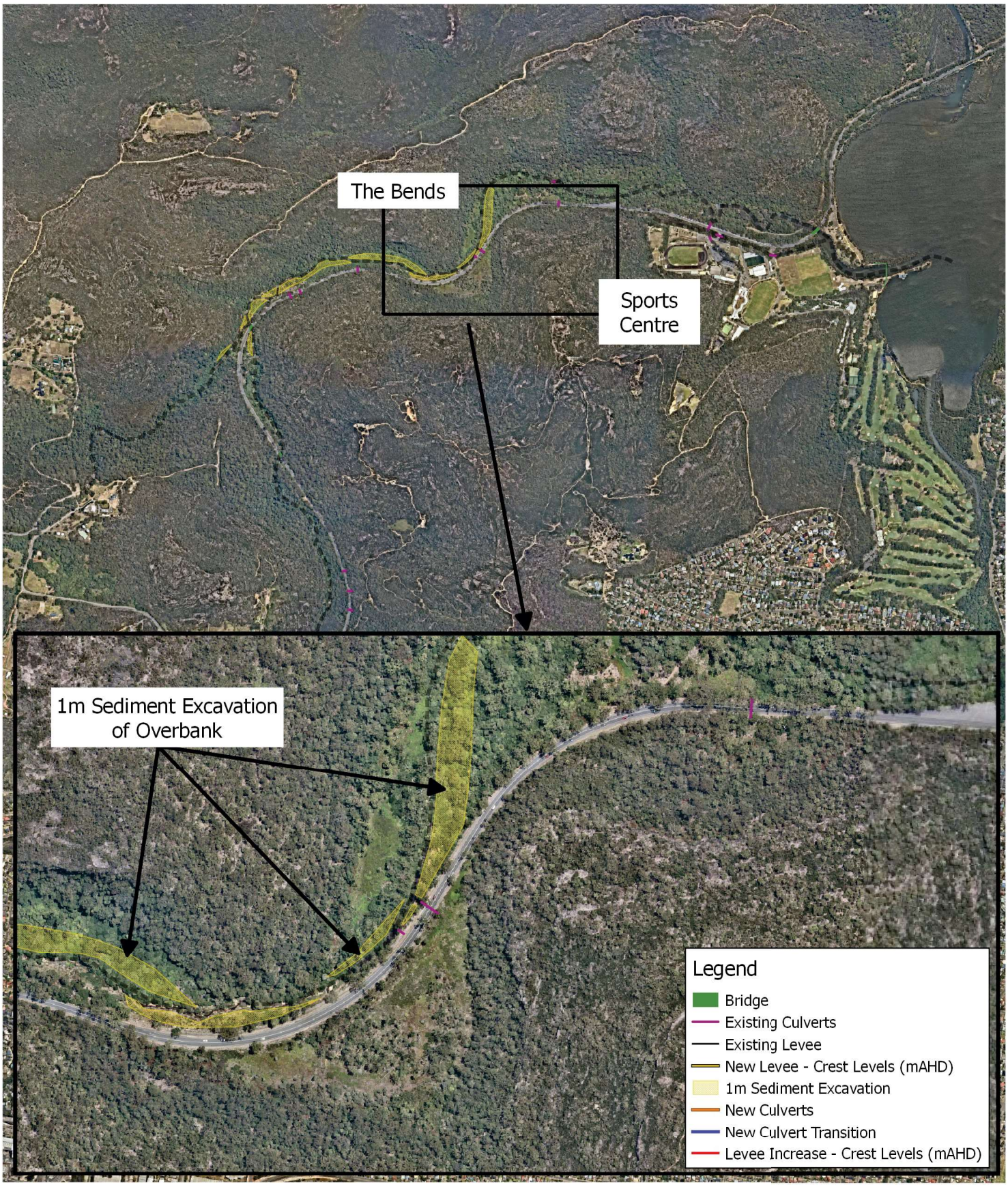

Title: Option B5- Removal of Overbank Sediment (1m)

Figure: F5

Rev: 1

Project: Wakehurst Parkway- Options Analysis

Disclaimer: While all reasonable care has been taken to ensure the information contained on this map is up to date and accurate, this map contains data from a number of sources - no warranty is given that the information contained on this is free from error or omission. Any reliance placed on such information shall be at the sole risk of the user. Please verify the accuracy of all information prior to using it. This map is not a design document.

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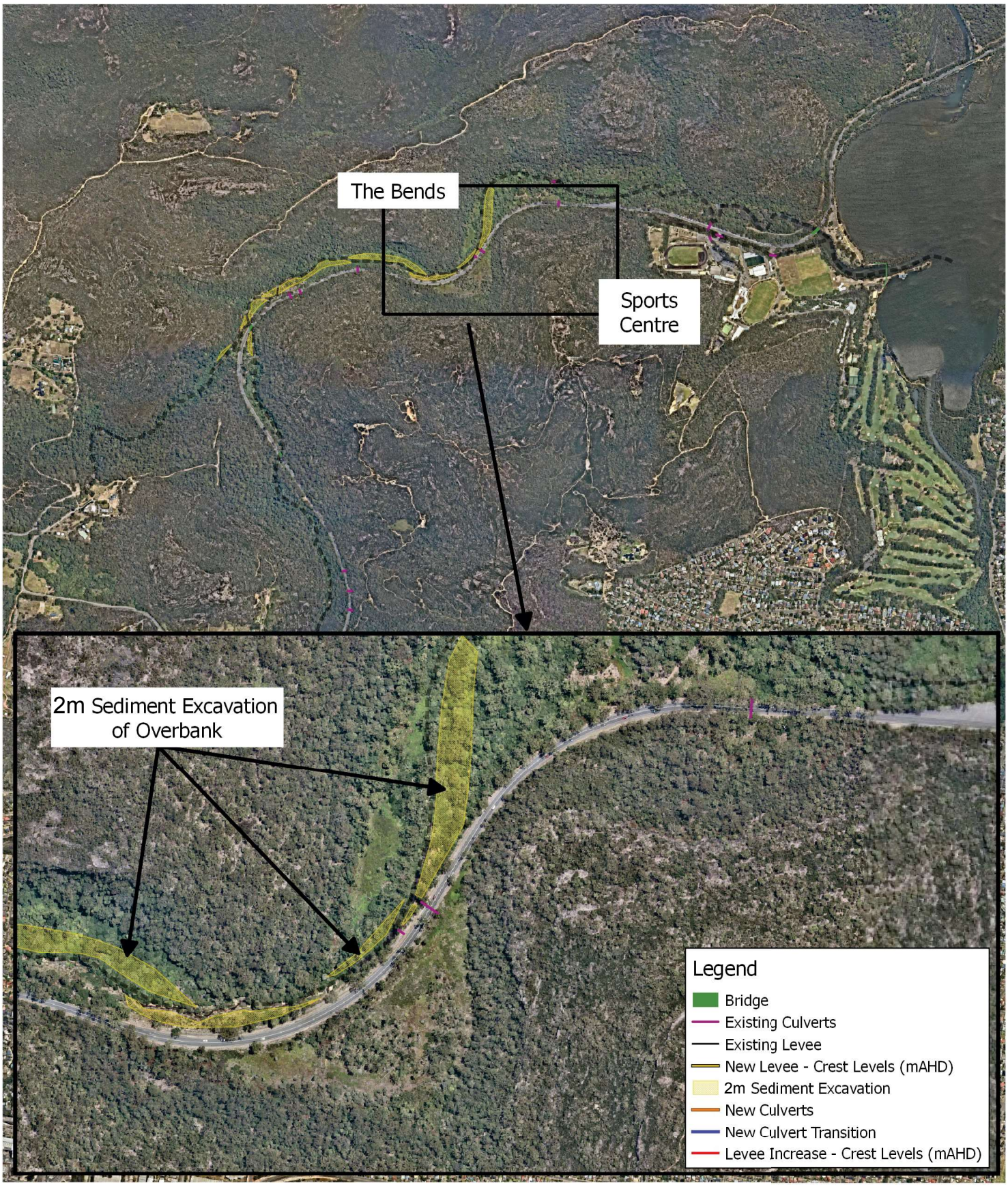
Main Map Only

TUFLOW ID: WP_()_GPU_Po8_014

Royal HaskoningDHV
Enhancing Society Together



Title: Option B6- Removal of Overbank Sediment (2m)

Figure: F6

Rev: 1

Project: Wakehurst Parkway- Options Analysis

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Main Map Only

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Royal HaskoningDHV
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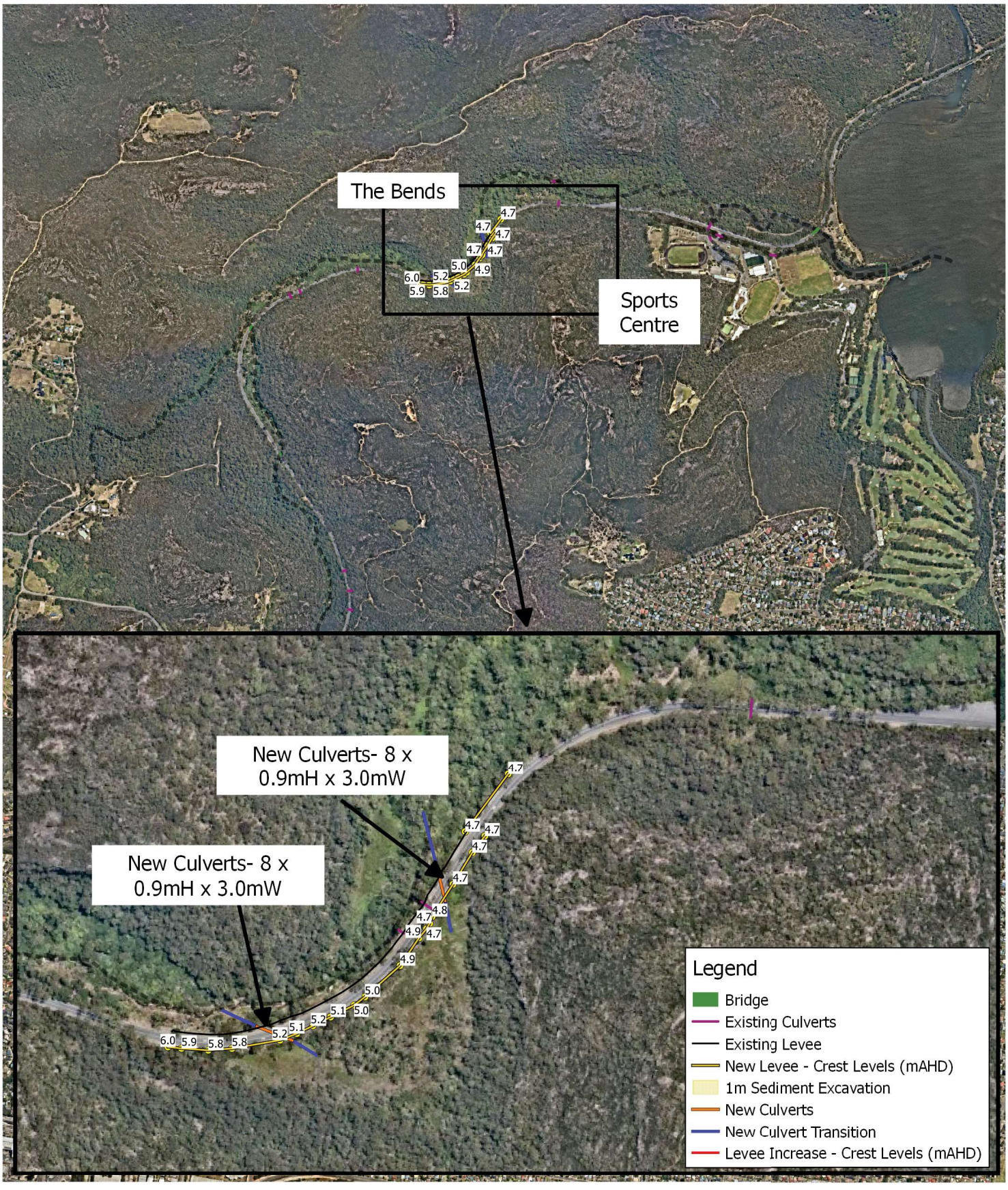

Title: Option B7- New Levee, Under Road Culverts

Figure: F7

Rev: 1

Project: Wakehurst Parkway- Options Analysis

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Main Map Only

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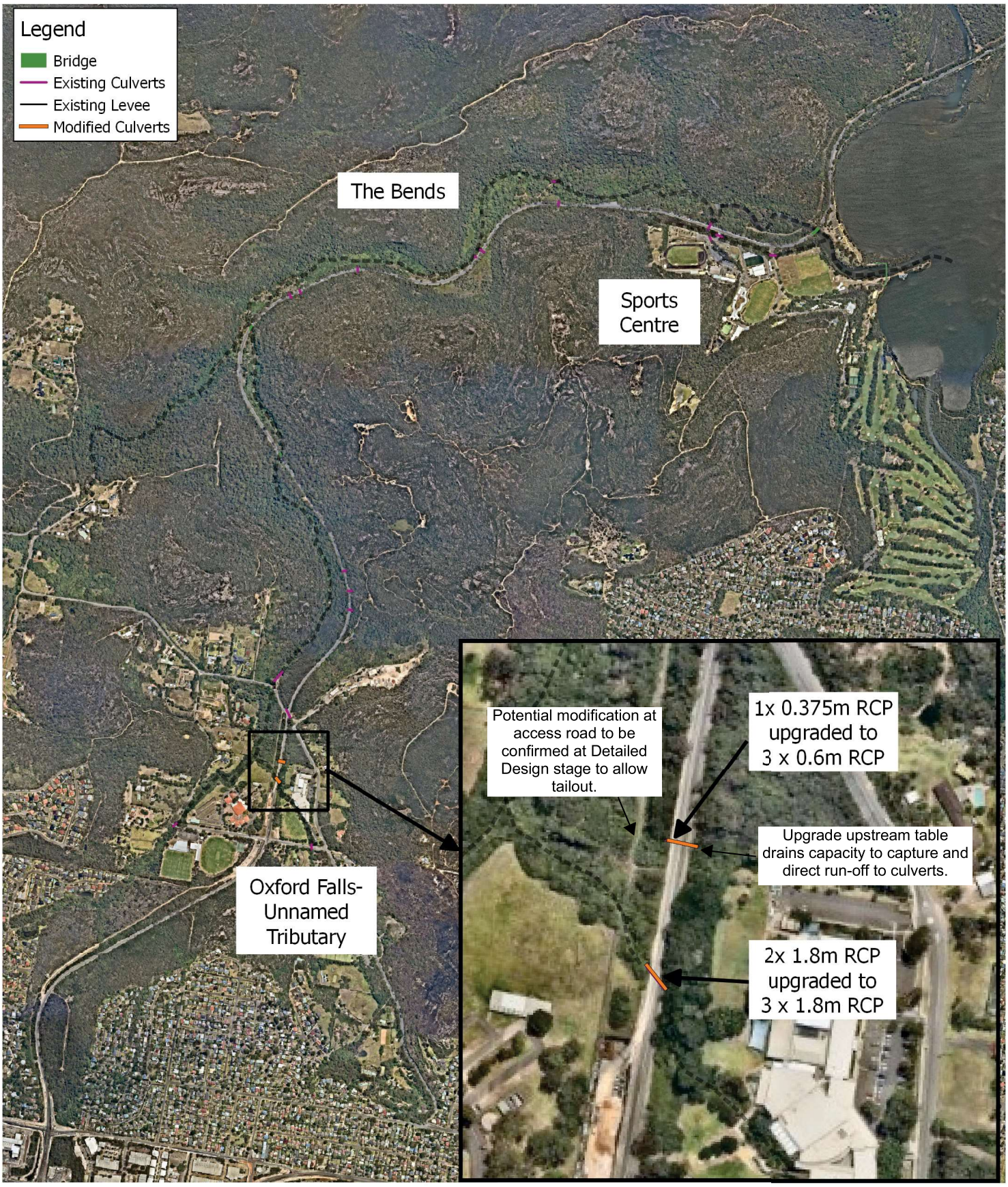
Enhancing Society Together



Title: Option O1- Culvert Capacity Increase

Figure: F8

Rev: 1

Project: Wakehurst Parkway- Options Analysis

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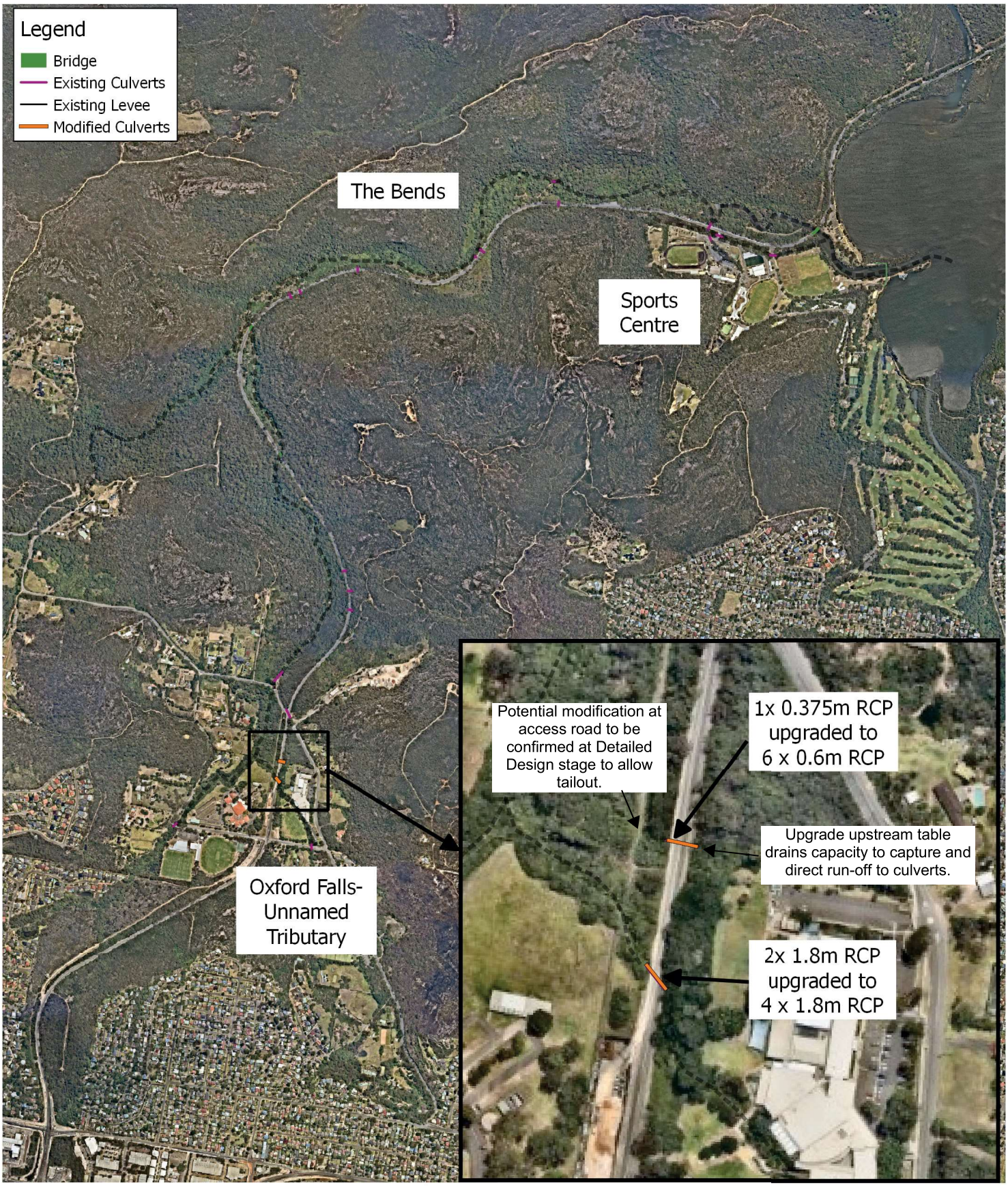

Title: Option O2- Culvert Capacity Increase (2 year immunity)

Figure: F9

Rev: 1

Project: Wakehurst Parkway- Options Analysis

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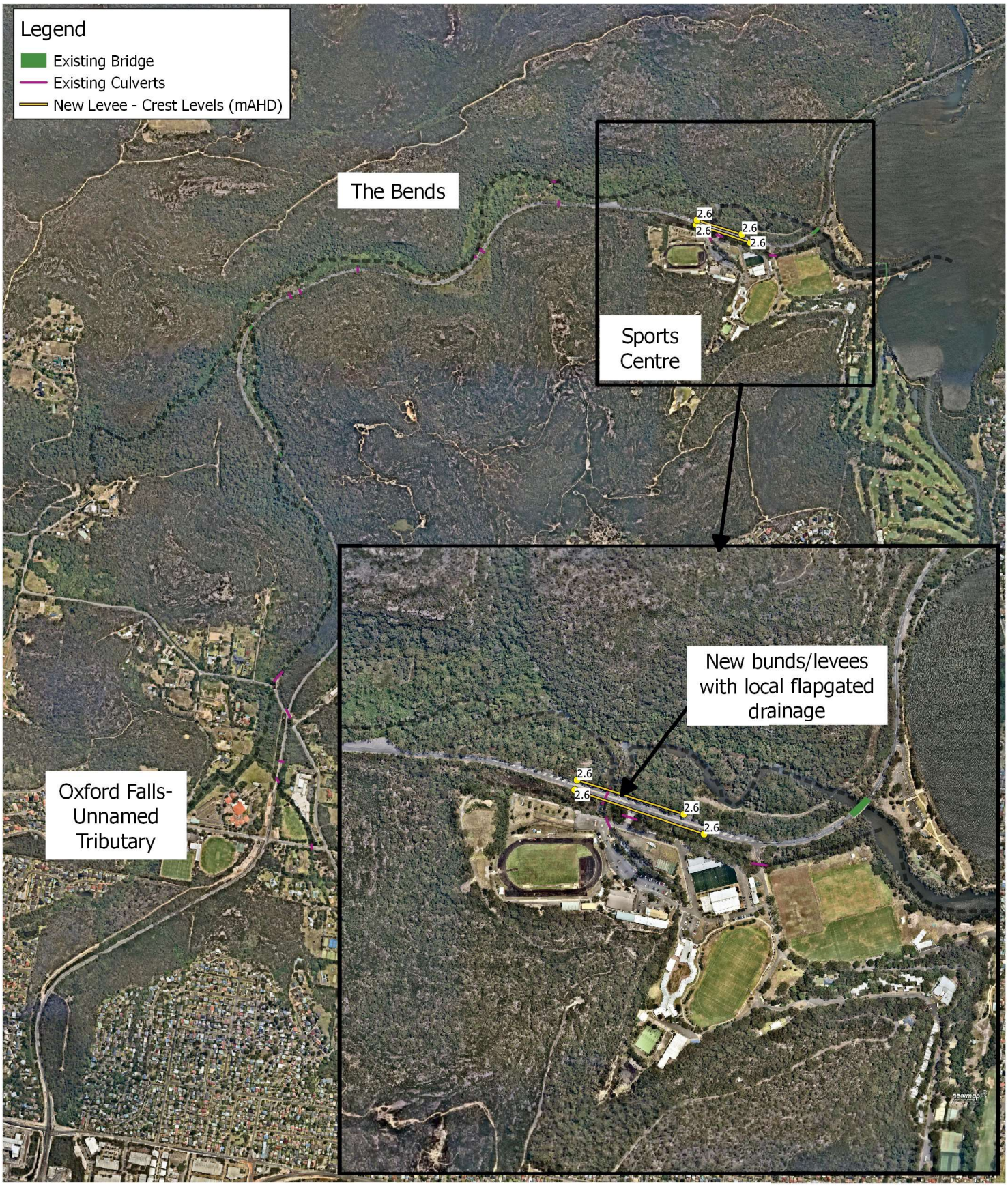

Title: Option S1- Bunds and localised low point drainage

Figure:	Rev:
F10	1

Project: Wakehurst Parkway- Options Analysis

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Main Map Only

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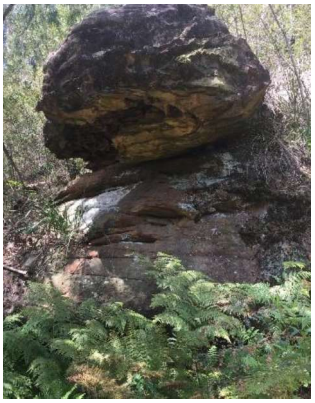
APPENDIX D – Heritage Assessment













Wakehurst Parkway Flood Mitigation

Due Diligence Archaeological Assessment

December 2018

Navin Officer

heritage consultants Pty Ltd

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Document control

Project no.:	190030
Project client:	Northern Beaches Council
Project proponent:	Northern Beaches Council
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Local Government Area:	Northern Beaches Council - Narrabeen

Document revision status

Author	Revision number	Internal review	Date issued
Jasmine Fenyvesi	1	Nicola Hayes	1/11/18
Nicola Hayes	2		6/12/18

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- Descriptive text and data relating to Aboriginal objects which must, by law, be provided to OEH for its purposes and use;
- Information which, under Australian law, can be identified as belonging to Indigenous intellectual property; and
- Content which was sourced from and remains part of the public domain.

Cover photographs: NOHC October 2018

EXECUTIVE SUMMARY

This report documents the results of a Due Diligence archaeological assessment of the Wakehurst Parkway Flood Mitigation project.

This assessment is undertaken to satisfy the NSW Office of Environment and Heritage *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales*:

The current project is focused on the 4.5 kilometre stretch of road running alongside Middle Creek, from Oxford Falls to Narrabeen Lagoon, where regular flooding occurs, causing the road to be closed.

Three locations in particular have been identified as problematic areas for over-road flooding:

- The Sports Academy;
- The Bends; and
- Oxford Falls.

As part of works to counteract these flooding occurrences the Northern Beaches Council has proposed a series of flood mitigation options including; sediment removal, culvert upgrades, stream creation/ widening, and the implementation/ upgrade of levees. All of these options would require some level of ground disturbance.

58 Aboriginal site recordings and an Aboriginal place are listed on the OEH AHIMS for the area around the Wakehurst Parkway study area. None are located within the current study area.

Two locally listed historic sites sit in close proximity to the study area. Middle Creek Bridge No. 2 (I151) sits 10 metres away from the sediment removal area at The Bends, and Bridge No. 3 over Middle Creek (I146) sits 25 metres away from the proposed channel at the Sports Academy. There are no plans for the heritage sites to be impacted by the proposal.

Background research and field inspection of the study area did not identify any Aboriginal sites or potential archaeological deposits (PADs) in the study area. The area has been disturbed since European exploration of the area. The construction of Wakehurst Parkway and sediment build-up have had a massive impact on the area in particular.

It is recommended that:

1. No further archaeological assessment is required for the Wakehurst Parkway Flood Mitigation project.

2. The unanticipated discovery protocols included in Appendix 2 should be put in place for the project.

3. A copy of this report should be provided to the Metro Local Aboriginal Land Council.

~ o0o ~

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1 INTRODUCTION

1.1 Project Framework

This assessment is undertaken to satisfy the NSW Office of Environment and Heritage *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales*.

This Code of Practice helps individuals and organisations to exercise due diligence when conducting activities that may harm Aboriginal objects and to identify whether they need to apply for an Aboriginal Heritage Impact Permit (AHIP) (NSW DECCW 2010: 2).

The Code sets out the steps to take in order to:

1 identify whether or not Aboriginal objects are, or likely to be, present in an area;

2 determine whether or not their activities are likely to harm Aboriginal objects (if present); and

3 determine whether an AHIP application is required.

The steps are (Figure 1.1):

Step 1: Determine if the activity will disturb the ground surface.

Step 2a: Search the AHIMS database and use any other sources of information of which you are already aware.

Step 2b: Determine if the activity is in area where landscape features indicate the presence of Aboriginal objects

Step 3: Can you avoid harm to the object or disturbance of the landscape feature?

Step 4: Desktop assessment and visual inspection

Step 5: Further investigation and impact assessment

This report documents the results of a Due Diligence archaeological assessment of the Wakehurst Parkway Flood Mitigation project.

The report was commissioned by Northern Beaches Council.

1.2 Contributors

Field inspection of the study area was undertaken on Friday 26th October 2018 by Jasmine Fenyvesi (NOHC), Joel Mason (NOHC), and Kevin Telford (Metro LALC).

This report was prepared by Jasmine Fenyvesi and internal review was completed by Nicola Hayes.

1.3 This Report

1.3.1 Outline

This report:

- Describes the Due Diligence assessment process (Section 1);
- Describes the proposed works (Section 2);

- Describes the methodology employed in the study, and outlines the results of the data and literature review(Section 3);
- Describes the environmental setting of the study area (Section 4);
- Describes the results of the data review, field survey and Aboriginal consultation program conducted in the context of the assessment (Section 5 and 6); and
- Provides management recommendations based on the results of the investigation (Section 7).

1.3.2 Restricted Information

Information in this report relating to the exact location of Aboriginal sites should not be published or promoted in the public domain. The following images and report sections should be restricted in a public version of this document:

- Figure 3.1;
- Section 3.2 (grid references and site location information); and
- Appendix 1 (AHIMS Searches)

No information provided by Aboriginal stakeholders in this report has been specifically identified as requiring access restrictions due to its cultural sensitivity.

1.3.3 Confidentiality

No information in this report has been classified as confidential.

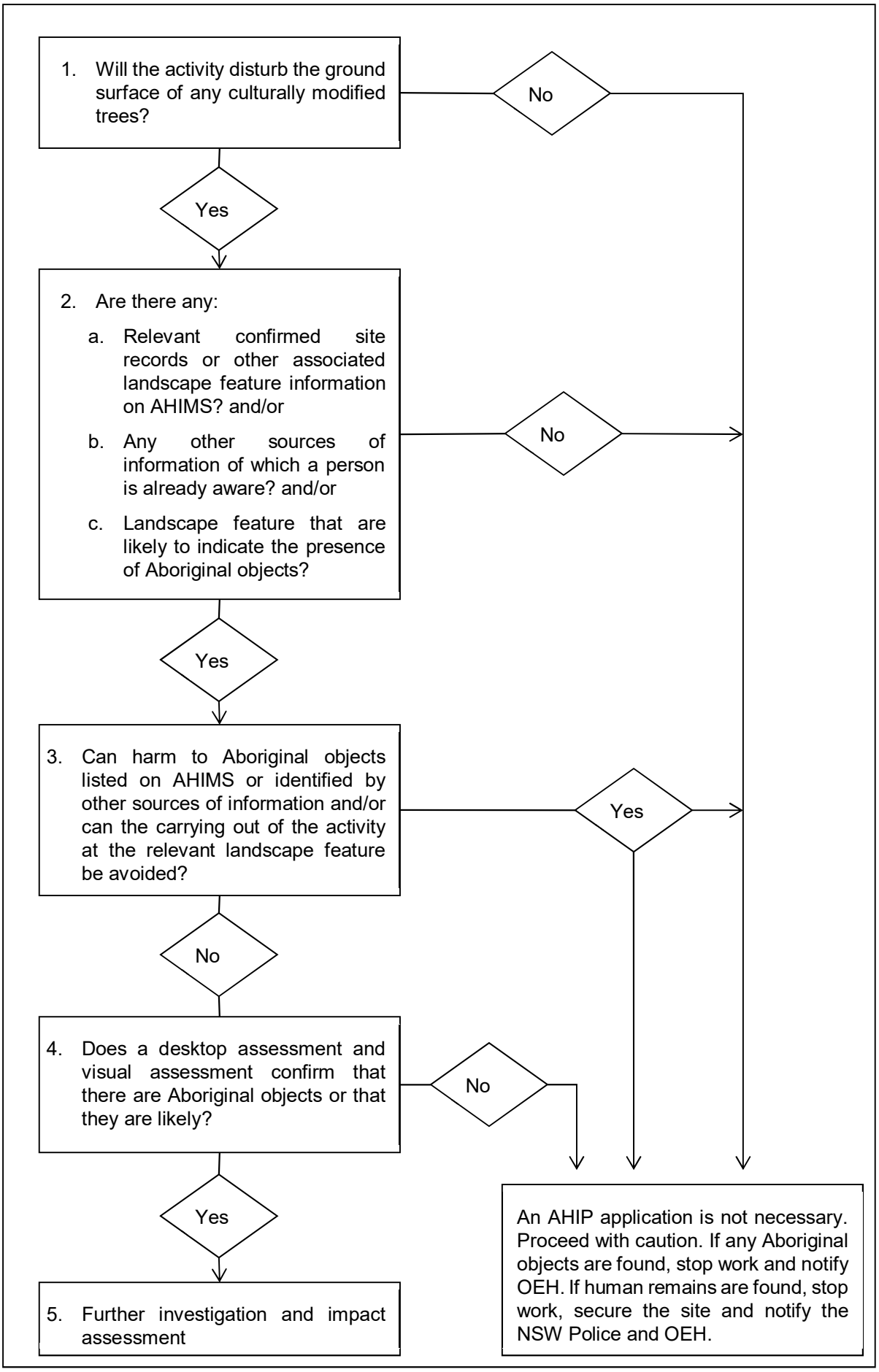

Figure 1.1 Generic due diligence process (from DECCW 2010)

2 PROJECT DESCRIPTION

Wakehurst Parkway is one of the main connecting roads in the Northern Beaches, running from Narrabeen, through Frenchs Forest, to North Balgowlah. It is approximately 17kms from the Sydney CBD. The current project is focused on the 4.5 kilometre stretch of road running alongside Middle Creek, from Oxford Falls to Narrabeen Lagoon, where regular flooding occurs, causing the road to be closed.

Three locations in particular have been identified as problematic areas for over-road flooding:

- The Sports Academy;
- The Bends; and
- Oxford Falls.

As part of works to counteract these flooding occurrences the Northern Beaches Council has proposed a series of flood mitigation options. Sediment removal from Middle Creek at The Bends, culvert upgrades, levee implementation and modification, and stream channel creation or widening are all being considered as viable options at this stage.

A series of environmental investigations have been undertaken for the project in order to assess the various flood mitigation options including the following:

- Detailed creek/ ground survey and bathymetric survey;
- Sediment and geomorphic study;
- Ecology and biodiversity study; and
- Flood mitigation options development study.

2.1 Will the activity disturb the ground surface? (Step 1)

The Wakehurst Parkway Flood Mitigation project may disturb the ground via the following construction activities:

- sediment removal of 1 or 2 metres depth across ~25,000 metre square area;
- culvert upgrades; and
- channel and levee modifications.

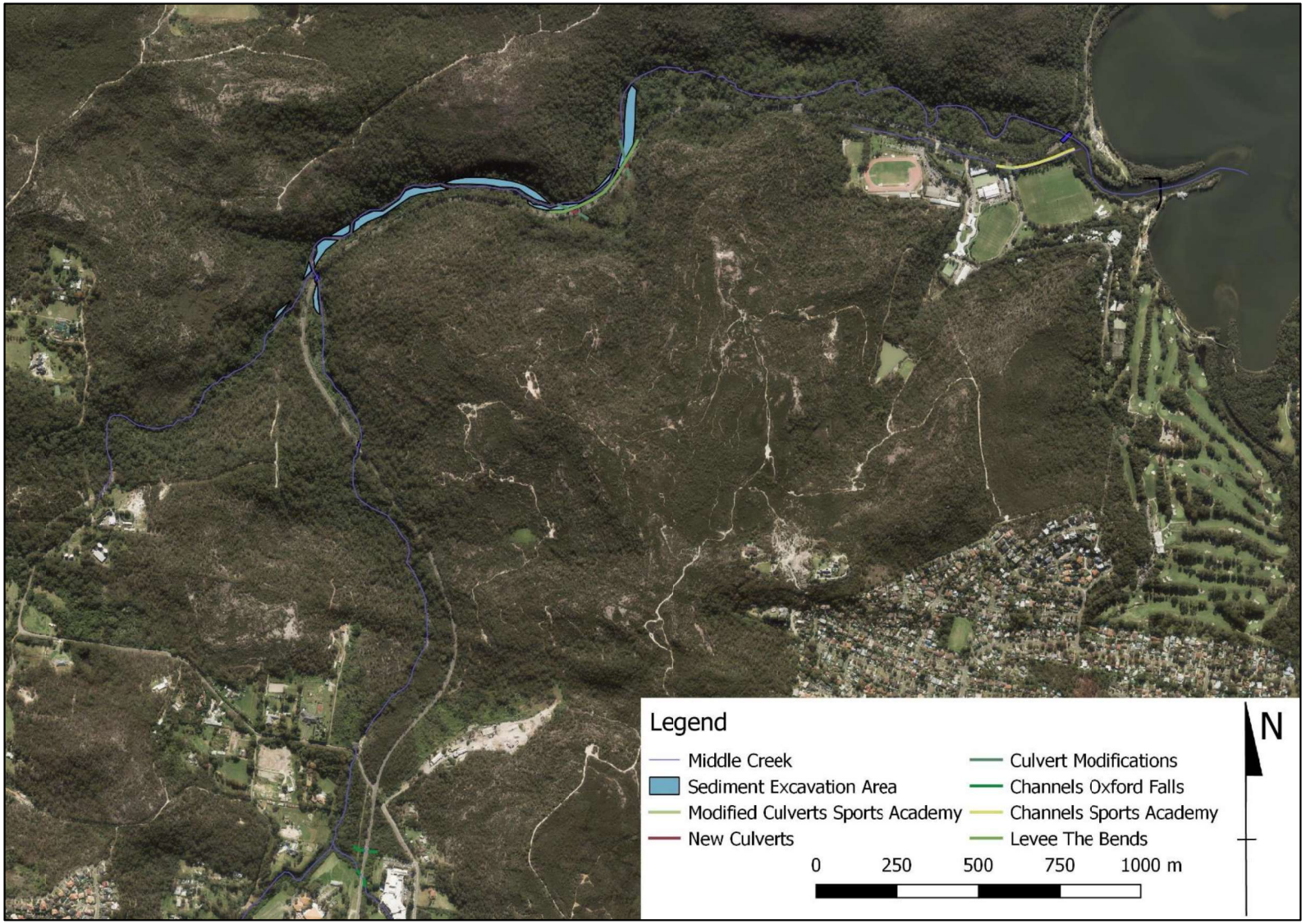

Figure 2.1 Wakehurst parkway Flood Mitigation Project Study Area

3 AHIMS SEARCH AND LITERATURE REVIEW

3.1 Methodology

A range of archaeological and historical data was reviewed for the Wakehurst Parkway study area and its surrounds. The literature and data review was used to determine if known Aboriginal and historical sites were located within the area under investigation, to facilitate site prediction on the basis of known regional and local site patterns, and to place the area within an archaeological and heritage management context. The review of documentary sources included heritage registers and schedules, local histories, and archaeological reports.

Aboriginal literature sources included the Aboriginal Heritage Information Management System (AHIMS) maintained by the NSW Office of Environment and Heritage (OEH) and associated files and catalogue of archaeological reports. Sources of historical information included regional and local histories, heritage studies and theses; parish maps; and where available, other maps, such as portion plans.

Searches were undertaken of the following statutory and non-statutory heritage registers and schedules:

- Aboriginal Heritage Information Management System (AHIMS) (NSW OEH);
- Atlas of Aboriginal Places (NSW OEH); and
- Heritage Schedule(s) attached to relevant Local Environmental Plans.

3.2 AHIMS Search Results

Fifty-eight Aboriginal site recordings and an Aboriginal place are listed on the OEH AHIMS for the area around the Wakehurst Parkway study area within the following (MGA/GDA) map grid references:

Lat, Long From : -33.7434, 151.2278

Lat, Long To : -33.7102, 151.2804

Sites comprise:

- 33 rock engraving sites;
- 6 shelters with art;
- 4 Potential Archaeological Deposits (PADs);
- 4 isolated finds;
- 4 art sites;
- 3 stone arrangements;
- 2 shelters with deposit;
- a quarry;
- a burial;
- a habitation structure; and
- an open camp site.

A copy of the AHIMS search is provided in Appendix 1.

No AHIMS listed sites are located within the current study area.

3.3 Previous Aboriginal Archaeological Research

In 1982, L. Haglund undertook a survey of the Wakehurst Parkway for a proposed pipeline that would run parallel with the road. It covered a distance of 3.4km, from the intersection of Middle Creek and Oxford Falls Rd heading north. She noted a number of small potential rock shelters along the rockfaces bordering the mouths of tributaries but found no sites alongside the parkway.

An archaeological survey of the floodplains was undertaken by McDonald in 1988 (1993), as well as an additional survey conducted by Gunn of the creek lines and alluvial flats within the Narrabeen area (1992). Neither survey identified any Aboriginal sites.

Archaeological investigations of the parkway are limited, however, a large number of sites were recorded within Garigal National Park, to the west of the parkway, and the surrounding area prior to the 1980's. A large number of the, roughly, 40 sites were recorded by government surveyor W.D. Campbell in the late 1800's and amateur archaeologist W. Bluff in the 1970's and 1980's (Gunn 1992, McDonald 2008).

Gunn (1992) conducted a survey of Garigal National park, revisiting a number of the previously recorded sites, and was able to conclude that out of 39 recorded sites 31 of these were considered to be reliable. Engravings, Rock Shelter Art, and Rock Shelter Occupation sites were the main site types encountered in the park, typical of the geology of the region. Gunn estimated that there were still a large number of sites yet to be discovered within the park.

3.4 Heritage Listed Items

Local Heritage items listed under Warrinngah Local Environment Plan (2011):

- Middle Creek Bridge No. 1 (I150)
- Middle Creek Bridge No. 2 (I151)
- Bridge No. 3 over Middle Creek (I146)

Local Archaeological Site listed under Warrinngah Local Environment Plan (2011):

- Ruins of Never Been Beaten Lime and Cement Works (A2)

Items I150 and A2 do not sit within the area of any planned works and should not be impacted. Items I146 and I151 sit in close proximity to planned works at the Sports Academy and The Bends, 10 metres and 30 metres respectively, however there are no plans for the bridges to be impacted by the works (see figure 3.2).

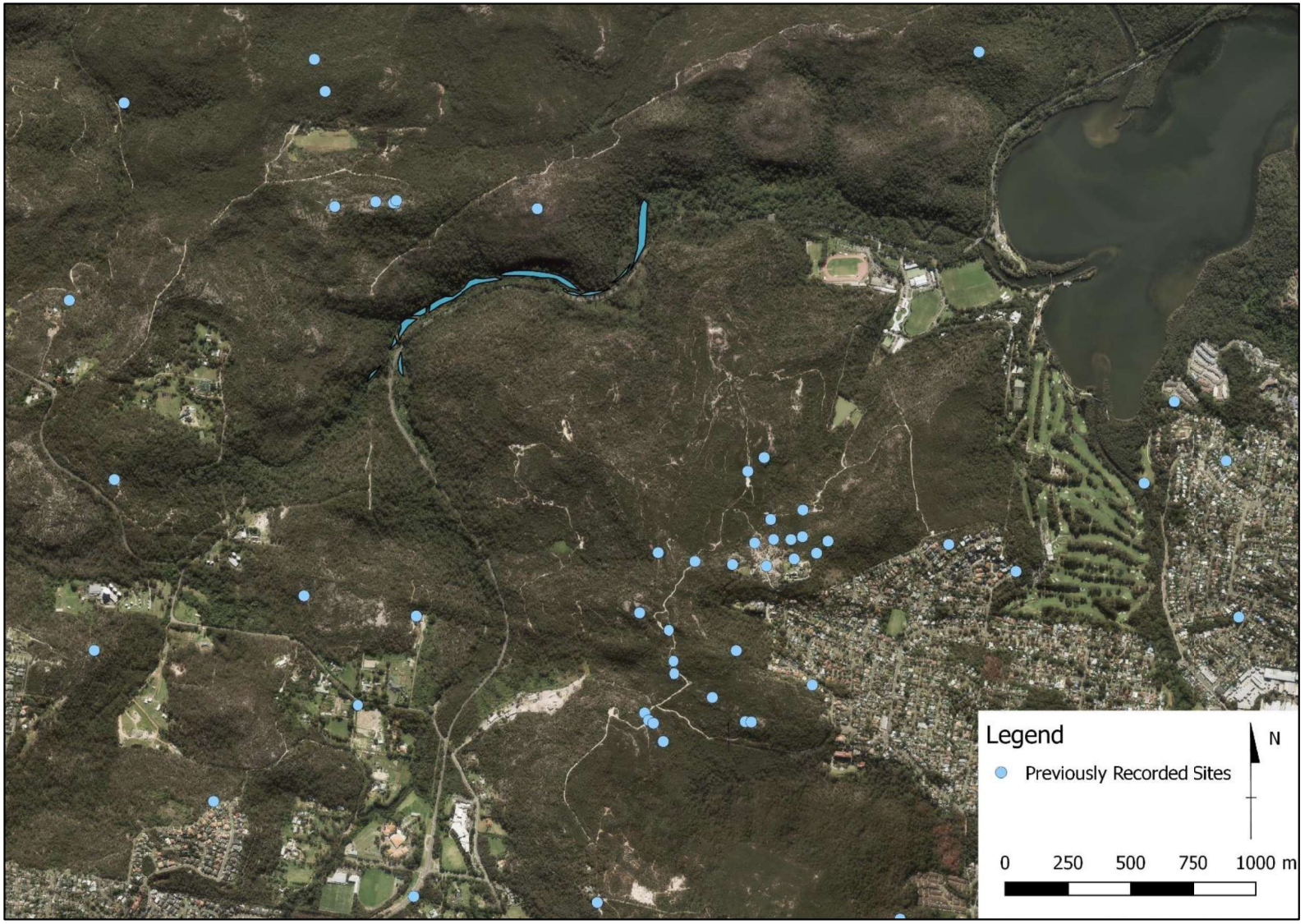

Figure 3.1 Previously Recorded Sites

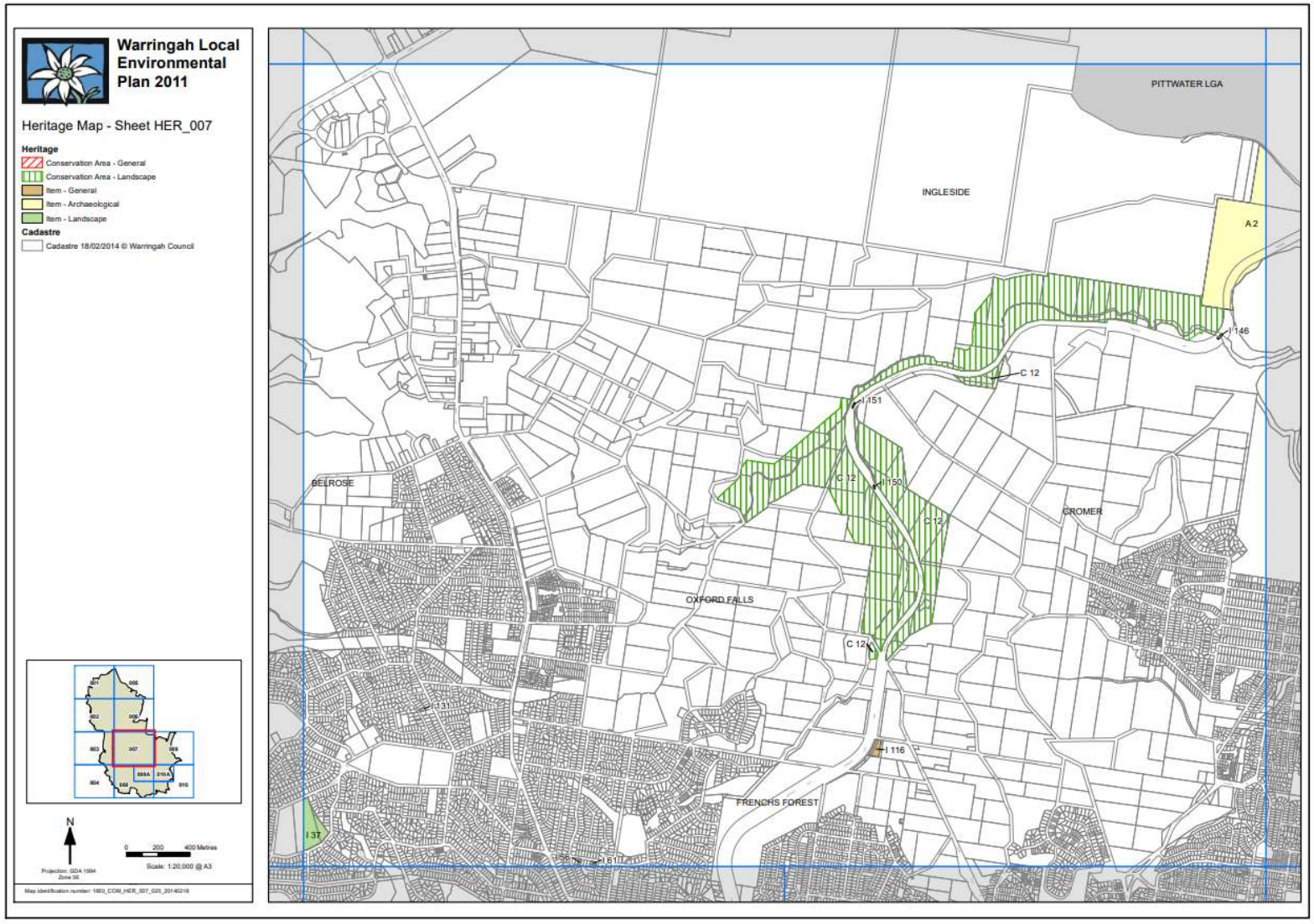

Figure 3.2 Heritage Listed Items (map courtesy of Warringah LEP, 2011)

4 LANDSCAPE CONTEXT

4.1 Landform, Geology, and Vegetation

The Wakehurst Parkway is located on the Northern coastal (Hornsby) plateau of the Hawkesbury sandstone country

Middle Creek is a category 3 stream, with a catchment of approximately 13 kilometres, draining into Narrabeen Lagoon. Elevation is at sea level at the mouth of Middle creek as it enters Narrabeen lagoon. Middle Creek is prone to 'flash flooding' due to the steep surrounding topography of the Hawkesbury Sandstone formation.

Primary rock found in the subject area is Triassic Hawkesbury Sandstone, however, Wianamatta Shales also occur. Erosion of the Sandstone has produced rock platforms, rock shelters, and other rock formations.

Large deposits of Quaternary Alluvium have accumulated in the valleys over the last 100 years. This appears to have stemmed from a single event of massive sand deposit, which may have been dislodged from the hillslopes possibly as a result of fires. The bulk of the sediment has been transported downstream and deposited on the floodplains and has built up to a depth of at least 1m in some areas.

Modelling suggests that the pre-1750's ecology of the Middle Creek riparian zone would have been comprised of Costal Swamp Forest in the lower reaches of the riparian zone and Sydney Sandstone Gully Forrest in the middle to upper reaches (Ecological, 2009).

There have been three principle vegetation classes identified in the wider area surrounding Wakehurst parkway (Gunn, 1992);

- Closed/ open scrub/ woodland along ridge crests and slopes;
- Low woodland in upper gullies; and
- Woodland/ open forest along the alluvial flats

4.2 Landscape History

The Narrabeen area was first settled by a solider named Reynolds who came over with the first fleet (Gunn 1992). Settlement grew throughout the early 1800's, the surrounding land was subject to market gardening, clearing, and low intensity farming.

The woodlands surrounding Deep Creek, which intersects with Wakehurst Parkway north of the main subject area, were subject to timber harvesting

Narrabeen Lakes had extensive shell beds which were dredged for the production of lime, a kiln was set up on the western shore of the lake, west of the Deep Creek entrance.

The growth of Narrabeen and surrounding suburbs in the early 1900's necessitated the construction of the Wakehurst Parkway in the 1940's as a major connecting road. Running between North Balgowlah and Narrabeen, the parkway has had the largest impact on the landscape of the area between Oxford Falls and Narrabeen lagoon, where it runs alongside Middle Creek. .

Due to the change in environment from European land use practises, namely the construction of the Wakehurst Parkway, the surrounding environment has changed substantially. This is particularly visible at The Bends, with high levels of sediment build up on the northern side of the road and a major shift in environment from on the southern side of the road from a riverine environment to a wetland environment (Ecological, 2009).



Figure 4.1 Car buried by the high level of recent sediment deposition

4.3 Is the activity in an area where landscape features indicate the presence of Aboriginal objects?

No surface Aboriginal objects were identified during the visual assessment and no previously recorded sites are located in the project area.

Previous investigations in the area surrounding the Wakehurst Parkway indicate that Aboriginal sites are likely to be found at higher altitudes on the rocky escarpments and are rarely found in the valleys. This dispersal of sites is likely not representative of the movement by Aboriginal people but rather a consequence of development in the area, such as the parkway and suburbs such as Narrabeen, which have likely destroyed a large number of occupational sites (Gunn 1992).

The vegetation native to the area surrounding Middle Creek indicate that this would have been an area utilised by Aboriginal people. Along the alluvial flats of Middle Creek a number of known food plants can be sourced including; Xanthorrhoea (nectar), cabbage palm (young leaves), Lillypilly (fruit), tree fern (pith), soft tree fern (pith), bracken (rhizome and young shoots), and orchid bulbs (Gunn 1992). A number of plants used to make wooden implements can be found in the surrounding study area; stringybark and paperbark (baskets), Xanthorrhoea (spears, fishing and hunting), casuarina (bark canoes), and kurrajong (fishing line). (Gunn 1992).

There are no local stone sources suitable for stone tool manufacturing. It is unlikely that people would have used this area for stone tool production.

The build up of sediment and the changes to the environment in the area surrounding The Bends have obscured any areas that could have held archaeological potential. European land disturbance have also greatly impacted on the other two study areas, Oxford Falls and the Sports Academy.



Figure 4.2 Oxford Falls study area facing north



Figure 4.3 The Bends study area facing south, southern side of road



Figure 4.4 The Bends study area facing west, northern side of road



Figure 4.5 The Sports Academy study area facing west

5 VISUAL ASSESSMENT

5.1 Results

No Aboriginal or non-Aboriginal sites were located during the field survey

Fifty-eight Aboriginal site recordings and an Aboriginal place are listed on the OEH AHIMS for the wider area surrounding the Wakehurst Parkway. None are located in close proximity to the study areas. The closest site is located over 250 metres away from The Bends.

Two locally listed historic sites sit in close proximity to the study area. Middle Creek Bridge No. 2 (I151) sits 10 metres away from the sediment removal area, and Bridge No. 3 over Middle Creek (I146) sits 25 metres away from a proposed channel at the Sports Academy. There are no plans for the heritage sites to be impacted by the proposal.

5.2 Field Methodology

Field Inspection of the study areas was undertaken on Friday 26th October 2018 by Jasmine Fenyvesi (NOHC), Joel Mason (NOHC), and Kevin Telford (Metro LALC).

The study areas were inspected for artefacts, ground surface exposures, vegetation cover, ground conditions and likely soil depth and characteristics.

5.3 Survey Coverage and Visibility Variables

No aboriginal or historical sites or areas of archaeological potential were identified in the Wakehurst Parkway study areas.

The visibility across the study area was low <10% due to vegetation cover, sediment build up, and introduced gravels from the road surface as well as various other impacts of the road.

The project study area has been heavily disturbed through past land use. It is therefore concluded that there is little or no archaeological potential within the current project study area.

6 IMPACT ASSESSMENT AND RECOMMENDATIONS

6.1 Can harm be avoided?

There will be no direct impacts to Aboriginal and historical heritage items.

The flood mitigation study area is located adjacent to heritage listed items Middle Creek Bridge No. 2 (I151) and Bridge No. 3 over Middle Creek (I146). No heritage items will be directly impacted by the current project. Changes to the current project outline may have visual and indirect impacts to the item.

6.2 Recommendations

It is recommended that:

1. No further archaeological assessment is required for the Wakehurst Parkway Flood Mitigation project.

2. The unanticipated discovery protocols included in Appendix 2 should be put in place for the project.

3. A copy of this report should be provided to the Metro Local Aboriginal Land Council.

7 REFERENCES

Ecological 2009 Middle Creek- Management Plan. Report to Warringah Council.

Gunn, R.G. 1992 Garigal National Park Archaeological Survey. A report to NPWS.

Haglund, L. 1982 Report on Survey for Archaeological Relics on the Wakehurst Parkway Route, Frenchs Forest, Sydney, N.S.W. A report to MWS & DB.McDonald, B. 199. Archaeological Survey near Narrabeen Lakes – Middle Creek EIS. A report to Paterson Britton & Partners on behalf of Warringah Council.

NSW DECCW 2010 Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales.

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APPENDIX 1

AHIMS AND OTHER HERITAGE REGISTER SEARCH RESULTS

Office of Environment & Heritage

AHIMS Web Services (AWS)
Search Result

Purchase Order/Reference : Wakehurst parkway

Client Service ID : 369136

Navin Officer Heritage Consultants Pty Ltd

4/71 Leichhardt Street
Kingston Australian Capital Territory 2604

Attention: Nicola Hayes

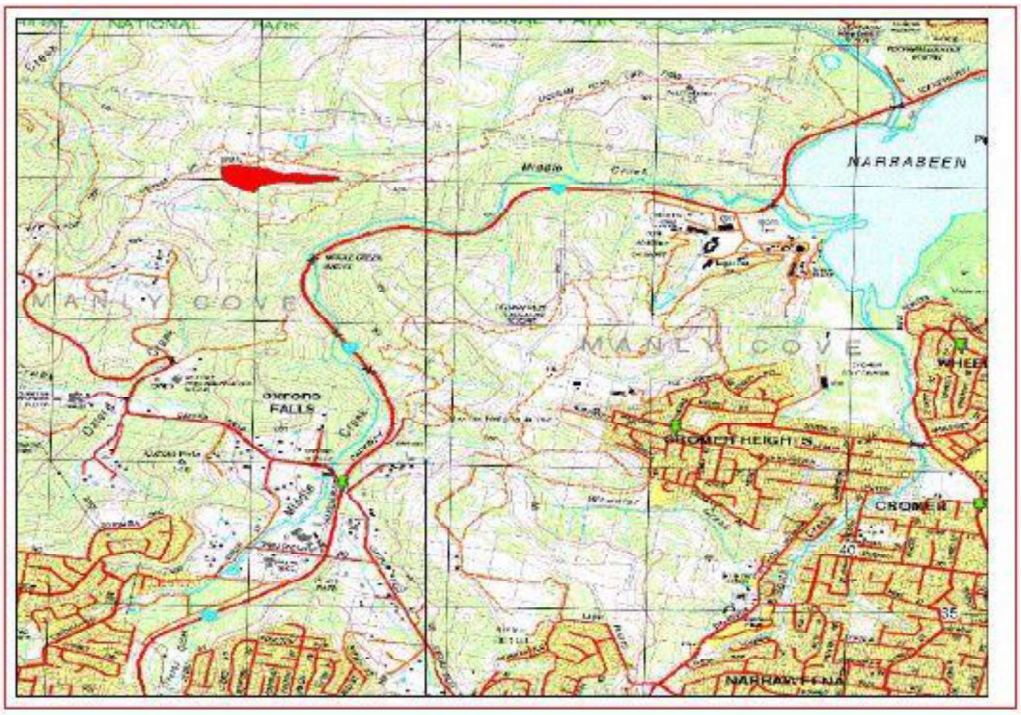
Email: nhayes@nohc.com.au

Date: 07 September 2018

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lat, Long From : -33.7434, 151.2278 - Lat, Long To : -33.7102, 151.2804 with a Buffer of 0 meters, conducted by Nicola Hayes on 07 September 2018.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of the Office of the Environment and Heritage AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

58	Aboriginal sites are recorded in or near the above location.
1	Aboriginal places have been declared in or near the above location. *

ID	Aboriginal Place Name
114	Moon Rock

Office of Environment & Heritage NSW GOVERNMENT

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : Wakehurst parkway

Client Service ID : 369136

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
45-6-2219	Cromer Shelter;	GDA	56	339744	6266540	Closed site	Valid	Art (Pigment or Engraved) : -	Shelter with Art	1907
	Contact	Recorders	Mary Dallas Consulting Archaeologists,Mr.Phil Hunt					Permits		
45-6-2274	Frenchs Forest - (refer to 45-6-1273)	AGD	56	337195	6264955	Open site	Valid	Art (Pigment or Engraved) : -	Rock Engraving	
	Contact	Recorders	Mr.Phil Hunt,Melanie Kennedy					Permits		
45-6-2315	GA-2;Garrigal NP;	GDA	56	337829	6267989	Closed site	Valid	Art (Pigment or Engraved) : -	Shelter with Art	2227
	Contact	Recorders	Robert "Ben" Gunn					Permits		
45-6-2318	Dharug N.P.;	AGD	56	336070	6268220	Closed site	Valid	Art (Pigment or Engraved) : -	Shelter with Art	1333
	Contact	Recorders	Warren Bluff					Permits		
45-6-1273	Belrose.	AGD	56	337230	6265050	Open site	Valid	Art (Pigment or Engraved) : -	Rock Engraving	1891
	Contact	Recorders	Mr.Phil Hunt,Charles.D Power					Permits		
45-6-1275	Belrose;	AGD	56	337270	6264946	Open site	Valid	Art (Pigment or Engraved) : -	Rock Engraving	
	Contact	Recorders	ASRSYS					Permits		
45-6-2465	Oxford Falls 1;	AGD	56	335952	6266033	Open site	Valid	Artefact : -	Isolated Find	3462
	Contact	Recorders	Mr.Matthew Barber					Permits		
45-6-0563	Wheeler Creek;Mona Vale;	AGD	56	338152	6265783	Closed site	Valid	Artefact : -	Shelter with Deposit	
	Contact	Recorders	Ms.Bronwyn Conyers,L Hoad,Neil Stone					Permits		
45-6-1160	Oxford Creek	AGD	56	337240	6266170	Open site	Not a Site	Art (Pigment or Engraved) : -	Not an Aboriginal Site	
	Contact	Recorders	Young,M Young					Permits		
45-6-2197	Morgan Road 3;	GDA	56	336136	6266907	Open site	Valid	Art (Pigment or Engraved) : -	Rock Engraving	
	Contact	Recorders	Michael Guider					Permits		
45-6-2336	Red Hill, Narraweena 2	AGD	56	338269	6265990	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	Recorders	Michael Guider,Mr.Phil Hunt					Permits		
45-6-2337	Red Hill, Narraweena 1	AGD	56	337964	6265026	Open site	Valid	Art (Pigment or Engraved) : -	Rock Engraving	
	Contact	Recorders	Michael Guider					Permits		
45-6-0110	Narrabeen;	AGD	56	339489	6268424	Open site	Valid	Art (Pigment or Engraved) : -	Rock Engraving	
	Contact	Recorders	Fred McCarthy					Permits		
45-6-1493	Belrose	AGD	56	338823	6265895	Closed site	Valid	Artefact : -	Shelter with Deposit	940,2010

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Extensive search - Site list report

Your Ref/PO Number : Wakehurst parkway

Client Service ID : 369136

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
	Contact	Recorders	Ms.Laila Haglund					Permits		
45-6-0117	Belrose;Wheeler Creek;	AGD	56	338168	6265754	Open site	Valid	Art (Pigment or Engraved) : -	Rock Engraving	
	Contact	Recorders	Young,Ms.Lisa Campbell					Permits		
45-6-0118	Belrose;Wheeler Creek;	AGD	56	338226	6265669	Open site	Valid	Art (Pigment or Engraved) : -	Rock Engraving	1891
	Contact	Recorders	Young,Ms.Lisa Campbell					Permits		
45-6-0119	Belrose;Wheeler Creek;	AGD	56	338187	6265742	Open site	Valid	Art (Pigment or Engraved) : -	Rock Engraving	371,1891
	Contact	Recorders	Young,Ms.Lisa Campbell					Permits		
45-6-0120	Belrose;Wheeler Creek;	AGD	56	338272	6265940	Open site	Valid	Art (Pigment or Engraved) : -	Rock Engraving	1891
	Contact	Recorders	Young,Ms.Lisa Campbell					Permits		
45-6-0121	Wheeler Creek; Belrose WARR - 49	AGD	56	338425	6265845	Open site	Valid	Art (Pigment or Engraved) : 3	Rock Engraving	1891
	Contact	Recorders	Young,Ms.Lisa Campbell,Mr.Phil Hunt					Permits		
45-6-0122	Wheeler Creek;Belrose;	AGD	56	338657	6266556	Open site	Valid	Art (Pigment or Engraved) : -	Rock Engraving	
	Contact	Recorders	Young,Ms.Lisa Campbell					Permits		
45-6-0123	Belrose;Wheeler Creek;	AGD	56	338738	6266476	Open site	Valid	Art (Pigment or Engraved) : -	Rock Engraving	
	Contact	Recorders	Young,Ms.Lisa Campbell					Permits		
45-6-0124	Wheeler Creek;Belrose;	AGD	56	338784	6266487	Open site	Valid	Art (Pigment or Engraved) : -	Rock Engraving	
	Contact	Recorders	Young,Ms.Lisa Campbell					Permits		
45-6-0125	Belrose;Wheeler Creek;	AGD	56	338786	6266594	Open site	Valid	Art (Pigment or Engraved) : -	Rock Engraving	1333
	Contact	Recorders	Young,Ms.Lisa Campbell					Permits		
45-6-0126	Belrose;Wheeler Creek	GDA	56	338989	6266661	Open site	Valid	Art (Pigment or Engraved) : -	Rock Engraving	
	Contact	Recorders	Young,Ms.Lisa Campbell,Mr.Phil Hunt					Permits		
45-6-0127	Wheeler Creek;Belrose;	AGD	56	338640	6266370	Open site	Valid	Art (Pigment or Engraved) : -	Rock Engraving	
	Contact	Recorders	Young,Ms.Lisa Campbell					Permits		
45-6-0128	Belrose;Wheelers Creek;	AGD	56	338505	6266376	Open site	Valid	Art (Pigment or Engraved) : -	Rock Engraving	
	Contact	Recorders	Young,Ms.Lisa Campbell					Permits		
45-6-0129	Wheeler Creek;Belrose	GDA	56	338855	6266590	Open site	Valid	Art (Pigment or Engraved) : -	Rock Engraving	1329
	Contact	Recorders	Young,Ms.Lisa Campbell,Mr.Phil Hunt					Permits		

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SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
45-6-0303	Belrose;	AGD	56	337006	6265814	Open site	Valid	Art (Pigment or Engraved) : -	Rock Engraving	1891
	Contact	Recorders	Young,W Walton					Permits		
45-6-0224	Belrose (Moon Rock)	AGD	56	337079	6267825	Open site	Valid	Stone Arrangement : -, Art (Pigment or Engraved) : -	Rock Engraving,Stone Arrangement	2212
	Contact	Recorders	Young,Ms.Lisa Campbell					Permits		
45-6-0225	Belrose (Moon Rock) A	AGD	56	337161	6267830	Open site	Valid	Art (Pigment or Engraved) : -, Stone Arrangement : -	Rock Engraving,Stone Arrangement	371,2212
	Contact	Recorders	Young,Ms.Lisa Campbell					Permits		
45-6-0082	Collaroy;Long Reef Ridge;Group 44;	AGD	56	340530	6266166	Open site	Valid	Art (Pigment or Engraved) : -	Rock Engraving	
	Contact	Recorders	Fred McCarthy					Permits		
45-6-0083	Collaroy;Long Reef Ridge;Group 44;	AGD	56	340150	6266701	Open site	Valid	Art (Pigment or Engraved) : -	Rock Engraving	
	Contact	Recorders	Fred McCarthy					Permits		
45-6-0088	War Veterans Estate, Narrabeen	AGD	56	340480	6266790	Open site	Valid	Art (Pigment or Engraved) : -	Rock Engraving	4539
	Contact	Recorders	Kate Sullivan					Permits		
45-6-0089	Belrose;Wheelers Creek;Group 121;	AGD	56	338580	6265747	Open site	Valid	Art (Pigment or Engraved) : -	Rock Engraving	
	Contact	Recorders	J.C Lough					Permits		
45-6-0092	Narrabeen Lakes;	AGD	56	340270	6267027	Closed site	Valid	Art (Pigment or Engraved) : -	Shelter with Art	
	Contact	Recorders	W Walton					Permits		
45-6-0226	Belrose (Moon Rock) B	AGD	56	336912	6267806	Open site	Valid	Art (Pigment or Engraved) : -	Rock Engraving	371,1891,2212
	Contact	Recorders	Ms.Lisa Campbell					Permits		
45-6-0785	Belrose;	AGD	56	338132	6266183	Open site	Valid	Stone Arrangement : -	Stone Arrangement	1891
	Contact	Recorders	Young,I.M Sim					Permits		
45-6-0822	Belrose;DC/RE;	GDA	56	337260	6268010	Open site	Valid	Art (Pigment or Engraved) : -	Rock Engraving	371,2212
	Contact	Recorders	Young,University of Sydney,Mr.Phil Hunt					Permits		
45-6-0823	Belrose;DC/RFa;	GDA	56	337254	6268012	Open site	Valid	Art (Pigment or Engraved) : -	Rock Engraving	371
	Contact	Recorders	Young,University of Sydney					Permits		

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SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
45-6-1850	Middle Creek;	GDA	56	338735	6266995	Closed site	Valid	Art (Pigment or Engraved) : -, Stone Quarry : -, Artefact : -	Quarry,Shelter with Art	
	Contact	Recorders	A Heath,Mr.Phil Hunt					Permits		
45-6-1015	Belrose;	AGD	56	337964	6265026	Open site	Valid	Art (Pigment or Engraved) : -	Rock Engraving	1447,1891
	Contact	Recorders	Ms.Lisa Campbell					Permits		
45-6-1593	Terrey Hills;	AGD	56	336831	6268394	Open site	Valid	Art (Pigment or Engraved) : -	Rock Engraving	1333
	Contact	Recorders	Warren Bluff					Permits		
45-6-1613	Belrose;Warringah;	AGD	56	336874	6268266	Open site	Valid	Art (Pigment or Engraved) : -	Rock Engraving	1333
	Contact	Recorders	Warren Bluff					Permits		
45-6-2790	Brooker Avenue Engraving Site 1	AGD	56	338034	6264770	Closed site	Valid	Art (Pigment or Engraved) : 2		
	Contact T Russell	Recorders	Mr.Phil Hunt,Mr.Paul Irish					Permits		
45-6-2787	Wheeler Creek Engraving WARR -59	GDA	56	338660	6265940	Open site	Valid	Aboriginal Resource and Gathering : 1		
	Contact T Russell	Recorders	Mr.Phil Hunt					Permits		
45-6-2788	Wheeler Creek , Belrose WARR - 49	AGD	56	338520	6266032	Open site	Deleted	Aboriginal Ceremony and Dreaming : 3		
	Contact T Russell	Recorders	Mr.Phil Hunt					Permits		
45-6-0526	Oxford Falls 4;Hornsby;	AGD	56	336790	6266251	Closed site	Valid	Art (Pigment or Engraved) : -	Shelter with Art	1333
	Contact	Recorders	Warren Bluff					Permits		
45-6-2944	WARR-043 Corymbia Shelter	AGD	56	336430	6265430	Closed site	Valid	Artefact : 1		
	Contact	Recorders	Mr.Phil Hunt					Permits		
45-6-2218	Kangaroo Engraving;	AGD	56	339369	6266456	Open site	Valid	Art (Pigment or Engraved) : -	Rock Engraving	1907
	Contact	Recorders	Mary Dallas Consulting Archaeologists					Permits		
45-6-3107	CFT1	GDA	56	338354	6266305	Open site	Valid	Potential Archaeological Deposit (PAD) : 1		
	Contact	Recorders	Ms.Vanessa Hardy,Cultural Heritage Connections Pty Ltd					Permits		
45-6-3128	Cromer Heights Shelter PAD	GDA	56	338310	6266615	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	Contact	Recorders	Mr.Phil Hunt					Permits		
45-6-3129	Cromer Heights - IF01	GDA	56	338460	6266580	Open site	Valid	Artefact : -		

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SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
	Contact	Recorders	Mr.Phil Hunt					Permits		
45-6-3130	Cromer Heights - Open Site	GDA	56	338670	6266940	Open site	Valid	Artefact : -		
	Contact	Recorders	Mr.Phil Hunt					Permits		
45-6-3141	Cromer Valley Rd 1 WARR060	GDA	56	338773	6266668	Open site	Valid	Art (Pigment or Engraved) : -		
	Contact	Recorders	Mr.Phil Hunt					Permits		
45-6-3142	Cromer Valley Rd 2 WARR061	GDA	56	338697	6266654	Open site	Valid	Art (Pigment or Engraved) : -		
	Contact	Recorders	Mr.Phil Hunt					Permits		
45-6-3143	Cromer Valley Rd 3 WARR065	GDA	56	338944	6266613	Open site	Valid	Art (Pigment or Engraved) : -		
	Contact	Recorders	Mr.Phil Hunt					Permits		
45-6-3207	MORGAN RD BELROSE	GDA	56	335957	6267623	Open site	Valid	Burial : 1, Potential Archaeological Deposit (PAD) : 1		
	Contact	Recorders	Wayne Brennan,Office of Environment & Heritage					Permits		
45-6-3579	Oxford Falls RS-1	GDA	56	339280	6265151	Open site	Valid	Habitation Structure : 1, Potential Archaeological Deposit (PAD) : 1		
	Contact	Recorders	Mr.Tyler Beebe,Eco Logical Australia					Permits		

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APPENDIX 2

UNANTICIPATED DISCOVERY PROTOCOLS



Protocol to follow in the event that Aboriginal object(s) or historical relics (other than human remains) are encountered and no AHIP has been approved

In the event that object(s) which are suspected of being Aboriginal object(s) or relic(s) are encountered during development works, then the following protocol will be followed:

1. Cease any further excavation or ground disturbance, in the area of the find(s);

    a. The discoverer of the find(s) will notify machinery operators in the immediate vicinity of the find(s) so that work can be temporarily halted; and

    b. The site supervisor and the Principal will be informed of the find(s).

2. Do not remove any find(s) or unnecessarily disturb the area of the find(s);

3. Ensure that the area of the find(s) is adequately marked as a no-go area for machinery or further disturbance, and that the potential for accidental impact is avoided;

4. Note the location and nature of the finds, and report the find to:

    a. Relevant project personnel responsible for project and construction direction and management, and

    b. Report the find to the Office of Environment and Heritage (OEH).

5. Where feasible, ensure that any excavation remains open so that the finds can be recorded and verified. An excavation may be backfilled if this is necessary to comply with work safety requirements, and where this action has been approved by the OEH. An excavation that remains open should only be left unattended if it is safe and adequate protective fencing is installed around it.

6. Following consultation with the relevant statutory authority (OEH), and, where advised, any other relevant stakeholder groups, the significance of the finds should be assessed and an appropriate management strategy followed. Depending on project resources and the nature of the find(s), this process may require input from a consulting heritage specialist.

7. Development works in the area of the find(s) may re-commence, if and when outlined by the management strategy, developed in consultation with, and approved by the relevant statutory authority.

8. If human skeletal material is encountered, the protocol for the discovery of human remains should be followed (refer attached).



Protocol to follow in the event of the discovery of suspected human remains

The following protocol will be actioned if suspected human material is revealed during development activities or excavations:

1. All works must halt in the immediate area of the find(s) and any further disturbance to the area of the find(s) prevented.

    c. The discoverer of the find(s) will notify machinery operators in the immediate vicinity of the find(s) so that work can be halted; and

    d. The site supervisor and the Principal/Project manager will be informed of the find(s).

2. If there is substantial doubt regarding a human origin for the remains, then consider if it is possible to gain a qualified opinion within a short period of time. If feasible, gain a qualified opinion (this can circumvent proceeding further along the protocol for remains which are not human). If conducted, this opinion must be gained without further disturbance to the find(s) or the immediate area of the find(s). (Be aware that the site may be considered a crime scene that retains forensic evidence). If a quick opinion cannot be gained, or the identification is positive, then proceed to the next step.

3. Immediately notify the following of the discovery:

    a. The local Police (this is required by law);

    b. An OEH archaeologist or Aboriginal Heritage Officer;

    c. Representative(s) from the Local Aboriginal Land Council; and

    d. The project archaeologist (if not already notified).

4. Co-operate and be advised by the Police and/or coroner with regard to further actions and requirements concerning the find area. If required, facilitate the definitive identification of the material by a qualified person (if not already completed).

5. In the event that the Police or coroner instigate an investigation, construction works are not to resume in the designated area until approval in writing is gained from the NSW Police.

6. In the event that the Police and/or Coroner advise that they do not have a continuing or statutory role in the management of the finds then proceed with the following steps:

7. If the finds are not human in origin but are considered to be archaeological material relating to Aboriginal occupation then proceed with Protocol for the discovery of Aboriginal objects (other than human remains).

8. If the finds are Aboriginal or probably Aboriginal in origin:

    a. Ascertain the requirements of OEH, the Heritage Branch, the Project Manager, and the views of the Local Aboriginal Land Council, and the project archaeologist.

    b. Based on the above, determine and conduct an appropriate course of action. Possible strategies could include one or more of the following:

        i. Avoiding further disturbance to the find and conserving the remains *in situ*;

        ii. Conducting archaeological salvage of the finds following receipt of any required statutory approvals;

iii. Scientific description (including excavation where necessary), and possibly also analysis of the remains prior to reburial;

iv. Recovering samples for dating and other analyses; and/or

v. Subsequent reburial at another place and in an appropriate manner determined by the Local Aboriginal Land Council.

9. If the finds are non-Aboriginal in origin:

c. Ascertain the requirements of the Heritage Branch, Project Manager, and the views of any relevant community stakeholders and the project archaeologist.

a. Based on the above, determine and conduct an appropriate course of action. Possible strategies could include one or more of the following:

a. Avoiding further disturbance to the find and conserving the remains *in situ*;

b. Conducting archaeological salvage of the finds following receipt of any required statutory approvals;

c. Scientific description (including excavation where necessary), and possibly also analysis of the remains prior to reburial;

d. Recovering samples for dating and other analyses; and/or

e. Subsequent reburial at another place and in an appropriate manner determined in consultation with the Heritage Office and other relevant stakeholders.

10. Construction related works in the area of the remains (designated area) may not resume until the proponent receives written approval in writing from the relevant statutory authority: from the Police or Coroner in the event of an investigation, from OEH in the case of Aboriginal remains outside of the jurisdiction of the Police or Coroner, and from the Heritage Branch in the case of non-Aboriginal remains outside of the jurisdiction of the Police or Coroner.

APPENDIX 3

STATUTORY AND POLICY CONTEXT[1]

[1] The following information is provided as a guide only. Readers are advised to seek qualified legal advice relative to legislative matters.

National Parks and Wildlife Amendment Bill 2010

The National Parks and Wildlife Amendment Bill 2010 (also known as the Omnibus Bill), was implemented on 1 October 2010 to amend the *National Parks and Wildlife Act 1974* (NPW Act). Existing offences relating to Aboriginal objects and places were replaced with new offences, including a strict liability offence, along with offence exemptions and defences.

Part 6 of the NPW Act provides specific protection for Aboriginal objects and declared Aboriginal places by establishing offences of harm. Harm is defined to mean destroying, defacing, damaging or moving an object from the land. There are a number of defences and exemptions to the offence of harming an Aboriginal object or place. One of the defences is that the harm was carried out under an Aboriginal Heritage Impact Permit (AHIP).

In practice, archaeologists use a methodology that groups 'Aboriginal objects' into various site classifications according to the nature, occurrence and exposure of archaeological material evidence. The archaeological definition of a site may vary according to survey objectives; however a site is not recognised or defined as a legal entity in the Act.

It should be noted that even single and isolated artefacts are protected as Aboriginal objects under the Act.

In 2010 the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* was adopted by clause 3A of the National Parks and Wildlife Regulation 2009 (NPW Regulation). The code allows for the subsurface test excavation of Aboriginal objects without the need for an AHIP. The code establishes the requirements for undertaking test excavation without an AHIP and establishes the requirements that must be followed when carrying out archaeological investigation in NSW where an application for an AHIP is likely to be made.

Additional amendments that commenced on 1 October 2010 include the introduction of new processes for Aboriginal Heritage Impact Permit (AHIP) applications, consultation guidelines to support the Aboriginal Heritage Impact Permits (AHIP) application process, and mechanical provisions such as the transfer and variations of conditions of AHIPs.

NSW Heritage Act 1977 and Heritage Amendment Acts 1998 & 2009

The purpose of these Acts is to ensure that the heritage of New South Wales is adequately identified and conserved. In practice the Acts have focused on items and places of non-indigenous heritage to avoid overlap with the NP&W Act, which has primary responsibilities for nature conservation and the protection of Aboriginal relics and places in NSW.

The *Heritage Amendment Act 1998* came into effect in April 1999. The Act instigated changes to the NSW heritage system, which were the result of a substantial review begun in 1992. A central feature of the amendments was the clarification and strengthening of shared responsibility for heritage management between local government authorities, responsible for items of local significance, and the NSW Heritage Council. The Council retained its consent powers for alterations to heritage items of State significance.

The *Heritage Amendment Act 2009* came into effect in October 2009. The Act includes greater fairness and rigour in the heritage listing process while retaining key elements of the current system, including local and State listings, and the Heritage Council.

One of the changes to the former Heritage Act has been the move from the arbitrary 50 year age-based definition for archaeology, to one based on significance where relics have to demonstrate local or State significance.

Under the *Heritage Act 1977* a 'relic' had been defined as any deposit which related to the European settlement of NSW and was 50 years old or more. This broad definition captured too many items – many of which would not generally be considered part of the State's archaeological heritage. This approach brings archaeological heritage management more consistently within the management of other heritage items, which is based on an assessment of significance. The previous definition of

archaeological relic encompassed a significant number of items over 50 years of age that had no heritage value.

The Heritage Act is concerned with all aspects of conservation ranging from the most basic protection against damage and demolition, to restoration and enhancement. It recognises two levels of heritage significance – State and Local significance across a broad range of values.

Some key provisions of the Act are:

- The establishment and functions of the Heritage Council (Part 2);
- Interim heritage orders (Part 3), the State Heritage Register (Part 3A);
- Heritage Agreements (Part 3B);
- Environmental planning instruments (Part 5);
- The protection of archaeological deposits and relics (Part 6); and
- The establishment of Heritage and Conservation Registers for state government owned and managed items (Part 7).

Generally this Act provides protection to items that have been identified, assessed and listed on various registers including State government section 170 registers, local government Local Environmental Plans and the State Heritage Register. The Interim Heritage Order provisions allow the minister or his delegates (local government may have delegated authority) to provide emergency protection to threatened places which have not been previously identified.

In addition, the Act includes provisions which relate to the definition and protection of relics.

APPENDIX E - Ecological Constraints Reports

Ecological Constraints & Impacts have been assessed and presented in the following Niche Report. The following table has been presented to show how the impacts in various areas map to the options presented in the main body of the report, in summary form.

Option	Description	Impacts Assessed	Native Vegetation Area (ha)	Significant Impacts
The Bends				
Option B1	*New levee*	*N/A*	*N/A*	*N/A*
Option B2	*New levee and removal of 1m depth of overbank sediment*	Sediment Removal	2.41	Likely
Option B3	*New levee, removal of 1m depth of overbank sediment and under-road culverts*	Sediment Removal + Bends (culverts)	2.41 + 0.22 = 2.63	Likely
Option B4	*New levee, removal of 1m depth of overbank sediment, under road culverts, and top up of existing levee.*	Sediment Removal + Bends (culverts)	2.41 + 0.22 = 2.63	Likely
Option B5	*Removal of overbank sediment (1m depth)*	Sediment Removal	2.41	Likely
Option B6	*Removal of overbank sediment (2m depth)*	*N/A*	*N/A*	*N/A*
Option B7	*New levee, under road culverts.*	Bends (culverts)	0.22	Likely
Oxford Falls Road				
Option O1	*Culvert capacity increase*	Oxford Falls	0.07	Not likely
Option O2	*Culvert capacity increase (additional to O1)*	Oxford Falls	0.07	Not likely
Sydney Academy of Sport and Recreation				
Option S1	*Bunds and localised low point drainage*	Sportsground	0.77	Likely

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Wakehurst Parkway Flood Mitigation Project

Preliminary Biodiversity Assessment

Prepared for Royal Haskoning DHV | 21 November 2019



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Document control

Project number	Client	Project manager	LGA
4604	Royal Haskoning DHV	Matthew Russell	Northern Beaches

Version	Author	Review	Status	Date
D1	Luella Cox, Cairo Forrest	Luke Baker	Draft	05 April 2019
Rev1	Luke Baker	Royal Haskoning DHV	Rev1	19 November 2019

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1. Introduction

1.1 Context

Niche Environment and Heritage (Niche) has prepared a preliminary biodiversity assessment for three potential flood mitigation impact sites, and one 'sediment removal' option, associated with the Wakehurst Parkway Flood Mitigation Project. The advice provided will be used to inform the feasibility of each site by providing information regarding biodiversity values and biodiversity offsetting costs associated with each of the options.

1.2 The project

Northern Beaches Council has been granted funding by the state government under the Stronger Communities Fund for the development of flood mitigation solutions along Wakehurst Parkway. Potential three flood mitigation options associated with the funding include:

- Extraction of the top 1 m of sand from the Middle Creek channel from Narrabeen Lagoon to the intersection of Middle Creek with Oxford Creek;
- Extraction of the top 1 m of sand within Middle Creek at Sydney Academy of Sport and Recreation and at the Bends Culverts only with a vegetation management program along the extent of the creek to reduce the presence of weeds and exotic vegetation;
- Upgrade of culverts;
- Dredging at the mouth of Middle Creek, downstream of Wakehurst Parkway;
- Small sediment basins and sediment traps;
- Stabilisation of fire trails;
- Construction of additional sediment control measures in the urban areas;
- Creek restoration to minimise sediment generation; and
- Vegetation removal to assist sediment movement.

The three sites considered for flood mitigation works include areas referred to as 'The Bends Culverts, The Sports Field and Oxley Falls', located within the Northern Beaches Local Government Area (LGA).

Another option, which is referred to as the 'sediment removal' option was also assessed, which entails a 1 m excavation footprint within the floodplain and riparian zone of Middle Creek, as well as enabling works (work areas, access tracks, ramps, etc.). The sediment removal option also occurs within 'The Bends Culverts'.

Collectively these areas are referred to as the 'Study Area' (Figure 1).

Each of these options are split into smaller 'sub-options' as detailed in Royal Haskoning DHV (2019) Wakehurst Parkway Flood Mitigation Feasibility Study, and have been summarised in Table 1.

1.3 Site location and description

The Study Area is located along Wakehurst Parkway within the Northern Beaches LGA (Figure 1). The flood mitigation sites are located immediately adjacent to Wakehurst Parkway road verge, and would require the direct disturbance to native vegetation and introduced vegetation to allow for machinery access to install appropriate sedimentation controls, and rehabilitated portions of Middle Creek.

A summary of the proposed option, including the relationship to the 'sub-options' as detailed in Royal Haskoning DHV (2019), has been provided in Table 1. The location of each of the options are also shown on Figures 2 to Figure 5.

Given the preliminary nature of this assessment, the extent of indirect impacts associated with the proposed works are not known, and as such, the Study Area encompasses the area of direct disturbance provided to Niche by Royal Haskoning DVH. As recommended in section 5, indirect impacts and any associated cumulative works would need to be considered in the overall biodiversity impact assessment for the project once known.

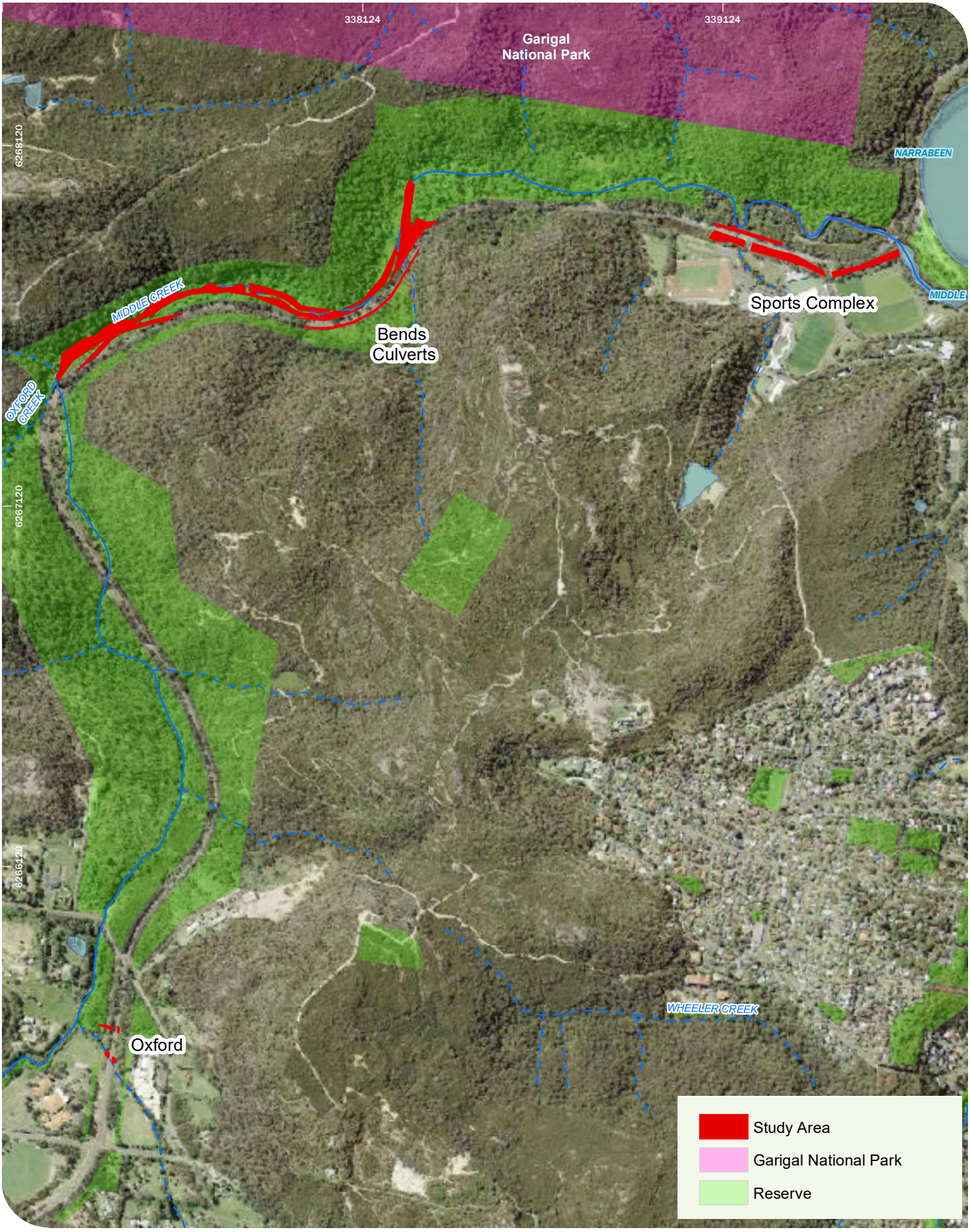
Table 1. Options assessed in this report

Option	Description	Impacts Assessed	Native Vegetation Area (ha)
The Bends option			
Option B2	New levee and removal of 1m depth of overbank sediment	The Bends Culverts 'sediment removal' option	2.88
Option B3	New levee, removal of 1m depth of overbank sediment and under-road culverts	The Bends Culverts 'sediment removal' option and the Bends culverts option	3.10
Option B4	New levee, removal of 1m depth of overbank sediment, under road culverts, and top up of existing levee.	The Bends Culverts 'sediment removal' option and the Bends culverts option	3.10
Option B5	Removal of overbank sediment (1m depth)	The Bends Culverts 'sediment removal'	2.88
Option B7	New levee, under road culverts.	Bends culverts option	0.22
Oxford Falls option			
Option O1	Culvert capacity increase	Oxford Falls	0.07
Option O2	Culvert capacity increase (additional to O1)	Oxford Falls	0.07
Sportsground option			
Option S1	Bunds and localised low point drainage	Sportsground	0.78

1.4 Aims

This report provides advice regarding the constraints of the options from an ecological perspective, which will inform project planning. The report includes a review previous surveys associated with each option, details the biodiversity impacts, and the likely 'significance' of impacts toward biodiversity.

This assessment also provides the indicative biodiversity offsetting costs, should the Biodiversity Offset Scheme (BOS) be triggered.



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Wakehurst Parkway Flood Mitigation - Ecological Assessment

Overview of study Area

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Figure 1

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2. Methodology

2.1 Approach to the preliminary assessment

The approach to this preliminary assessment has involved the following core tasks, which are described in detail below:

1. Review relevant biodiversity assessments, including GHD (2018) Northern Beaches Council Wakehurst Park Flood Mitigation Biodiversity Constraints Assessment
2. Complete a database search and likelihood of occurrence assessment
3. Field survey to confirm existing vegetation mapping
4. Determine if a significant impact associated with the project is likely
5. Determine the potential offsetting costs associated with each option, including the one sediment removal option.

2.2 Previous Biodiversity Assessments

The options and wider area has been surveyed by GHD (2018) between the 21st of February 2018 and the 9th of April 2018 as part of an initial preliminary biodiversity assessment. In summary, the field survey entailed the following:

Flora

- Ground-truthing vegetation mapping via walked transects across Study Area and walking vegetation boundaries.
- BAM plots (12) to confirm vegetation types, assess site condition and calculate biodiversity credits.
- Targeted threatened flora surveys through desktop assessment and during all transects and plot surveys. Potential habitat was noted based on OEH species profiles and knowledge.
- Weed mapping and identification during transects and plots for all priority and significant patches.

Fauna

- Five dawn bird surveys, targeted surveys in late afternoon. Diurnal surveys for migratory waders, plus all opportunistic observations throughout survey period.
- Targeted searches for Red Crowned Toadlet plus opportunistic occurrences of more common species recorded through study period. Habitat assessment specifically for Red-crowned Toadlet habitat plus call playbacks.
- Omnivorous baited infra-red cameras were placed across 6 sites for a two week period at each (3 sites at a time), targeting arboreal mammals including Eastern Pygmy Possum (*Cercartetus nanus*) and the Spot-tailed Quoll (*Dasyurus maculatus*).
- Anabat surveys over 4 nights at three sites. Call recognition done using guides and known species distribution.
- Culverts inspected opportunistically for guano, roosting bats and habitat potential.
- Opportunistic inspections of overhangs, crevices and undersides of bridges for any fauna.
- Hollow bearing trees were mapped, targeted for larger hollows with habitat potential for owls.
- Stag watches, call playbacks and spotlighting occurred over three evenings for a period of 3-3.5 hours each.

Key conclusions from the report have been incorporated throughout this assessment where relevant.

2.3 Database and literature sources

Relevant databases were reviewed prior to field survey to identify data gaps and inform survey design. Database searches for a 10 km radius around the Study Area were conducted in January 2019 to identify threatened biodiversity and migratory species with known occurrences in the locality. The following databases and literature were used for this purpose:

- Office of Environment and Heritage (OEH) BioNet, Atlas of NSW Wildlife (OEH 2019a)
- Department of the Environment and Energy (DoEE) EPBC Act Protected Matters Report (DoEE 2019)
- Threatened Species Profiles for threatened species, endangered populations and threatened ecological communities (TECs) listed under the BC Act (OEH 2019b).

A list of subject threatened flora and fauna within the locality (10 km radius) was determined from database searches. Threatened species with potential to occur in the Study Area are determined from consideration of this list.

Five categories for 'likelihood of occurrence' (Table 2) were attributed to species after consideration of criteria such as known records, presence or absence of important habitat features in the Study Area, results of the field surveys and professional judgement. This process was completed on an individual species basis.

Table 2: Likelihood of occurrence criteria

Likelihood rating	Threatened flora criteria	Threatened and migratory fauna criteria
Known	The species was observed within the Study Area.	The species was observed within the Study Area.
High	It is likely that a species inhabits or utilises habitat within the Study Area.	It is likely that a species inhabits or utilises habitat within the Study Area.
Moderate	Potential habitat for a species occurs on the site. Adequate field survey would determine if there is a 'high' or 'low' likelihood of occurrence for the species within the Study Area.	Potential habitat for a species occurs on the site and the species may occasionally utilise that habitat. Species unlikely to be wholly dependent on the habitat present within the Study Area.
Low	It is unlikely that the species inhabits the Study Area.	It is unlikely that the species inhabits the Study Area. If present at the site the species would likely be a transient visitor. The site contains only very common habitat for this species which the species would not rely on for its on-going local existence.
None	The habitat within the Study Area is unsuitable for the species.	The habitat within the Study Area is unsuitable for the species.

2.4 Field Survey

A field survey was undertaken on 15 November 2018 by two ecologists from Niche concentrating on the three flood mitigation options. The area subject to the Bends Culverts 'sediment removal' option was not surveyed, as this area of disturbance was not known at the time of the survey.

The purpose of the field survey was to validate the existing vegetation mapping, and complete a fauna habitat assessment associated with the optional sites.

No floristic plots were collected during the field survey, rather key flora and stratum characteristics were collected across each of the options to verify the vegetation mapping.

The fauna habitat assessment involved noting the presence and relative abundance of key habitat features (e.g. tree hollows, large logs, exfoliating rock, flowering resources, aquatic features) at each option.

Detailed hollow-bearing tree mapping was not undertaken as part of this assessment, rather the mapping of hollow-bearing trees by GHD (2018) was utilised where relevant.

2.5 Assessments of Significance

Formal Assessments of Significance under both the BC Act and *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) would be required when completing a Biodiversity Impact Assessment for the Project (section 5). Should a significant impact be likely, then it would trigger the requirements for a Species Impact Statement (SIS), and subsequent biodiversity offsetting. Alternatively, Council may choose to 'opt into' the BOS.

No Assessments of Significance have been completing as part of this assessment, however a discussion around the likelihood for a significant impact based on the threatened entities being impacted has been discussed in section 5.1.

2.6 Biodiversity offsetting

It is unclear at this stage if the project would trigger the BOS, and thus require the retirement of biodiversity credits as per the requirements of the BC Act and associated regulations and guidelines. The need to offset the project would be determined upon completion of the Assessments of Significance as described above.

To assist in the financial feasibility associated with each option, the indicative biodiversity credits and associated offsetting costs have been provided for each options in section 5.2.

2.7 Limitations

A limited set of survey methods have been employed in this investigation, however the GHD (2018) survey data has been used where relevant to guide the likelihood for impacts.

Numerous threatened plant and animal species are cryptic or difficult to detect. For instance, some cryptic plant species are more easily detected at certain times of the year, such as during flowering events. Some fauna can only be detected during certain seasons (e.g. migration patterns or intra-torpor periods).

Given the full extent of the mitigation works are not yet known, it is difficult to ascertain the indirect impacts associated with the project. This preliminary assessment has therefore focused on the known direct impact areas provided to Niche by Royal Haskoning DHV.

3. Results

3.1 Existing Environment

3.1.1 Plant Community Types

The Study Area and surrounds have been mapped previously by GHD (2018) and Smith and Smith (2009). The field survey completed as part of this assessment aimed at confirming the validated vegetation mapping associated with the three options.

The field survey confirmed that the GHD (2018) and Smith and Smith (2009) vegetation mapping was broadly accurately, within only some minor amendments made to areas of exotic weeds and regenerating PCT 1794 - Bangalay - Smooth-barked Apple / She-oak open forest on sandy alluvium in coastal parts of the Sydney Basin.

Based on the vegetation mapping, seven Plant Community Types (PTCs) were recorded within Study Area. Descriptions associated with each of the PCTs (as described by GHD (2018)) associated with each of the three options, including the one 'sediment removal option' have been provided in Table 3.

Table 3: Plant Community Types

Vegetation community	Description based on site inspection and GHD (2018)	Threatened Ecological Community		Mapped occurrence in the Study Area		
			The Bends Culverts	The Bends Culverts – 'sediment removal option'	Sports Centre	Oxford Falls
PCT 1794 - Bangalay - Smooth-barked Apple / She-oak open forest on sandy alluvium in coastal parts of the Sydney Basin	Over storey: The most common canopy species is Bangalay (*Eucalyptus botryoides*) with occasional occurrences of Blue Gums (*Eucalyptus saligna/E. botryoides* hybrid), Swamp Mahogany (*E. robusta*) and Smooth Barked Apple (*Angophora costata).* Mid storey: The mid-storey includes patches of exotic shrub species, especially Privet (*Ligustrum lucidum* and *Ligustrum sinense*) and Lantana (*Lantana camara*), although there are also extensive patches of native species, including Brush Daphne (*Pittosporum undulatum*), Smooth Cheese-tree (*Glochidion ferdinandi* var. *ferdinandi*), Coast Banksia (*Banksia integrifolia* subsp. *integrifolia*), Paperbarks (*Melaleuca* spp.), Tea tree (*Leptospermum* spp.) and Swamp Oak (*Casuarina glauca*). Groundcover: Groundcover vegetation is generally dense and includes sedges such as Tassel Cord Rush (*Baloskion tetraphyllus*), Saw Sedges (*Gahnia* spp.) and Spiny-headed Mat-rush (*Lomandra longifolia)*; ferns, especially Bracken (*Pteridium esculentum*) and Rainbow Fern (*Calochlaena dubia*); grasses such as Wiry Panic (*Entolasia stricta*), Weeping Grass (*Microlaeana stipoides* var. *stipoides*) and Blady Grass (*Imperata cylindrica*); and herbs, including Whiteroot (*Pratia purpurascens*) and Scurvy Weed (*Commelina cyanea*).	Swamp Sclerophyll Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South-east Corner Bioregions	0.02	0.00	0.00	0.00
PCT 659 - Bangalay - Old-man Banksia open forest on coastal sands, Sydney Basin Bioregion and South East Corner Bioregion	[1]Over storey likely dominated by Blackbutt (*Eucalyptus pilularis)*, Old Man Banksia (*Banksia serrata*), Coastal Banksia (*Banksia integrifolia* subsp. *integrifolia)*, Cheese Tree (*Glochidion ferdinandi*).	Swamp Sclerophyll Forest on Coastal Floodplains of the NSW North Coast, Sydney	0.00	2.77	0.00	0.00

[1] No validated vegetation mapping was undertaken within this PCT as details of the direct disturbance were not known at the time of survey. As such, existing vegetation mapping has been utilised, and PCT descriptions are based-off the OEH (2019d) Vegetation Information System database.

Vegetation community	Description based on site inspection and GHD (2018)	Threatened Ecological Community		Mapped occurrence in the Study Area		
			The Bends Culverts	The Bends Culverts – 'sediment removal option'	Sports Centre	Oxford Falls
	Ground cover likely dominated by Blue flax-lily (*Dianella caerulea*), Purple Coral Pea (*Hardenbergia violacea*), Matt Rush (*Lomandra longifolia*), Pomax (*Pomax umbellata*).	Basin and South-east Corner Bioregions				
PCT 1234 - Swamp Oak swamp forest fringing estuaries	Over Storey: Most patches consist of monotypic stands of Swamp Oak (*Casuarina glauca*), with a sparse to dense groundcover of grasses, sedges and forbs. Mid Storey: n/a Groundcover: Common groundcover species include Common Reed (*Phragmites australis*), New Zealand Spinach (*Tetragonia tetragonioides*), Bare Twig-rush (*Baumea juncea*), Couch (*Cynodon dactylon*) and Nioaka (*Sporobolus virginicus* var. *minor*).	Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions.	0.15	0.00	0.74	0.00
PCT 1841: Smooth-barked – Apple – Turpentine – Blackbutt tall open forest	Over storey: Common canopy species include Smooth-barked Apple, Turpentine (*Syncarpia glomulifera* subsp. *glomulifera*), Blackbutt (*Eucalyptus pilularis*), Sydney Blue Gum and hybrids (*Eucalyptus saligna* and *E. saligna/E. botryoides* hybrid). Mid storey: Mid-storey species include Forest Oak (*Allocasuarina torulosa*), Murrogun (*Myrsine variabilis*), Brush Daphne (*Pittosporum undulatum*), Blueberry Ash (*Elaeocarpus reticulatus*) and Elderberry Panax (*Polyscias sambucifolia*). Common vine species include Five-leaf water Vine (*Cissus hypoglauca),* Sweet Sarsparilla (*Smilax glyciphylla)* and Wonga Vine (*Pandorea pandorana* var. *pandorana)*. Groundcover: Ferns, especially Bracken and False Bracken form dense patches of ground cover.	Not listed	0.01	0.05	0.00	0.00
PCT 781 - Coastal freshwater lagoons of the Sydney	Over Story: n/a Mid Storey: n/a	Freshwater Wetlands on	0.04	0.06	0.04	0.00

Vegetation community	Description based on site inspection and GHD (2018)	Threatened Ecological Community		Mapped occurrence in the Study Area		
			The Bends Culverts	The Bends Culverts – 'sediment removal option'	Sports Centre	Oxford Falls
Basin Bioregion and South East Corner Bioregion	Groundcover: The floristics and structure of the Freshwater Wetland patches vary, although common wetland species in most patches include Cumbungi (*Typha orientalis*) and Common Reed (*Phragmites australis*). Grasses and sedges include Water Couch (*Paspalum distichum*) Twig-rush (*Baumea* spp.), Spike-rush (*Eleocharis* spp.) and Rush (*Juncus* species). Common herbs include Water Pepper (*Persicaria* spp.) and Woolly Frogmouth (*Philydrum lanuginosum*).	Coastal Floodplains				
PCT 1250: Sydney Peppermint - Smooth-barked Apple - Red Bloodwood shrubby open forest on slopes of moist sandstone gullies	Dominant species include the following: Old Man Banksia (*Banksia serrata),* Blackbutt (*Eucalyptus piperita), Coastal Red Gum (Angophora costata),* Red Bloodwood (*Corymbia gummifera), Christmas Bush (Ceratopetalum gummiferum), Geebung (Persoonia levis),* Jelly Bush (L*eptospermum polygalifolium),* Crinkle Bush (*Lomatia silaifolia);* Heath-leaved Banksia (*Banksia ericifolia);* Sunshine Wattle (*Acacia terminalis).*	Not listed	0.00	0.00	0.00	0.07
Non-native	Predominant species Privet (*Ligustrum lucidum and Ligustrum sinense*) and Lantana (*Lantana camara*).	Not listed	0.05	0.56	0.26	0.00
Total		**-**	**0.27**	**3.44**	**1.04**	**0.07**

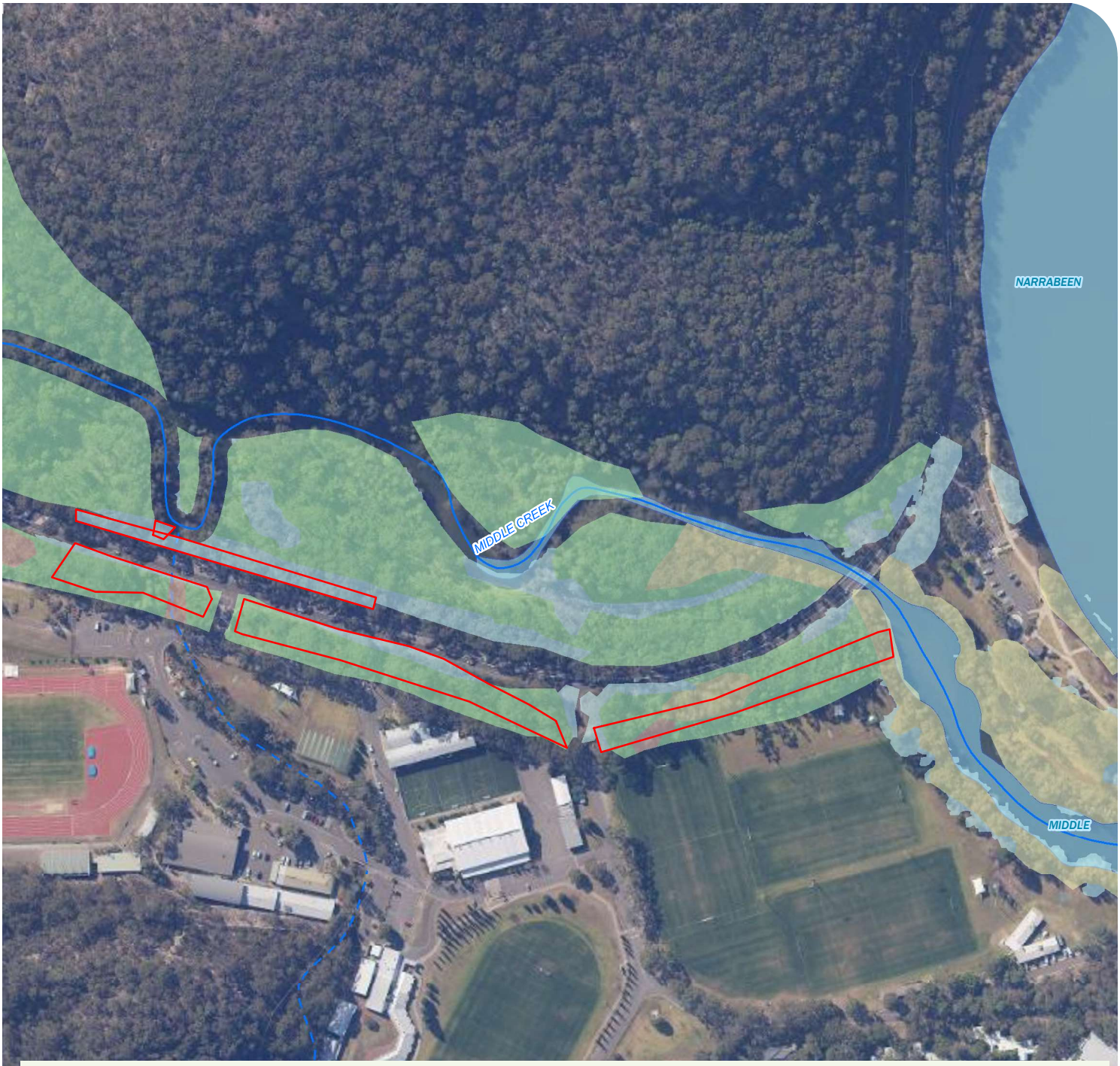
3.1.2 Threatened Ecological Communities

Three of the PCTs recorded within the Study Area are consistent with Threatened Ecological Communities (TECs) listed under the BC Act and/or EPBC Act. The area of each TECs associated with each option is provided in Table 4.

Table 4: TECs in the Study Area

Threatened ecological Community	BC Act	EPBC Act	Area and condition of TEC in the Study Area			
			The Bends Culverts	The Bends Culverts – 'sediment removal option'	Sports Centre	Oxford Falls
Swamp Sclerophyll Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South-east Corner Bioregions	Listed	Not listed	Area: 0.02 ha Condition: predominantly moderate condition throughout impact site, however exposed to direct impacts from localised flooding from Middle Creek and edge effects from the Wakehurst Parkway. Poorer condition patches occur closer to the roads edge and contain localised and dense weed infestations of Privet (*Ligustrum lucidum* and *Ligustrum sinense*) and Lantana (*Lantana camara*).	Area 2.77 ha Condition: predominantly moderate condition throughout impact site. Patches of Privet (*Ligustrum lucidum* and *L sinense*) and Lantana (*Lantana camara*).	Not mapped within direct disturbance area	Not mapped within direct disturbance area
Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions.	Listed	Listed	Area 0.15 ha Condition: This vegetation type is in moderate/good condition throughout impact site. Small infestation of Privet (*Ligustrum lucidum* and *Ligustrum sinense*) and Lantana (*Lantana camara*) along creekline	-	Area: 0.74 ha Condition: This vegetation type is in moderate/good condition throughout impact site. Small infestation of Privet (*Ligustrum lucidum* and *Ligustrum sinense*) and Lantana (*Lantana camara*) along creekline	Not mapped within direct disturbance area
Freshwater Wetlands on Coastal Floodplains	Listed	Not listed	Area: 0.04 ha Condition: This vegetation type is moderate/good throughout impact area. Small infestation of Privet (*Ligustrum lucidum*	Area: 0.06 ha Condition: This vegetation type is moderate/good throughout impact	Area: 0.04 ha Condition: This vegetation type is moderate/good throughout	n/a

Threatened ecological Community	BC Act	EPBC Act	Area and condition of TEC in the Study Area			
			The Bends Culverts	**The Bends Culverts – 'sediment removal option'**	**Sports Centre**	**Oxford Falls**
			and *Ligustrum sinense*) and Lantana (*Lantana camara*) along creekline	area. Small infestation of Privet (*Ligustrum lucidum* and *Ligustrum sinense*) and Lantana (*Lantana camara*) along creekline	impact area. Small infestation of Privet (*Ligustrum lucidum* and *Ligustrum sinense*) and Lantana (*Lantana camara*) along creekline	



Disturbance Footprint

PCT_Name

- Bangalay - Old-man Banksia open forest on coastal sands, Sydney Basin Bioregion and South East Corner Bioregion
- Coastal freshwater lagoons of the Sydney Basin and South East Corner
- Non-native
- Saltmarsh in estuaries of the Sydney Basin Bioregion and South East Corner Bioregion
- Smooth-barked Apple - Turpentine - Blackbutt tall open forest on enriched sandstone slopes and gullies of the Sydney region
- Swamp Oak swamp forest fringing estuaries, Sydney Basin Bioregion and South East Corner Bioregion
- Sydney Peppermint - Smooth-barked Apple - Red Bloodwood shrubby open forest on slopes of moist sandstone gullies, eastern Sydney Basin Bioregion

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Wakehurst Parkway Flood Mitigation - Ecological Assessment

Sports Complex

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Figure 2

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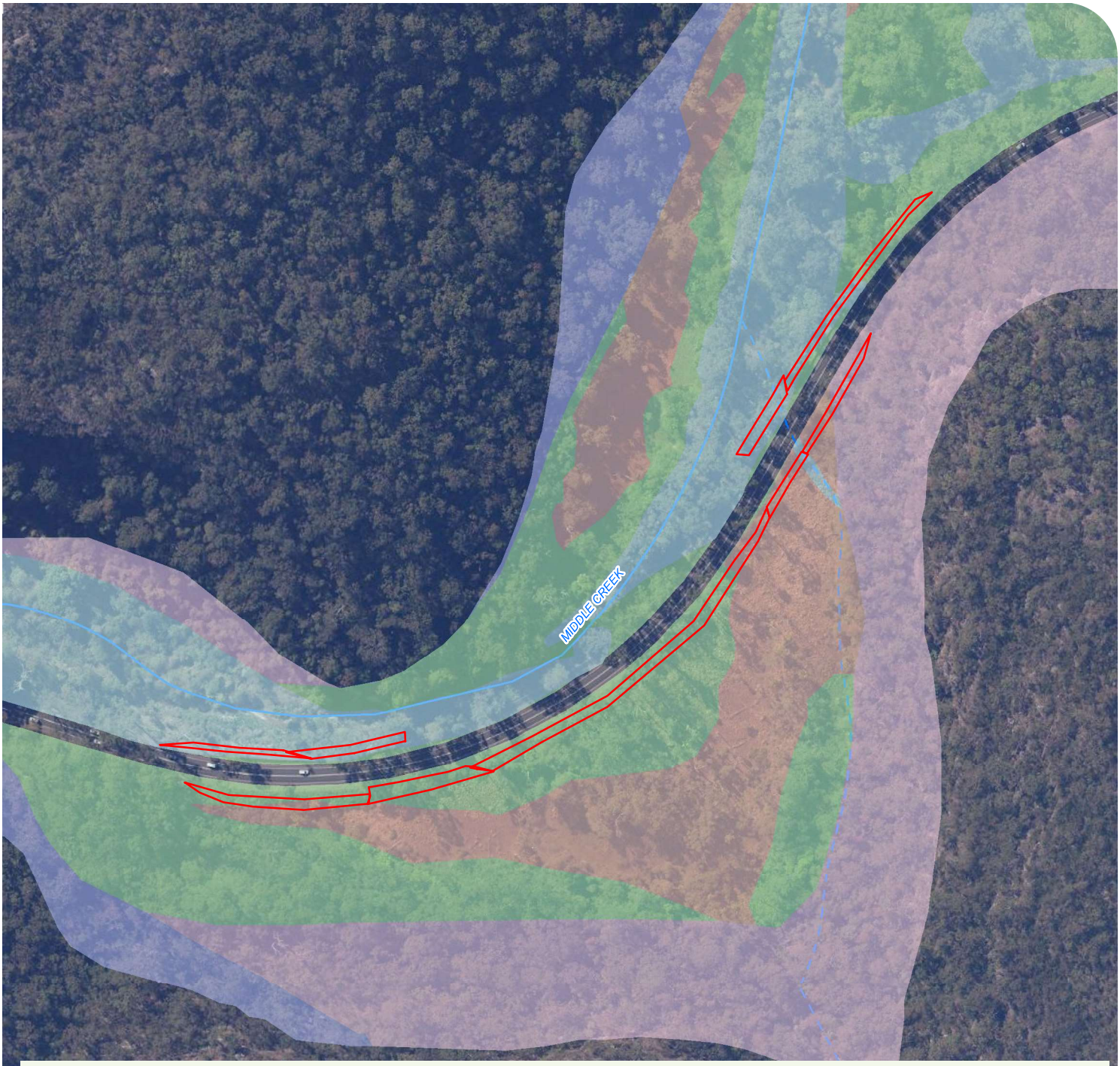

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- Sydney Peppermint - Smooth-barked Apple - Red Bloodwood shrubby open forest on slopes of moist sandstone gullies, eastern Sydney Basin Bioregion

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The Bends Culverts

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Figure 3

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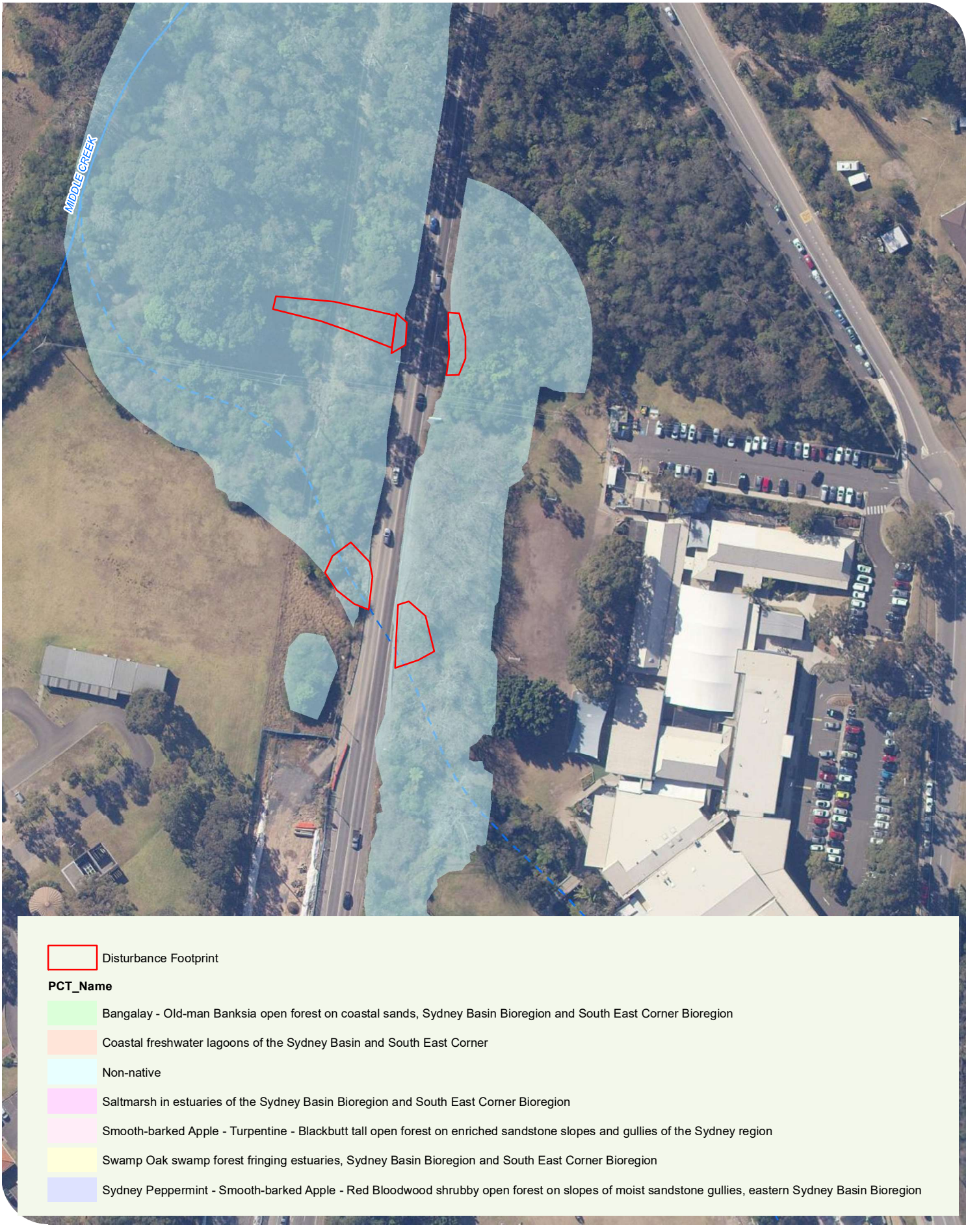

Disturbance Footprint

PCT_Name

- Bangalay - Old-man Banksia open forest on coastal sands, Sydney Basin Bioregion and South East Corner Bioregion
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Figure 4

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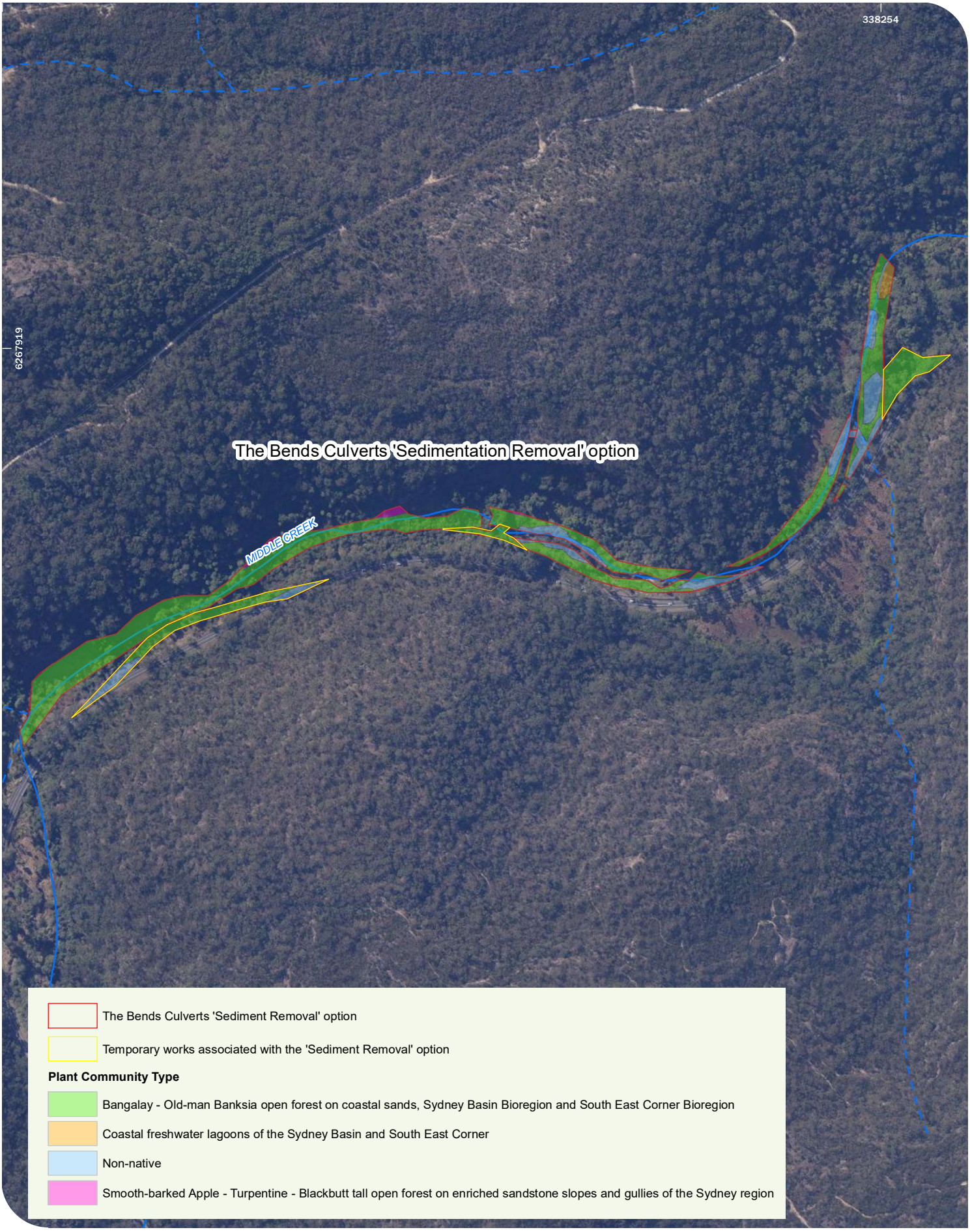

The Bends Culverts 'Sediment Removal' option

Temporary works associated with the 'Sediment Removal' option

Plant Community Type

Bangalay - Old-man Banksia open forest on coastal sands, Sydney Basin Bioregion and South East Corner Bioregion

Coastal freshwater lagoons of the Sydney Basin and South East Corner

Non-native

Smooth-barked Apple - Turpentine - Blackbutt tall open forest on enriched sandstone slopes and gullies of the Sydney region

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Wakehurst Parkway Flood Mitigation - Ecological Assessment

The Bends Culverts 'sediment removal' option

Niche PM: MR
Niche Proj. #: 4604
Client: Northern Beaches Council

Figure 5

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3.1.3 Threatened Flora

A total of 37 threatened flora listed on the BC and/or EPBC Act were identified as subject species in this assessment (Appendix 1).

No threatened species were recorded during field survey, nor have any been recorded by GHD (2018). Given there is marginal habitat present within the area of direct disturbance, all potentially occurring threatened species were considered to have a 'low' or 'no' likelihood of occurrence which is a similar conclusion to that provided in GHD (2018). However, it should be noted that since indirect impacts are not known at this stage, targeted threatened flora surveys are likely to be required once details are known, and incorporated into the impact assessment. In particular, threatened flora surveys may be required for those species reliant upon riparian habitats, including: *Callistemon linearifolius, Deyeuxia appressa, Grevillea shiressii, Triplarina imbricata, Haloragodendron lucasii, Leptospermum deanei, Melaleuca biconvexa* and *Persoonia mollis subsp. maxima.*

3.1.4 Fauna habitat

Based on the results of the field survey and previous assessments, a list of fauna habitats located at each of the optional impact sites are listed below in Table 5.

Table 5: Fauna habitats within proposed impact areas

Fauna Habitats	Description	Occurrence in the Study Area			
		The Bends Culverts	The Bends Culverts – 'sediment removal option'	Sports Centre	Oxford Falls
Tree Hollows	Trees which contain hollows are particularly important for those species of animals, including many threatened species, which specifically require such hollows for shelter and nesting. These animals are termed 'hollow-dependent' in that they require hollows as a key component of their habitat either on a daily or seasonal basis.	Present	Likely	Present	Not present
Logs	Fallen logs instantly provide complex structures where a diverse range of organisms can find stable microclimates for nesting, denning, feeding, and food storage. From microscopic protozoa and magnificent mushrooms, to birds and amphibians	Present	Likely	Present	Present
Surface Rock	Sandstone outcrops also provide shelter habitat for a range of reptiles and roosting habitat for microbats. A range of overhangs, under hangs cracks and fissures were observed within sandstone outcrops.	Not present or very minor	Likely to be present	Not present or very minor	Not present or very minor
Aquatic Habitat Features	Freshwater wetland areas are densely vegetated with native wetland and aquatic plants. These include a variety of sedges and rushes including Plume Rush (*Baloskion tetraphyllum* subsp. *meiostachyum*), Jointed Twig-rush (*Baumea articulata*), Broad-leaved Cumbungi (*Typha orientalis*) or *Baumea juncea*. Wetlands in the Study Area were inundated with water at the time of the survey and would contain standing water periodically throughout the year.	Present			

Fauna Habitats	Description	Occurrence in the Study Area			
		The Bends Culverts	The Bends Culverts – 'sediment removal option'	Sports Centre	Oxford Falls
	These freshwater wetlands provide high value basking and refuge habitat for a range of frog species.				

3.1.5 Threatened fauna

No threatened or migratory fauna were recorded in the Study Area during the field survey, however it should be noted that targeted surveys were not conducted as part of the field survey.

A total of 65 threatened or migratory fauna listed on the BC and/or EPBC Act were identified as subject species in this assessment (Appendix 1). This list was derived from the database searches outlined in Section 2.1.

Using the results of the field survey, GHD (2018) survey results, and analysis of habitat preferences, of this list of subject species, 16 species were considered to have a 'Moderate' or greater likelihood of occurrence to occur within the Study Area (Appendix 1) mainly due to the use of the sites as foraging habitat. Species with a moderate to high likelihood of occurrence include those species in Table 6. Of the options proposed, the Oxford Falls site contains the least habitat potential for threatened fauna, whilst the Bends Culverts sediment removal option contains potential habitat for the most threatened fauna species.

Table 6. Threatened fauna with a moderate to high likelihood of occurrence within Study Area

Scientific Name	Common Name	Threatened listing[2]		Options				Habitat descriptions based on field survey and GHD (2018) records
		BC Act	EPBC Act	The Bends Culverts	The Bends Culverts 'sediment removal' option	Sport Centre	Oxford Falls	
Pseudophryne australis	Red-crowned Toadlet	V	-	High	High	High	Low	Recorded by GHD (2018) further along Middle Creek immediately east of the 'Bends Culvert'. The area of disturbance occurs outside the species polygon (breeding habitat) mapped by GHD, however potential foraging habitat may be impacted by the project.
Pandion cristatus	Eastern Osprey	V	M	High	High	High	Low	Recorded by GHD (2018) further along Middle Creek immediately east of the 'Bends Culvert'. The area of disturbance occurs outside the species polygon (breeding habitat) mapped by GHD, however potential foraging habitat may be impacted by the project.
Calyptorhynchus lathami	Glossy Black-Cockatoo	V	-	High	High	High	Low	Recorded by GHD (2018) immediately outside the disturbance footprint. Approximately 2.3 ha of foraging habitat may be impacted.
Daphoenositta chrysoptera	Varied Sittella	V	-	High	High	High	High	Highly likely to utilise the habitat of each option give the wide range of habitat types the species can occupy.
Ixobrychus flavicollis	Black Bittern	V	-	Moderate	High	High	Low	Recorded by GHD (2018) further along Middle Creek immediately east of the 'Bends Culvert'. The area of disturbance occurs outside the species polygon (breeding habitat) mapped by GHD, however potential foraging habitat may be impacted by the project.
Ninox strenua	Powerful Owl	V	-	High	High	High	Low	Recorded by GHD (2018) further along Middle Creek immediately east of the 'Bends Culvert'. The area of disturbance occurs outside the species polygon (breeding habitat) mapped by GHD, however potential foraging habitat may be impacted by the project.
Tyto tenebricosa	Sooty Owl	V	-	Moderate	Moderate	Moderate	Low	Potential foraging habitat to be impacted. No hollow-bearing trees mapped by GHD (2018) occur in the disturbance footprint so removal of roost tree unlikely.

[2] V = Vulnerable; E = Endangered; M = Migratory

Scientific Name	Common Name	Threatened listing[2]		Options				Habitat descriptions based on field survey and GHD (2018) records
		BC Act	EPBC Act	The Bends Culverts	The Bends Culverts 'sediment removal' option	Sport Centre	Oxford Falls	
Miniopterus australis	Little Bentwing-bat	V	-	Moderate	Moderate	Moderate	Moderate	Potential foraging habitat to be impacted. No hollow-bearing trees mapped by GHD (2018) occur in the disturbance footprint so removal of roost tree unlikely.
Miniopterus schreibersii oceanensis	Eastern Bentwing-bat	V	-	Moderate	Moderate	Moderate	Moderate	Potential foraging habitat to be impacted. No hollow-bearing trees mapped by GHD (2018) occur in the disturbance footprint so removal of roost tree unlikely.
Mormopterus norfolkensis	Eastern Freetail-bat	V	-	Moderate	Moderate	Moderate	Moderate	Potential foraging habitat to be impacted. No hollow-bearing trees mapped by GHD (2018) occur in the disturbance footprint so removal of roost tree unlikely.
Myotis macropus	Southern Myotis	V	-	Moderate	Moderate	Moderate	Moderate	Potential foraging habitat to be impacted. No hollow-bearing trees mapped by GHD (2018) occur in the disturbance footprint so removal of roost trees unlikely, however foraging habitat is likely.
Falsistrellus tasmaniensis	Eastern False Pipistrelle	V	-	Moderate	Moderate	Moderate	Moderate	Species can utilise a range of habitat types up to 12km from roost site. Potential foraging habitat to be impacted. No hollow-bearing trees mapped by GHD (2018) occur in the disturbance footprint so removal of roost trees unlikely, however foraging habitat is likely.
Pteropus poliocephalus	Grey-headed Flying-fox	V	V	High	High	High	High	No camp sites known in the disturbance area. Foraging habitat would be impacted.
Chalinolobus dwyeri	Large-eared Pied Bat	V	V	Moderate	Moderate	Moderate	Moderate	Potential foraging habitat to be impacted. No hollow-bearing trees mapped by GHD (2018) occur in the disturbance footprint so removal of roost trees unlikely, however foraging habitat is likely.
Scoteanax rueppellii	Greater-Broad Nosed Bat	V	V	Moderate	Moderate	Moderate	Moderate	Potential foraging habitat to be impacted. No hollow-bearing trees mapped by GHD (2018) occur in the disturbance footprint so removal of roost tree unlikely.
Heleioporus australiacus	Giant Burrowing Frog	V	V	Low	Moderate	Low	Low	GHD (2018) notes that potential habitat for the Giant Burrowing Frog may occur within the disturbance area. Further field survey would be required to confirm the presence of the species and the extent of habitat (if any) within the disturbance areas and surrounds. As a conservative approach we have assumed approximately 2.41 ha of Giant Burrowing Frog habitat would be impacted by the Project.

4. Potential impacts

4.1 Potential impacts

An assessment of the potential impacts of the project on biodiversity is provided in Table 6. Impacts are categorised as direct or indirect as described in DECC (2007), which states:

> *"**Direct impacts** are those that directly affect the habitat and individuals. They include, but are not limited to, death through predation, trampling, poisoning of the animal/plant itself and the removal of suitable habitat. When applying each factor, consideration must be given to all of the likely direct impacts of the proposed activity or development.*
>
> ***Indirect impacts** occur when project-related activities affect species, populations or ecological communities in a manner other than direct loss. Indirect impacts can include loss of individuals through starvation, exposure, predation by domestic and/or feral animals, loss of breeding opportunities, loss of shade/shelter, deleterious hydrological changes, increased soil salinity, erosion, inhibition of nitrogen fixation, weed invasion, fertiliser drift, or increased human activity within or directly adjacent to sensitive habitat areas. As with direct impacts, consideration must be given, when applying each factor, to all of the likely indirect impacts of the proposed activity or development."*

A likelihood rating of known, High, Moderate or Low has been assigned to each of the potential impacts listed in Table 6 which illustrates that the project would likely result in a number of unavoidable direct impacts and potential indirect impacts. However it should be noted, that the area of indirect impacts are not yet known given the full extent of the works have not been provided to Niche.

Table 7. Summary of impacts

Impact	**Extent of impact as a result of the project**			
Direct impacts	**The Bends Culverts**	**The Bends Culverts**	**Sports Centre**	**Oxley Falls**
Removal or modification of native vegetation	**Known:** 0.21 ha	**Known:** 2.88 ha	**Known:** 0.77 ha	**Known:** 0.07 ha
Loss of individuals of a threatened flora	**Unlikely:** Based on the result of the current field survey and GHD (2018), no threatened flora would be removed as part of the project.			
Loss of threatened fauna habitat	**Known:** All options would impact upon habitat for threatened fauna.			
Removal or modification of threatened species habitat other than native vegetation (micro-habitat features)	**Moderate:** the area to be impacted does contain tree hollows or other important habitat features which may be used by threatened species.			

Impact	Extent of impact as a result of the project			
Death through trampling	**Low:** impact area is a strip of vegetation along Wakehurst Parkway. Any death to native vegetation and habitat would be considered as part of the area of direct impact.			
Death through poisoning	**Low:** no poisons are proposed to be used as part of the project. Harmful substances used in construction would all be controlled as per required Australian Standards.			
Modification to waterways	**Known:** Flood mitigation works would impact upon existing waterways.			
Fragmentation	**Moderate:** the removal of vegetation in the Study Area could exacerbate fragmentation in the local area along the road.			
Indirect impacts				
Predation by domestic and/or feral animals	**Low:** the project is not likely to increase the presence of domestic or feral animals in the local area.			
Loss of shade/shelter	**Known:** the removal of vegetation in the Study Area would result in a significant loss of shade/shelter for local fauna.			
Loss of breeding opportunities	**High:** There are a few trees to be removed contain hollows. Vegetation may be suitable for breeding by nest building birds.	**High:** There are likely to be pools suitable for breeding amphibians that would be impacted by the sedimentation removal.	**Moderate:** There are a few trees to be removed contain hollows. Vegetation may be suitable for breeding by nest building birds.	**Low:** the trees to be removed do not contain hollows, however vegetation within the Study Area may be suitable for breeding by nest building birds.
Loss of individuals through starvation	**Low:** the habitat to be removed in the Study Area occurs as a strip of vegetation along Wakehurst Parkway. Extensive areas of habitat nearby would not be impacted by the project. Foraging habitat for fauna would remain in abundance in the locality.			
Loss of individuals through exposure	**Low:** habitat to be removed in the impact area is a corridor alongside Wakehurst Parkway. Extensive areas of habitat nearby would not be impacted by the project. Shelter habitat for fauna would remain in abundance in the locality.			
Deleterious hydrological changes	**Low:** the project is unlikely to cause greater than negligible alterations to existing flow regimes or result in un-contained nutrient-laden sedimentation. A sediment control and erosion plan would be recommended to lessen potential impacts during construction on nearby receiving environments.			
Increased soil salinity	**Low:** the project is not likely to alter the soil salinity of the Study Area or surrounding areas.			
Sedimentation and erosion	**Moderate:** Safeguards are recommended to ensure sediments are contained during and post construction.			
Inhibition of nitrogen fixation	**Low:** unlikely to be greater than current impact.			
Weed invasion	**Low:** unlikely to be greater than current impact. Controls regarding clearing of weeds recommended.			
Fertiliser drift	**Low:** no fertilisers to be used as part of the project.			

Impact	Extent of impact as a result of the project
Increased human activity within or directly adjacent to sensitive habitat areas	**Low:** unlikely to be greater than current impact along Wakehurst Parkway.

4.2 Affected threatened ecological communities

As discussed in Section 3.1.2, three TECs are associated with the PCTs recorded within the Study Area.

As shown in Table 7 the following conclusions can be made:

- The Bends Culverts 'sediment removal option' would result in the greatest area of direct impact. The 'sediment removal option' would result in direct impact to two TECs (Swamp Sclerophyll Forest, and Freshwater Wetlands) totalling an area of 2.83 hectares.
- The Bends Culverts optional site would result in a direct impact to three TECs (Swamp Sclerophyll Forest, Swamp Oak Floodplain Forest and Freshwater Wetlands), totalling an area of 0.21 hectares of direct impact.
- The Sports Centre optional site would result in an impact to two TECs (Swamp Oak Floodplain Forest, and Freshwater Wetlands) totalling approximately 0.78 hectares of direct impact.
- The Oxford optional site would not impact any TECs.

Assessments of significance under the BC Act and/or EPBC Act would need to be completed for all impacts to TECs, and must take into consideration indirect impacts, which would likely increase the areas proposed in Table 7.

Table 8. Direct impacts to TECs

Site	Area of Threatened Ecological Community to be impacted (ha)			Total Area (ha)
	Swamp Sclerophyll Forest on Coastal Floodplains	Swamp Oak Floodplain Forest	Freshwater Wetlands on Coastal Floodplains	
The Bends Culverts	0.02	0.15	0.04	0.21
The Bends Culvert 'sediment removal' option	2.77	0.00	0.06	2.83
Sports Centres	0.00	0.74	0.04	0.78
Oxford Falls	0.00	0.00	0.00	0.00

4.3 Affected flora

No threatened flora were identified during the field survey although no targeted surveys were conducted. GHD (2018) did not record any threatened species during their survey, and there are no previous records in the Study Area.

However, as discussed in section 2.7, it should be noted that this assessment has only considered the area of direct impacts provide to Niche. Should indirect impacts from the operations result in a greater area of

impact than that considered and surveyed by GHD (2018), then further consideration would need to be attributed to the following species that can occur adjacent to riparian habitats: *Callistemon linearifolius, Deyeuxia appressa, Grevillea shiressii, Triplarina imbricata, Haloragodendron lucasii, Leptospermum deanei, Melaleuca biconvexa* and *Persoonia mollis subsp. Maxima.*

4.4 Affected fauna

Fauna habitats occurring in the Study Area may provide shelter, foraging and breeding habitat to the threatened/migratory fauna listed in section 3.1.5.

Without knowing the precise details of the operations, it is difficult to gauge the impact to threatened fauna. However, assuming the Study Area would be directly cleared, the flood mitigation can impact upon fauna in a number of ways with the significance of an impact greatest if any of the following situations occur:

- Death or injury of individuals.
- Loss or disturbance of limiting foraging resources.
- Loss or disturbance of limiting breeding resources.

Limiting resources are those that are important for a particular species survival. For example, fauna that only feed on certain types of plants or breed in certain habitats such as deep water pools in flowing creeks.

The assessment of affected threatened fauna in section 3.1.5 concluded that 15 threatened fauna have a moderate or greater potential to be negatively impacted by the proposal:

- Red-crowned Toadlet
- Giant Burrowing Frog
- Eastern Osprey
- Glossy Black-Cockatoo
- Varied Sittella
- Black Bittern
- Powerful Owl
- Sooty Owl
- Little Bentwing-bat
- Eastern Bentwing-bat
- Eastern Freetail-bat
- Southern Myotis
- Grey-headed Flying-fox
- Large-eared Pied Bat
- Rufous Fantail (migratory under EPBC).

Assessments of significance (BC Act) and/or significant impact criteria assessments (EPBC Act) would need to be completed for these threatened fauna depending on the option, in order to determine the significance of impacts to limiting habitat features.

5. Recommendations

5.1 Biodiversity Impact Assessment

A biodiversity impact assessment using the OEH (2017) Biodiversity Assessment Methodology (BAM) would be required for each of the three options and the 'Bends Culvert sediment removal option'. The impact assessment would be assessed under the requirements of the *Environmental Planning and Assessment Act 1979* (EP&A Act), associated BC Act and *NSW Biodiversity Conservation Regulation 2017* (BC Regulation 2017), which provides proponents with two options for impact assessment and offsetting:

1. Preparation of a biodiversity impact assessment that applies assessments of significance (five-part test) under the BC Act to determine whether significant impacts on threatened biodiversity are likely. If a significant impact is considered unlikely there may be no further requirement for ecological assessment or any offset requirement. If a significant impact is likely, then a Species Impact Statement (SIS) and subsequent offsetting would be required.
2. Use of the Biodiversity Offset Scheme (BOS) and BAM to prepare a Biodiversity Development Assessment Report (BDAR) under the BC Act. The BDAR would outline avoidance and mitigation measures as well as offset requirements for all vegetation clearing regardless of whether significant impacts on threatened biodiversity were likely to occur. Project approval would then require offsetting as per the requirements of the BDAR or to a lesser degree as agreed upon after consultation with the Minister administering the BC Act.

Council may consider the first option listed above to test the significance of the impacts for each of the threatened entities associated with each optional site. This would be a cheaper alternative than progressing immediately with the second option described above given the cost of biodiversity offsetting.

The impact assessment would also need to consider impacts to threatened biodiversity listed on the EPBC Act.

5.2 Conservation/offsetting

It is unclear if biodiversity offsetting would be required, as no Assessments of Significance have been completed as part of this assessment. However, it seems likely that based on the area of direct impact associated with the 'Bends Culvert sediment removal option', significant impacts are likely due to the following:

- Removal of approximately 2.77 ha of Swamp Sclerophyll Forest TEC.
- Removal of 2.88 ha of fauna habitat, in particular threatened fauna that would require the retirement of 'species fauna credits' if offsetting is required. Species credit fauna include: Red-crowned Toadlet, Giant Burrowing Frog habitat (note this needs to be confirmed via targeted survey), Southern Myotis and of Large-eared Pied Bat.

The Bends Culverts and Sports Complex options have biodiversity impacts that may result in a significant impact, especially once indirect impacts are determined and added to the overall project impact. A summary of the impacts for the Bends Culvert and the Sports Complex includes the following:

Bends Culverts option:

- Impacts to approximately 0.15 ha of Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions TEC.
- Impacts to approximately 0.04 ha of Freshwater Wetlands on Coastal Floodplains TEC.

- Impacts to approximately 0.02 ha of Swamp Sclerophyll Forest TEC
- Impacts to approximately 0.22 ha of Red-crowned Toadlet habitat
- Impacted to approximately 0.22 ha of Powerful owl foraging habitat
- Impacts to approximately 0.22 ha of Bitter habitat.

Sports Complex option:

- Impacts to approximately 0.74 ha of Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions TEC.
- Impacts to approximately 0.04 ha of Freshwater Wetlands on Coastal Floodplains TEC.
- Impacts to approximately 0.78 ha of Red-crowned Toadet habitat
- Impacted to approximately 0.78 ha of Powerful owl foraging habitat
- Impacts to approximately 0.78 ha of Bitter habitat.

The Oxford option, seems less likely to result in a significant impact given the relatively minor impacts to biodiversity values:

- Only 0.07 ha of native vegetation and habitat would be direct impacted.
- It is unlikely that any TECs would be impacted.
- No Red-crowned Toadlet habitat has been mapped within the site
- No threatened flora or fauna have been recorded within the site.

Should a significant impact be likely, then it would trigger a SIS which would entail biodiversity offsetting. The BAM would be used to determine the impact assessment process, and to determine the offset in terms of biodiversity credits.

In order to provide an indication of the likely credits associated with each options should an SIS be required or if Council chose to 'opt' into completing a BDAR, an offsetting scenario has been provided in Table 9 for each option. The credits required has been estimated by using an average of 35 credits per hectare (with impacts less than 0.5 ha generating 5 credits), which is the average credits generated at a relatively in-tact native vegetation development site using the BAM. The cost per credit has been based on the OEH (2019) Biodiversity Conservation Trust Payment Calculator (costed at April 2019) and has also been provided in Table 9. It should be noted that the credits prices are updated quarterly, and thus should only be used as a preliminary guide. The offsetting has assumed that the only species credits required for offsetting include the Red-crowned Toadlet, Giant Burrowing Frog, Powerful Owl (due to roosting habitat), Black Bittern and Glossy Black Cockatoo. The cost for the offsetting for threatened microbats have been included for the Bends Culverts 'sediment removal option'.

Table 9. Indicative credit costs should an SIS be required for each option

Option	Impact area (ha)	Credit estimate	Credit per credit	Total cost
The Bends Culverts option				
PCT 1794 - Bangalay - Smooth-barked Apple / She-oak open forest on sandy alluvium in coastal parts of the Sydney Basin	0.02	5	$1,616.94	$8,084.70
PCT 1234 - Swamp Oak swamp forest fringing estuaries	0.15	5	$1482.778	$7,413.89
PCT 1841: Smooth-barked – Apple – Turpentine – Blackbutt tall open forest	0.01	5	$1616.94	$8,084.70
PCT 781 - Coastal freshwater lagoons of the Sydney Basin Bioregion and South East Corner Bioregion	0.04	5	$2377.6	$11,888.00
Red-crowned Toadlet	0.27	17	$630.47	$10,717.99
Powerful Owl	0.27	17	$630.47	$10,717.99
Black Bittern	0.27	17	$265.97	$4,521.49
Glossy Black Cockatoo	0.27	17	$265.97	$4,521.49
			Total	**$66,950.25**
Sports Complex option				
PCT 1234 - Swamp Oak swamp forest fringing estuaries	0.74	35	$1482.778	$51,897.23
PCT 781 - Coastal freshwater lagoons of the Sydney Basin Bioregion and South East Corner Bioregion	0.04	5	$2377.6	$11,888.00
Red-crowned Toadlet	0.74	35	$630.47	$22,066.45
Powerful Owl	0.74	35	$630.47	$22,066.45
Black Bittern	0.74	35	$265.97	$9,308.95
Glossy Black Cockatoo	0.74	35	$265.97	$9,308.95
			Total	**$126,536.02**
Oxford option				
PCT 1250: Sydney Peppermint - Smooth-barked Apple - Red Bloodwood shrubby open forest on slopes of moist sandstone gullies	0.07	5	$ 2297.16	$11,485.80
			Total	**$11,485.80**
The Bends Culverts sediment removal option				
PCT659 Bangalay - Old-man Banksia open forest on coastal	2.77	97	$4,169.49	$404,440.53

Option	Impact area (ha)	Credit estimate	Credit per credit	Total cost
sands, Sydney Basin Bioregion and South East Corner Bioregion				
PCT781 Coastal freshwater lagoons of the Sydney Basin and South East Corner	0.06	2	$6,622.52	$13,245.04
PCT1841 Smooth-barked Apple - Turpentine - Blackbutt tall open forest on enriched sandstone slopes and gullies of the Sydney region	0.05	2	$18,345.03	$36,690.05
Red-crowned Toadlet	2.41	72	$630.47	$45,394.17
Giant Burrowing Frog	2.41	72	$265.97	$19,149.72
Southern Myotis	2.41	72	$1,062.33	$76,488.11
Large-eared Pied Bat	2.41	72	$1,062.33	$76,488.11
			Total	**$671,985.73**

5.3 Referral

Referral of a project is recommended if there is likely to be a significant impact on a matter of national environmental significance (MNES) listed under the EPBC Act, such as threatened species or communities, or if there is uncertainty over whether the impact will be significant or not.

Based on current information, the Bends Culverts 'sediment removal option', the Bends Culverts, and Sports Centre options have the potential to have an impact on Coastal Swamp Oak Forest of New South Wales and South East Queensland ecological community, which is listed as a TEC on the EPBC Act. A number of threatened fauna species listed on the EPBC Act, including the Giant Burrowing Frog, Large-eared Pied Bat, Greater-Broad Nosed Bat, Grey-headed Flying Fox and Eastern Osprey, also have the potential to be impacted by the Project.

It is unclear if a significant impact is likely given the details around indirect impacts are not yet known. However, should a significant impact by likely, EPBC Act offsets would be required for any MNES that is likely to be significantly impacted by a proposal. The Commonwealth has its own offset policy and offsets calculator, and would require a 'land-based biodiversity offset'. To date, the Department of Environment and Energy (DPEE) will not accept a proponent paying into the Biodiversity Conservation Trust Fund as a suitable offset mechanism for significant impacts to a MNES.

Early referral of a proposal that is likely to significantly impact MNES is recommended so that if the Minister for the Environment determines the project to be a controlled action, any additional survey requirements can be incorporated into the field season and minimise further remobilisation of field staff.

6. Conclusion

This assessment has provided a preliminary assessment to be used to assess the feasibility of the project in regards to biodiversity values and potential biodiversity offsetting costs. Specially, this assessment has detailed the potential impacts associated with one 'sediment removal option' and three flood mitigation options for the project.

Based on the field survey and results of the previously GHD (2018) assessment, the Bends Culvert 'sediment removal option' has the greatest impact to biodiversity. Approximately 2.3 ha of native vegetation and associated fauna habitat would be impacted by this option.

Both the Bends Culverts and Spots Complex options would impact upon TECs, Red-crowned Toadlet habitat, Powerful Owl habitat and Black Bittern habitat. Further survey would be required once indirect impacts are known to assess impact to threatened microbats.

The Oxford option on the other hand, would involve approximately 0.07 ha of non-TEC vegetation, and some impacts to fauna habitat.

It is unclear if biodiversity offsetting would be required for the options. In order to inform a biodiversity impact assessment for the preferred option, indirect impacts and the full extent of the works would need to be incorporated into one impact assessment, and Assessments of Significance completed for all impacted threatened entities.

In order to inform potential offsetting costs, an offsetting scenario was completed for each option using credit estimates and current credit pricing. It was concluded that the Bends Culvert 'sediment removal option' would be the most expensive option (estimated at $672K) The Sports Complex is likely to be the next expensive option (approximately $126K). The Bends Culverts option is estimated to be approximately $67K, whilst the Oxford option is estimated to be the cheapest at approximately $12K.

References

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Royal Haskoning DHV (2019) Wakehurst Parkway Flood Mitigation Feasibility Study

Annex 1. Likelihood of Occurrence Table of threatened Biodiversity in the study Area

Scientific Name	Common Name	BC Act	EPBC Act	Habitat	Likelihood of Occurrence within area of direct disturbance
Plants					
Acacia bynoeana	Bynoe's Wattle	E	V	Grows mainly in heath and dry sclerophyll forest in sandy soils. Mainly south of Dora Creek-Morisset area to Berrima and the Illawarra region, west to the Blue Mountains, also recorded from near Kurri Kurri in the Hunter Valley and from Morton National Park.	Low
Acacia pubescens	Downy Wattle	V	V	Concentrated around the Bankstown-Fairfield-Rookwood area and the Pitt Town area, with outliers occurring at Barden Ridge, Oakdale and Mountain Lagoon. Occurs on alluviums, shales and at the intergrade between shales and sandstones. The soils are characteristically gravely soils, often with ironstone. Grows in open woodland and forest, in a variety of plant communities, including Cooks River-Castlereagh Ironbark forest, Shale-Gravel Transition forest and Cumberland Plain woodland.	Low
Acacia terminalis subsp. terminalis	Sunshine Wattle	E	E	Very limited distribution, mainly in near-coastal areas from the northern shores of Sydney Harbour S to Botany Bay, with most records from the Port Jackson area and the eastern suburbs of Sydney. Coastal scrub and dry sclerophyll woodland on sandy soils. Habitat is generally sparse and scattered.	Low
Allocasuarina glareicola	-	E	E	Primarily restricted to the Richmond (NW Cumberland Plain) district, but with an outlier population found at Voyager Point, Liverpool. Grows in Castlereagh woodland on lateritic soil. Found in open woodland with Eucalyptus parramattensis, Eucalyptus fibrosa, Angophora bakeri, Eucalyptus sclerophylla and Melaleuca decora. Common associated understorey species include Melaleuca nodosa, Hakea dactyloides, Hakea sericea, Dillwynia tenuifolia, Micromyrtus minutiflora, Acacia elongata, Acacia brownei, Themeda australis and Xanthorrhoea minor.	Low
Asterolasia elegans	-	E	E	Occurs north of Sydney, in the Baulkham Hills, Hawkesbury and Hornsby local government areas. Also likely to occur in the western part of Gosford local government area. Known from only seven populations, only one of which is wholly within a conservation reserve. Occurs on	Low

Scientific Name	Common Name	BC Act	EPBC Act	Habitat	Likelihood of Occurrence within area of direct disturbance
				Hawkesbury sandstone in sheltered forests on mid- to lower slopes and valleys, e.g. in or adjacent to gullies which support sheltered forest.	
Caladenia tessellata	Thick-lip Spider Orchid	E	V	The Tessellated Spider Orchid is found in grassy sclerophyll woodland on clay loam or sandy soils, though the population near Braidwood is in low woodland with stony soil. Known from the Sydney area (old records), Wyong, Ulladulla and Braidwood in NSW. Populations in Kiama and Queanbeyan are presumed extinct.	Low
Callistemon linearifolius	Nettled Bottlebrush	V	-	Recorded from the Georges River to Hawkesbury River in the Sydney area, and north to the Nelson Bay area of NSW. Recorded in 2000 at Coalcliff in the northern Illawarra. For the Sydney area, recent records are limited to the Hornsby Plateau area near the Hawkesbury River. Grows in dry sclerophyll forest on the coast and adjacent ranges.	Low
Cryptostylis hunteriana	Leafless Tongue-orchid	V	V	Does not appear to have well defined habitat preferences and is known from a range of communities, including swamp-heath and woodland. The larger populations typically occur in woodland dominated by Scribbly Gum (Eucalyptus sclerophylla), Silvertop Ash (E. sieberi), Red Bloodwood (Corymbia gummifera) and Black Sheoak (Allocasuarina littoralis); appears to prefer open areas in the understorey of this community and is often found in association with the Large Tongue Orchid (C. subulata) and the Tartan Tongue Orchid (C. erecta).	Low
Cynanchum elegans	White-flowered Wax Plant	E	E	Recorded from rainforest gullies scrub and scree slopes from the Gloucester district to the Wollongong area and inland to Mt Dangar.	Low
Darwinia biflora	-	V	V	Recorded in Ku-ring-gai, Hornsby, Baulkham Hills and Ryde local government areas. The northern, southern, eastern and western limits of the range are at Maroota, North Ryde, Cowan and Kellyville, respectively. Occurs on the edges of weathered shale-capped ridges, where these intergrade with Hawkesbury Sandstone. The vegetation structure is usually woodland, open forest or scrub-heath.	Low
Deyeuxia appressa	-	E	E	A highly restricted NSW endemic known only from two pre-1942 records in the Sydney area (Herne Bay, Saltpan Creek, off the Georges River, south of Bankstown and Killara, near Hornsby). Almost nothing is known about the species' habitat and ecology. Flowers spring to summer and is mesophytic (grows in moist conditions).	Low

Scientific Name	Common Name	BC Act	EPBC Act	Habitat	Likelihood of Occurrence within area of direct disturbance
Epacris purpurascens var. purpurascens	Port Jackson Heath	V	-	Recorded from Gosford in the north, to Narrabeen in the east, Silverdale in the west and Avon Dam vicinity in the South. Found in a range of habitat types, most of which have a strong shale soil influence.	Low
Eucalyptus camfieldii	Heart-leaved Stringybark	V	V	Restricted distribution in a narrow band with the most northerly records in the Raymond Terrace Area south to Waterfall. Localised and scattered distribution includes sites at Norah Head (Tuggerah Lakes), Peats Ridge, Mt Colah, Elvina Bay Trail (West Head), Terrey Hills, Killara, North Head, Menai, Wattamolla and a few other sites in Royal National Park. Poor coastal country in shallow sandy soils overlying Hawkesbury sandstone. Coastal heath mostly on exposed sandy ridges. Occurs mostly in small scattered stands near the boundary of tall coastal heaths and low open woodland of the slightly more fertile inland areas.	Low
Eucalyptus nicholii	Narrow-leaved Black Peppermint	V	V	Typically grows in dry grassy woodland, on shallow soils of slopes and ridges. Found primarily on infertile soils derived from granite or metasedimentary rock. Seedling recruitment is common, even in disturbed soils, if protected from grazing and fire.	Low
Eucalyptus scoparia	Wallangarra White Gum	E	V	In NSW it is known from only three locations near Tenterfield. Found in open eucalypt forest and woodland on well-drained granite hilltops, slopes and rocky outcrops, typically at high altitudes. At lower elevations can occur in less rocky soils in damp situations.	Low
Genoplesium baueri	Bauer's Midge Orchid	E	E	Grows in dry sclerophyll forest and moss gardens over sandstone. Flowers February to March. Has been recorded between Ulladulla and Port Stephens. Currently the species is known from just over 200 plants across 13 sites. The species has been recorded in Berowra Valley Regional Park, Royal National Park and Lane Cove National Park and may also occur in the Woronora, Oâ€™Hares, Metropolitan and Warragamba Catchments.	Low
Grevillea caleyi	Caley's Gravillea	E	E	Restricted to an 8 km square area around Terrey Hills, approximately 20 km north of Sydney. Occurs in three major areas of suitable habitat, namely Belrose, Ingleside and Terrey Hills-Duffys forest within the Ku-ring-gai, Pittwater and Warringah Local Government Areas. All sites occur on the ridgetop between elevations of 170 to 240m asl, in association with laterite soils and a vegetation community of open	Low

Scientific Name	Common Name	BC Act	EPBC Act	Habitat	Likelihood of Occurrence within area of direct disturbance
				forest, generally dominated by Eucalyptus sieberi and Corymbia gummifera. Commonly found in the endangered Duffys forest ecological community.	
Grevillea shiressii	Grevillea shiressii	V	V	Grows along creek banks in wet sclerophyll forest with a moist understorey in alluvial sandy or loamy soils.	Low
Haloragodendron lucasii	-	E	E	Occurs on Hawkesbury Sandstone in moist sandy loam soil. The species prefers sheltered aspects and inhabits gentle slopes below cliff lines near creeks in low open woodland or open forest. Its distribution is correlated with high soil moisture and phosphorus levels.	Low
Hibbertia superans	Hibbertia superans	E	-	Flowering time is July to December. The species occurs on sandstone ridgetops often near the shale-sandstone boundary. Occurs in both open woodland and heathland, and appears to prefer open disturbed areas, such as tracksides.	Low
Isotoma fluviatilis subsp. fluviatilis	-	Extinct	-	Known to grow in damp places, on the Cumberland Plain, including freshwater wetland, grassland/alluvial woodland and an alluvial woodland/shale plains woodland (Cumberland Plain Woodland) ecotone.	None
Kunzea rupestris	Kunzea rupestris	V	V	Grows in shallow depressions on large flat sandstone rock outcrops. Characteristically found in short to tall shrubland or heathland.	None
Lasiopetalum joyceae	Lasiopetalum joyceae	V	V	Grows in heath on sandstone.	None
Leptospermum deanei	Leptospermum deanei	V	V	woodland on lower hill slopes or near creeks. Sandy alluvial soil or sand over sandstone. Occurs in riparian scrub, woodland and open forest.	None
Melaleuca biconvexa	Biconvex Paperbark	V	V	Grows in damp places, often near streams or low-lying areas on alluvial soils of low slopes or sheltered aspects. Scattered and dispersed populations found in the Jervis Bay area in the south and the Gosford-Wyong area in the north.	Low
Melaleuca deanei	Deane\'s Paperbark	V	V	Grows in wet heath on sandstone in coastal districts from Berowra to Nowra.	None
Microtis angusii	Angus's Onion Orchid	E	E	It is not easy to define the preferred natural habitat of this orchid as the Ingleside location is highly disturbed. The dominant species occurring on the site are introduced weeds Coolatai grass and Acacia saligna. The Ingleside population occurs on soils that have been modified but were	None

Scientific Name	Common Name	BC Act	EPBC Act	Habitat	Likelihood of Occurrence within area of direct disturbance
				originally those of the restricted ridgetop lateritic soils in the Duffys forest - Terrey Hills - Ingleside and Belrose areas. These soils support a specific and distinct vegetation type, the Duffys forest Vegetation Community which is listed as an EEC under the TSC Act and ranges from open forest to low open forest and rarely woodland.	
Pelargonium sp. Striatellum (G.W.Carr 10345)	-	E	E	It has a narrow habitat that is usually just above the high-water level of irregularly inundated or ephemeral lakes, in the transition zone between surrounding grasslands or pasture and the wetland or aquatic communities.	Low
Persoonia hirsuta	Hairy Geebung	E	E	Distributed from Singleton in the north, along the east coast to Bargo in the south and the Blue Mountains to the west. A large area of occurrence, but occurs in small populations, increasing the species's fragmentation in the landscape. Found in sandy soils in dry sclerophyll open forest, woodland and heath on sandstone. Usually present as isolated individuals or very small populations. Probably killed by fire (as other Persoonia spp. are) but will regenerate from seed.	None
Persoonia mollis subsp. maxima	Persoonia mollis subsp. maxima	E	E	Occurs in sheltered aspects of deep gullies or on the steep upper hillsides of narrow gullies on Hawkesbury Sandstone. These habitats support relatively moist, tall forest vegetation communities, often with warm temperate rainforest influences. Flowers are likely to be pollinated predominantly by native bees. Self-pollination is usually unsuccessful.	None
Pimelea curviflora var. curviflora	-	V	V	Confined to the coastal area of Sydney between northern Sydney in the south and Maroota in the north-west. Former range extended south to the Parramatta River and Port Jackson region including Five Dock, Bellevue Hill and Manly. Occurs on shaley-lateritic soils over sandstone and shale-sandstone transition soils on ridgetops and upper slopes amongst woodlands.	None
Pimelea spicata	Spiked Rice-flower	E	E	Once widespread on the Cumberland Plain, the Spiked Rice-flower occurs in two disjunct areas; the Cumberland Plain (Narellan, Marayong, Prospect Reservoir areas) and the Illawarra (Landsdowne to Shellharbour to northern Kiama). In both the Cumberland Plain and Illawarra environments this species is found on well-structured clay	None

Scientific Name	Common Name	BC Act	EPBC Act	Habitat	Likelihood of Occurrence within area of direct disturbance
				soils. On the inland Cumberland Plain sites it is associated with grey box and Ironbark. In the coastal Illawarra it occurs commonly in Coast Banksia open woodland with a better developed shrub and grass understorey.	
Prostanthera densa	Villous Mintbush	V	V	Villous Mintbush is generally grows in sclerophyll forest and shrubland on coastal headlands and near coastal ranges, chiefly on sandstone, and rocky slopes near the sea.	None
Prostanthera marifolia	Seaforth Mintbush	CE	CE	Occurs in localised patches in or in close proximity to the endangered Duffys forest ecological community. Located on deeply weathered clay-loam soils associated with ironstone and scattered shale lenses, a soil type which only occurs on ridge tops and has been extensively urbanised.	None
Syzygium paniculatum	Magenta Lilly Pilly	E	V	Found only in NSW, in a narrow, linear coastal strip from Bulahdelah to Conjola State forest. On the south coast the species occurs on grey soils over sandstone, restricted mainly to remnant stands of littoral rainforest. On the central coast it occurs on gravels, sands, silts and clays in riverside gallery rainforests and remnant littoral rainforest communities	Low
Tetratheca glandulosa	Tetratheca glandulosa	V	V	Associated with shale-sandstone transition habitat where shale-cappings occur over sandstone, with associated soil landscapes such as Lucas Heights, Gymea, Lambert and Faulconbridge. Topographically, the plant occupies ridgetops, upper-slopes and to a lesser extent mid-slope sandstone benches. Soils are generally shallow, consisting of a yellow, clayey-sandy loam. Stony lateritic fragments are also common in the soil profile on many of these ridgetops. Vegetation structure varies from heaths and scrub to woodlands-open woodlands, and open forest.	None
Thesium australe	Austral Toadflax	V	V	Grows in very small populations scattered across eastern NSW, along the coast, and from the Northern to Southern Tablelands. It is also found in Tasmania and Queensland and in eastern Asia. Occurs in grassland or grassy woodland. Grows on kangaroo grass tussocks but has also been recorded within the exotic coolatai grass.	Low

Scientific Name	Common Name	BC Act	EPBC Act	Habitat	Likelihood of Occurrence within area of direct disturbance
Triplarina imbricata	Creek Triplarina	E	E	Found only in a few locations in the ranges south-west of Glenreagh and near Tabulam in north-east NSW. Along watercourses in low open forest with water gum.	Low
Threatened Fauna					
Heleioporus australiacus	Giant Burrowing Frog	V	V	The Giant Burrowing Frog has been recorded breeding in a range of water bodies associated with more sandy environments of the coast and adjacent ranges from the Sydney Basin south the eastern Victoria. It breeds in hanging swamps, perennial non-flooding creeks and occasionally permanent pools, but permanent water must be present to allow its large tadpoles time to reach metamorphosis.	Moderate
Litoria aurea	Green and Golden Bell Frog	E	V	Inhabits a very wide range of water bodies including marshes, dams and streams, particularly those containing emergent vegetation such as bullrushes or spikerushes. It also inhabits numerous types of man-made water bodies including quarries and sand extraction sites. Optimum habitat includes water-bodies that are un-shaded, free of predatory fish such as Plague Minnow, have a grassy area nearby and diurnal sheltering sites available.	None
Litoria littlejohni	Littlejohn's Tree Frog	V	V	Occurs in wet and dry sclerophyll forests and heathland associated with sandstone outcrops between 280 and 1000 m on the eastern slopes of the Great Dividing Range from the Central Coast down into Victoria. Individuals have been collected from a wide range of water bodies that includes semi-permanent dams, permanent ponds, temporary pools and permanent streams, with calling occurring from fringing vegeation or on the banks. Individuals have been observed sheltering under rocks on high exposed ridges during summer and within deep leaf litter adjacent to the breeding site. Calling occurs in all months of the year, often in association with heavy rains. The tadpoles are distinctive, being large and very dark in colouration.	None
Mixophyes balbus	Stuttering Frog	E	V	Associated with streams in dry sclerophyll and wet sclerophyll forests and rainforests of more upland areas of the Great Dividing Range of NSW and down into Victoria. Breeding occurs along forest streams with permanent water where eggs are deposited within nests excavated in riffle zones by the females and the tadpoles swim free into the stream	None

Scientific Name	Common Name	BC Act	EPBC Act	Habitat	Likelihood of Occurrence within area of direct disturbance
				when large enough to do so. Outside of breeding, individuals range widely across the forest floor and can be found hundres of metres from water	
Pseudopryne	Red-crowned Toadlet	V	-	Red-crowned Toadlets are quite a localised species that appear to be largely restricted to the immediate vicinity of suitable breeding habitat. Red-crowned Toadlets are usually found as small colonies scattered along ridges coinciding with the positions of suitable refuges near breeding sites. Due to this tendency for discrete populations to concentrate at particular sites, a relatively small localised disturbance may have a significant impact on a local population if it occurs on a favoured breeding or refuge site.	Moderate
Actitis hypoleucos	Common Sandpiper	-	M, MA, C, J, K	Utilises a wide range of coastal wetlands and some inland wetlands, mostly found around muddy margins or rocky shores. Forages in shallow water and on soft mud, roosts on rocks or vegetation such as mangroves. Northern hemisphere breeding.	Low
Cuculus optatus	Oriental Cuckoo	-	MA	Mainly inhabits coniferous, deciduous and mixed forests. Breeds in northern hemisphere. Brood parasite, laying eggs in nests of other birds.	Low
Pandion cristatus	Eastern Osprey	V	M, MA	Found right around the Australian coast line, except for Victoria and Tasmania. They are common around the northern coast, especially on rocky shorelines, islands and reefs. The species is uncommon to rare or absent from closely settled parts of south-eastern Australia. Favour coastal areas, especially the mouths of large rivers, lagoons and lakes. Feed on fish over clear, open water.	Moderate
Rostratula australis	Painted Snipe	E	E, MA	In NSW, this species has been recorded at the Paroo wetlands, Lake Cowell, Macquarie Marshes and Hexham Swamp. Most common in the Murray-Darling Basin. Prefers fringes of swamps, dams and nearby marshy areas where there is a cover of grasses, lignum, low scrub or open timber. Nests on the ground amongst tall vegetation, such as grasses, tussocks or reeds.	Low
Anthochaera phrygia	Regent Honeyeater	CE	E,M	The Regent Honeyeater mainly inhabits temperate woodlands and open forests of the inland slopes of south-east Australia. Birds are also found in drier coastal woodlands and forests in some years. The distribution of	None

Scientific Name	Common Name	BC Act	EPBC Act	Habitat	Likelihood of Occurrence within area of direct disturbance
				the species has contracted dramatically in the last 30 years to between north-eastern Victoria and south-eastern Queensland. There are only three known key breeding regions remaining: north-east Victoria (Chiltern-Albury), and in NSW at Capertee Valley and the Bundarra-Barraba region. In NSW the distribution is very patchy and mainly confined to the two main breeding areas and surrounding fragmented woodlands. In some years flocks converge on flowering coastal woodlands and forests.	
Artamus cyanopterus cyanopterus	Dusky Wood Swallow	V		dry, open eucalypt forests and woodlands, including mallee associations, with an open or sparse understorey of eucalypt saplings, acacias and other shrubs, and ground-cover of grasses or sedges and fallen woody debris. It has also been recorded in shrublands, heathlands and very occasionally in moist forest or rainforest. Also found in farmland, usually at the edges of forest or woodland.	Low
Botaurus poiciloptilus	Australasian Bittern	E	E	The Australasian Bitterns is widespread but uncommon over south-eastern Australia. In NSW they may be found over most of the state except for the far north-west. Favours permanent freshwater wetlands with tall, dense vegetation, particularly bullrushes and spikerushes.	Low
Burhinus grallarius	Bush Stone-curlew	E	-	The Bush Stone-curlew is found throughout Australia except for the central southern coast and inland, the far south-east corner, and Tasmania. Only in northern Australia is it still common however and in the south-east it is either rare or extinct throughout its former range. Inhabits open forests and woodlands with a sparse grassy groundlayer and fallen timber. Largely nocturnal, being especially active on moonlit nights.	None
Calidris acuminata	Sharp-tailed Sandpiper	-	M	the Sharp-tailed Sandpiper prefers muddy edges of shallow fresh or brackish wetlands, with inundated or emergent sedges, grass, saltmarsh or other low vegetation. This includes lagoons, swamps, lakes and pools near the coast, and dams, waterholes, soaks, bore drains and bore swamps, saltpans and hypersaline saltlakes inland. They also occur in saltworks and sewage farms. They use flooded paddocks, sedgelands and other ephemeral wetlands, but leave when they dry. They use intertidal mudflats in sheltered bays, inlets, estuaries or seashores, and	Low

Scientific Name	Common Name	BC Act	EPBC Act	Habitat	Likelihood of Occurrence within area of direct disturbance
				also swamps and creeks lined with mangroves. They tend to occupy coastal mudflats mainly after ephemeral terrestrial wetlands have dried out, moving back during the wet season. They may be attracted to mats of algae and water weed either floating or washed up around terrestrial wetlands, and coastal areas with much beachcast seaweed. Sometimes they occur on rocky shores and rarely on exposed reefs	
Calidris ferruginea	Curlew Sandpiper	E	-	The Curlew Sandpiper is distributed around most of the coastline of Australia. It occurs along the entire coast of NSW, particularly in the Hunter Estuary, and sometimes in freshwater wetlands in the Murray-Darling Basin. It generally occupies littoral and estuarine habitats, and in New South Wales is mainly found in intertidal mudflats of sheltered coasts. It also occurs in non-tidal swamps, lakes and lagoons on the coast and sometimes the inland	Low
Calidris melanotos	Pectoral Sandpiper	-	M	the Pectoral Sandpiper prefers shallow fresh to saline wetlands. The species is found at coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains and artificial wetlands.	Low
Callocephalon fimbriatum	Gang-gang Cockatoo	V	-	In summer, occupies tall montane forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests. Also occur in subalpine snow gum woodland and occasionally in temperate or regenerating forest. In winter, occurs at lower altitudes in drier, more open eucalypt forests and woodlands, particularly in box-ironbark assemblages, or in dry forest in coastal areas. It requires tree hollows in which to breed.	Low
Callocephalon fimbriatum	Gang-gang Cockatoo population in the Hornsby and Ku-ring-gai local government areas	EP	-	In summer, occupies tall montane forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests. Also occur in subalpine snow gum woodland and occasionally in temperate or regenerating forest. In winter, occurs at lower altitudes in drier, more open eucalypt forests and woodlands, particularly in box-ironbark assemblages, or in dry forest in coastal areas. It requires tree hollows in which to breed.	Low
Calyptorhynchus lathami	Glossy Black-Cockatoo	V	-	Inhabits forest with low nutrients, characteristically with key Allocasuarina spp. Tends to prefer drier forest types with a middle	Moderate

Scientific Name	Common Name	BC Act	EPBC Act	Habitat	Likelihood of Occurrence within area of direct disturbance
				stratum of Allocasuarina below Eucalyptus or Angophora. Often confined to remnant patches in hills and gullies. Breed in hollows stumps or limbs, either living or dead. Endangered population in the Riverina.	
Daphoenositta chrysoptera	Varied Sittella	V	-	Inhabits wide variety of dry eucalypt forests and woodlands, usually with either shrubby under storey or grassy ground cover or both, in all climatic zones of Australia. Usually in areas with rough-barked trees, such as stringybarks or ironbarks, but also in paperbarks or mature Eucalypts with hollows.	Moderate
Dasyornis brachypterus	Eastern Bristlebird	E	E	Found in coastal woodlands, dense scrub and heathlands, particularly where it borders taller woodlands.	Low
Glossopsitta pusilla	Little Lorikeet	V	-	Distributed in forests and woodlands from the coast to the western slopes of the Great Dividing Range in NSW, extending westwards to the vicinity of Albury, Parkes, Dubbo and Narrabri. Mostly occur in dry, open eucalypt forests and woodlands. They feed primarily on nectar and pollen in the tree canopy. Nest hollows are located at heights of between 2 m and 15 m, mostly in living, smooth-barked eucalypts. Most breeding records come from the western slopes.	Low
Grantiella picta	Painted Honeyeater	V	-	The Painted Honeyeater is nomadic and occurs at low densities throughout its range. The greatest concentrations of the bird and almost all breeding occurs on the inland slopes of the Great Dividing Range in NSW, Victoria and southern Queensland. During the winter it is more likely to be found in the north of its distribution. Inhabits boree, brigalow and box-gum woodlands and box-ironbark forests.	Low
Haliaeetus leucogaster	White-bellied Sea-Eagle	-	M	Inhabits coastal and near coastal areas, building large stick nests, and feeding mostly on marine and estuarine fish and aquatic fauna.	Low
Hieraaetus morphnoides	Little Eagle	V	-	Most abundant in lightly timbered areas with open areas nearby. Often recorded foraging in grasslands, crops, treeless dune fields, and recently logged areas. May nest in farmland, woodland and forest in tall trees.	Low
Hirundapus caudacutus	White-throated Needletail	-	M	An aerial species found in feeding concentrations over cities, hilltops and timbered ranges.	Low
Ixobrychus flavicollis	Black Bittern	V	-	Usually found on coastal plains below 200 m. Often found along timbered watercourses, in wetlands with fringing trees and shrub	Moderate

Scientific Name	Common Name	BC Act	EPBC Act	Habitat	Likelihood of Occurrence within area of direct disturbance
				vegetation. The sites where they occur are characterized by dense waterside vegetation.	
Lathamus discolor	Swift Parrot	E	E	The Swift Parrot occurs in woodlands and forests of NSW from May to August, where it feeds on eucalypt nectar, pollen and associated insects. The Swift Parrot is dependent on flowering resources across a wide range of habitats in its wintering grounds in NSW. This species is migratory, breeding in Tasmania and also nomadic, moving about in response to changing food availability.	Low
Lophoictinia isura	Square-tailed Kite	V	-	Typically inhabits coastal forested and wooded lands of tropical and temperate Australia. In NSW it is often associated with ridge and gully forests dominated by Eucalyptus longifolia, Corymbia maculata, E. elata or E. smithii. Individuals appear to occupy large hunting ranges of more than 100km2. They require large living trees for breeding, particularly near water with surrounding woodland -forest close by for foraging habitat. Nest sites are generally located along or near watercourses, in a tree fork or on large horizontal limbs.	Low
Monarcha melanopsis	Black-faced Monarch	-	M	Found along the coast of eastern Australia, becoming less common further south. Inhabits rainforests, eucalypt woodlands, coastal scrub and damp gullies. It may be found in more open woodland when migrating.	Low
Monarcha trivirgatus	Spectacled Monarch	-	M	Coastal north-eastern and eastern Australia, including coastal islands, from Cape York, Queensland to Port Stephens, New South Wales. Prefers thick understorey in rainforests, wet gullies and waterside vegetation, as well as mangroves.	Low
Motacilla flava	Western Yellow Wagtail	-	M	This species occupies a range of damp or wet habitats with low vegetation, from damp meadows, marshes, waterside pastures, sewage farms and bogs to damp steppe and grassy tundra. In the north of its range it is also found in large forest clearings.	Low
Myiagra cyanoleuca	Satin Flycatcher	-	M	The Satin Flycatcher is found along the east coast of Australia from far northern Queensland to Tasmania, including south-eastern South Australia. Found in tall forests, preferring wetter habitats such as heavily forested gullies, but not rainforests.	Low

Scientific Name	Common Name	BC Act	EPBC Act	Habitat	Likelihood of Occurrence within area of direct disturbance
Ninox connivens	Barking Owl	V	-	Generally found in open forests, woodlands, swamp woodlands and dense scrub. Can also be found in the foothills and timber along watercourses in otherwise open country.	Low
Ninox strenua	Powerful Owl	V	-	Occupies wet and dry eucalypt forests and rainforests. Can occupy both un-logged and lightly logged forests as well as undisturbed forests where it usually roosts on the limbs of dense trees in gully areas. It is most commonly recorded within red turpentine in tall open forests and black she-oak within open forests. Large mature trees with hollows at least 0.5 m deep are required for nesting. Tree hollows are particularly important for the Powerful Owl because a large proportion of the diet is made up of hollow-dependent arboreal marsupials. Nest trees for this species are usually emergent with a diameter at breast height of at least 100 cm.	Moderate
Numenius madagascariensis	Far Eastern Curlew	CE	M, MA	Generally forages on intertidal mudflats, along the muddy banks of estuaries and in coastal lagoons, either in open unvegetated areas or among mangroves. They sometimes forage on sandy beaches or among rocks	Low
Petroica boodang	Scarlet Robin	V	-	The Scarlet Robin is found from SE Queensland to SE South Australia and also in Tasmania and SW Western Australia. In NSW, it occurs from the coast to the inland slopes. The Scarlet Robin lives in dry eucalypt forests and woodlands. The understorey is usually open and grassy with few scattered shrubs.	Low
Ptilinopus superbus	Superb Fruit-dove	V	-	The Superb Fruit-dove occurs principally from north-eastern in Queensland to north-eastern NSW. It is much less common further south, where it is largely confined to pockets of suitable habitat as far south as Moruya. There are records of vagrants as far south as eastern Victoria and Tasmania. Inhabits rainforest and similar closed forests where it forages high in the canopy, eating the fruits of many tree species such as figs and palms. It may also forage in eucalypt or acacia woodland where there are fruit-bearing trees.	Low
Rhipidura rufifrons	Rufous Fantail	-	M	Found along the east coast of Australia from far northern Queensland to Tasmania, including south-eastern South Australia. Inhabits tall	Low

Scientific Name	Common Name	BC Act	EPBC Act	Habitat	Likelihood of Occurrence within area of direct disturbance
				forests, preferring wetter habitats such as heavily forested gullies, but not rainforests.	
Rostratula australis	Australian Painted Snipe	E	E, M	In NSW, this species has been recorded at the Paroo wetlands, Lake Cowell, Macquarie Marshes and Hexham Swamp. Most common in the Murray-Darling Basin. Prefers fringes of swamps, dams and nearby marshy areas where there is a cover of grasses, lignum, low scrub or open timber. Nests on the ground amongst tall vegetation, such as grasses, tussocks or reeds.	Low
Tyto novaehollandiae	Masked Owl	V	-	Inhabits a diverse range of wooded habitat that provide tall or dense mature trees with hollows suitable for nesting and roosting. Mostly recorded in open forest and woodlands adjacent to cleared lands. Nest in hollows, in trunks and in near vertical spouts or large trees, usually living but sometimes dead. Nest hollows are usually located within dense forests or woodlands. Masked owls prey upon hollow-dependent arboreal marsupials, but terrestrial mammals make up the largest proportion of the diet.	Low
Tyto tenebricosa	Sooty Owl	V	-	Often found in tall old-growth forests, including temperate and subtropical rainforests. In NSW mostly found on escarpments with a mean altitude less than 500 metres. Nests and roosts in hollows of tall emergent trees, mainly eucalypts often located in gullies. Nests have been located in trees 125 to 161 centimetres in diameter.	Moderate
Macquaria australasica	Macquarie Perch	E	E	Recent research indicates that there may be at least two distinct forms of Macquarie Perch, one from the western rivers (Murray-Darling Basin form) and one from the eastern rivers (the Shoalhaven and Hawkesbury-Nepean systems) (the coastal form). The species has also been stocked or translocated into a number of reservoirs including Talbingo, Cataract and Khancoban reservoirs and translocated into streams including the Mongarlowe River. Macquarie Perch are found in both river and lake habitats; especially the upper reaches of rivers and their tributaries	None
Prototroctes maraena	Australian Grayling	-	V	Historically, this species occurred in coastal streams from the Grose River Valley, southwards through NSW, Vic. and Tas. It also occasionally occurred high upstream in the Snowy R. A single juvenile specimen was	None

Scientific Name	Common Name	BC Act	EPBC Act	Habitat	Likelihood of Occurrence within area of direct disturbance
				collected from Lake Macquarie in 1974. This species spends only part of its lifecycle in freshwater. The Tambo River population inhabits a clear, gravel-bottomed stream with alternating pools and riffles, and granite outcrops. It has also been associated with clear, gravel-bottomed habitats in the Mitchell & Wonnangatta Rivers but was present in a muddy-bottomed, heavily silted habitat in the Tarwin R.	
Pommerhelix duralensis	Dural Land Snail	E	E	The species has a strong affinity for communities in the interface region between shale-derived and sandstone-derived soils, with forested habitats that have good native cover and woody debris. It favours sheltering under rocks or inside curled-up bark.	None
Cercartetus nanus	Eastern Pygmy-possum	V	-	Inhabits rainforest through to sclerophyll forest and tree heath. Banksias and myrtaceous shrubs and trees are a favoured food source. Will often nest in tree hollows, but can also construct its own nest. Because of its small size it is able to utilise a range of hollow sizes including very small hollows. Individuals will use a number of different hollows and an individual has been recorded using up to 9 nest sites within a 0.5ha area over a 5 month period.	Low
Chalinolobus dwyeri	Large-eared Pied Bat	V	V	Located in a variety of drier habitats, including the dry sclerophyll forests and woodlands to the east and west of the Great Dividing Range. Can also be found on the edges of rainforests and in wet sclerophyll forests. This species roosts in caves and mines in groups of between 3 and 37 individuals.	Moderate
Dasyurus maculatus maculatus	Spotted-tailed Quoll	V	E	Spotted-tailed Quoll are found on the east coast of NSW, Tasmania, eastern Victoria and north-eastern Queensland. Only in Tasmania is it still considered common. Recorded across a range of habitat types, including rainforest, open forest, woodland, coastal heath and inland riparian forest, from the sub-alpine zone to the coastline.	Low
Falsistrellus tasmaniensis	Eastern False Pipistrelle	V	-	Inhabit sclerophyll forests, preferring wet habitats where trees are more than 20 m high. Two observations have been made of roosts in stem holes of living eucalypts. There is debate about whether or not this species moves to lower altitudes during winter, or whether they remain sedentary but enter torpor. This species also appears to be	Moderate

Scientific Name	Common Name	BC Act	EPBC Act	Habitat	Likelihood of Occurrence within area of direct disturbance
				highly mobile and records showing movements of up to 12 km between roosting and foraging sites.	
Isoodon obesulus obesulus	Southern Brown Bandicoot (eastern)	E	-	Prefers sandy soils with scrubby vegetation and-or areas with low ground cover that are burn from time to time. A mosaic of post fire vegetation is important for this species.	Low
Miniopterus australis	Little Bentwing-bat	V	-	Coastal north-eastern NSW and eastern Queensland. Little Bent-wing Bat is an insectivorous bat that roost in caves, in old mines, in tunnels, under bridges, or in similar structures. They breed in large aggregations in a small number of known caves and may travel 100s km from feeding home ranges to breeding sites. Little Bent-wing Bat has a preference for moist eucalypt forest, rainforest or dense coastal banksia scrub where it forages below the canopy for insects.	Moderate
Miniopterus schreibersii oceanensis	Eastern Bentwing-bat	V	-	Eastern Bent-wing Bats occur along the east and north-west coasts of Australia. Caves are the primary roosting habitat, but also use derelict mines, storm-water tunnels, buildings and other man-made structures. Form discrete populations centred on a maternity cave that is used annually in spring and summer for the birth and rearing of young.	Moderate
Mormopterus norfolkensis	Eastern Freetail-bat	V	-	Most records are from dry eucalypt forests and woodlands to the east of the Great Dividing Range. Appears to roost in trees, but little is known of this species' habits.	Moderate
Myotis macropus	Southern Myotis	V	-	The Large-footed Myotis is found in the coastal band from the north-west of Australia, across the top-end and south to western Victoria. Generally roost in groups of 10 - 15 close to water in caves, mine shafts, hollow-bearing trees, and storm water channels, buildings, under bridges and in dense foliage.	Moderate
Petauroides volans	Greater Glider population in the Eurobodalla local government area	V	-	The Greater Glider is an arboreal marsupial, largely restricted to eucalypt forests and woodlands. It is primarily folivorous, with a diet mostly comprising eucalypt leaves, and occasionally	Low
Petaurus norfolcensis	Squirrel Glider	V	-	Generally occurs in dry sclerophyll forests and woodlands but is absent from dense coastal ranges in the southern part of its range. Requires abundant hollow bearing trees and a mix of eucalypts, banksias and acacias. There is only limited information available on den tree use by	Low

Scientific Name	Common Name	BC Act	EPBC Act	Habitat	Likelihood of Occurrence within area of direct disturbance
				Squirrel gliders, but it has been observed using both living and dead trees as well as hollow stumps. Within a suitable vegetation community at least one species should flower heavily in winter and one species of eucalypt should be smooth barked. Endangered population in the Wagga Wagga LGA.	
Petaurus norfolcensis	Squirrel Glider on Barrenjoey Peninsula, north of Bushrangers Hill	EP	-	Generally occurs in dry sclerophyll forests and woodlands but is absent from dense coastal ranges in the southern part of its range. Requires abundant hollow bearing trees and a mix of eucalypts, banksias and acacias. There is only limited information available on den tree use by Squirrel gliders, but it has been observed using both living and dead trees as well as hollow stumps. Within a suitable vegetation community at least one species should flower heavily in winter and one species of eucalypt should be smooth barked. Endangered population in the Wagga Wagga LGA.	None
Petrogale penicillata	Brush-tailed Rock-wallaby	E	V	Found in rocky areas in a wide variety of habitats including rainforest gullies, wet and dry sclerophyll forest, and open woodland and rocky outcrops in semi-arid country. Commonly sites have a northerly aspect with numerous ledges, caves and crevices.	None
Phascolarctos cinereus	Koala	V	V	Inhabits eucalypt forests and woodlands. The suitability of these forests for habitation depends on the size and species of trees present, soil nutrients, climate and rainfall.	Low
Phascolarctos cinereus	Koala in the Pittwater Local Government Area	EP	-	Inhabits eucalypt forests and woodlands. The suitability of these forests for habitation depends on the size and species of trees present, soil nutrients, climate and rainfall.	None
Potorous tridactylus tridactylus	Long-nosed Potoroo	V	V	Inhabits coastal heath and wet and dry sclerophyll forests. Generally found in areas with rainfall greater than 760 mm. Requires relatively thick ground cover where the soil is light and sandy.	Low
Pseudomys novaehollandiae	New Holland Mouse	-	V	The New Holland Mouse currently has a disjunct, fragmented distribution across Tasmania, Victoria, New South Wales and Queensland. Across the species' range the New Holland Mouse is known to inhabit open heathlands, open woodlands with a heathland understorey, and vegetated sand dunes.	Low

Scientific Name	Common Name	BC Act	EPBC Act	Habitat	Likelihood of Occurrence within area of direct disturbance
Pteropus poliocephalus	Grey-headed Flying-fox	V	V	This species is a canopy-feeding frugivore and nectarivore of rainforests, open forests, woodlands, melaleuca swamps and banksia woodlands. Bats commute daily to foraging areas, usually within 15 km of the day roost although some individuals may travel up to 70 km.	Moderate
Scoteanax rueppellii	Greater Broad-nosed Bat	V	-	Prefer moist gullies in mature coastal forests and rainforests, between the Great Dividing Range and the coast. They are only found at low altitudes below 500 m. In dense environments they utilise natural and human-made opening in the forest for flight paths. Creeks and small rivers are favoured foraging habitat. This species roosts in hollow tree trunks and branches.	Moderate
Hoplocephalus bungaroides	Broad-headed Snake	E	V	Occurs almost exclusively in association with communities occurring on Triassic sandstone within the Sydney Basin. Typically found among exposed sandstone outcrops with vegetation types ranging from woodland to heath. Within these habitats they spend most of the year sheltering in and under rock crevices and exfoliating rock. However, some individuals will migrate to tree hollows to find shelter during hotter parts of summer.	None
Varanus rosenbergi	Rosenberg's Goanna	V	-	This species is a Hawkesbury-Narrabeen sandstone outcrop specialist. Occurs in coastal heaths, humid woodlands and both wet and dry sclerophyll forests.	Low

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Our services

Ecology and biodiversity
Terrestrial
Freshwater
Marine and coastal
Research and monitoring
Wildlife Schools and training

Heritage management
Aboriginal heritage
Historical heritage
Conservation management
Community consultation
Archaeological, built and landscape values

Environmental management and approvals
Impact assessments
Development and activity approvals
Rehabilitation
Stakeholder consultation and facilitation
Project management

Environmental offsetting
Offset strategy and assessment (NSW, QLD, Commonwealth)
Accredited BAM assessors (NSW)
Biodiversity Stewardship Site Agreements (NSW)
Offset site establishment and management
Offset brokerage
Advanced Offset establishment (QLD)

APPENDIX F - Sand Sheet Investigation Report



northern beaches council

Hand Auger Sample Plan 1

OXFORD FALLS, NSW

DRAFT

Legend

- Study Reach
- Watercourse (LPI)

Hand Auger Site

- Sand Lense or Flood Couplet
- No Clean Sand Deposit (Silts & Clays)
- Clean Sand Deposit Recorded

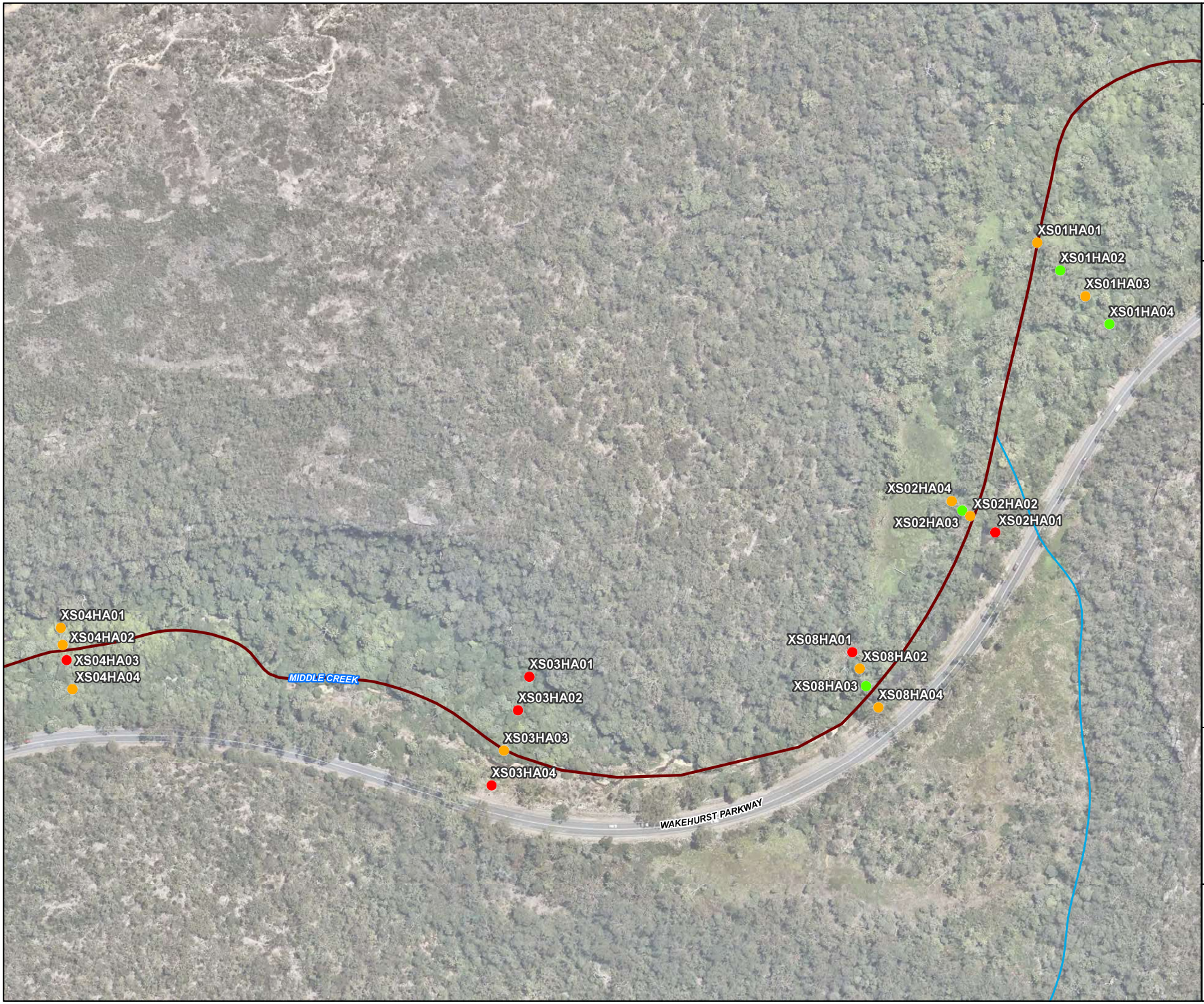
NSW GOVERNMENT Soil Conservation Service

1:1,500 Scale at A3

0 20 40 60 80 m

N

Map Produced by SCS Hornsby
Date: 2018-12-17
Coordinate System: GDA 1994 MGA Zone 56
Map: SCS3036-1-GS-002-HandAugerPlan 1.mxd 01
Aerial Imagery supplied by nearmap (January, 2018)



northern beaches council

Hand Auger Sample Plan 2

OXFORD FALLS, NSW

DRAFT

Legend

- Study Reach
- Watercourse (LPI)

Hand Auger Site

- Sand Lense or Flood Couplet
- No Clean Sand Deposit (Silts & Clays)
- Clean Sand Deposit Recorded

NSW GOVERNMENT Soil Conservation Service

1:2,000 Scale at A3

0 20 40 60 80 m

N

Map Produced by SCS Hornsby
Date: 2018-12-17
Coordinate System: GDA 1994 MGA Zone 56
Map: SCS3036-1-GS-003-HandAugerPlan 2.mxd 01
Aerial Imagery supplied by nearmap (January, 2018)



northern beaches council

Hand Auger Sample Plan

OXFORD FALLS, NSW

DRAFT

Legend

- Study Reach
- Watercourse (LPI)

Hand Auger Site

- Sand Lense or Flood Couplet
- No Clean Sand Deposit (Silts & Clays)
- Clean Sand Deposit Recorded

NSW GOVERNMENT Soil Conservation Service

1:3,500 Scale at A3

0 20 40 60 80 m

N

Map Produced by SCS Hornsby
Date: 2018-12-17
Coordinate System: GDA 1994 MGA Zone 56
Map: SCS3036-1-GS-004-HandAugerPlan.mxd 01
Aerial Imagery supplied by nearmap (January, 2018)

Soil Conservation Service

HAND AUGER LOG XS01-HA01

PROJECT NUMBER SCS3039
PROJECT NAME Middle Creek Sand Extent
CLIENT Northern Beaches Council
ADDRESS Wakehurst Parkway, Oxford Falls NSW

DRILLING DATE 5/12/2018
TOTAL DEPTH 2

COORDINATES 338242.7, 6267949
COORD SYS GDA 94 / MGA Zone 56
HEIGHT DATUM AHD
SURFACE RL 3.67

COMMENTS

LOGGED BY RMH

Depth (m)	Graphic Log	Moisture	Material Description	R. L (m)
0.1		D	Sandy LOAM (Top Soil) Brown, moist, slight to just firm. Organics, roots.	3.6
0.2				3.5
0.3			SAND (Flood Couplet Sequence) Brown with minor alternating yellow clean sand layers, moist. Fine grained.	3.4
0.4				3.3
0.5				3.2
0.6				3.1
0.7				3
0.8				2.9
0.9				2.8
1			Sandy Clay LOAM Brown, moist, strong.	2.7
1.1				2.6
1.2			Loamy SAND Grey, moist. Medium grained.	2.5
1.3				2.4
1.4				2.3
1.5			SAND Yellow, moist, loose. Medium to coarse grained.	2.2
1.6		W	Loamy SAND Grey, wet.	2.1
1.7				2
1.8			SAND Yellow, wet. Coarse grained.	1.9
1.9			Sandy Clay LOAM Dark brown, wet, strong.	1.8
2				1.7
			Termination Depth at:2 m	1.6

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produced by ESlog.ESdat.net on 21 Dec 2018

NSW GOVERNMENT Soil Conservation Service

HAND AUGER LOG XS01-HA02

PROJECT NUMBER SCS3039
PROJECT NAME Middle Creek Sand Extent
CLIENT Northern Beaches Council
ADDRESS Wakehurst Parkway, Oxford Falls NSW

DRILLING DATE 5/12/2018
TOTAL DEPTH 2

COORDINATES 338255.4, 6267934
COORD SYS GDA 94 / MGA Zone 56
HEIGHT DATUM AHD
SURFACE RL 3.20

COMMENTS

LOGGED BY RMH

Depth (m)	Graphic Log	Moisture	Material Description	R. L (m)
0.1		D	LOAM (Top Soil) Brown, moist, spongy to firm. Organics, roots, charcoal fragments at 0.36	3.1
0.2				3
0.3				2.9
0.4			SAND (Flood Couplet Sequence) Brown with minor alternating yellow clean sand layers, moist. Fine grained.	2.8
0.5				2.7
0.6			Sandy Clay LOAM Brown, moist, strong.	2.6
0.7			SAND Yellow, moist, loose. Medium grained.	2.5
0.8		W	SAND Grey, wet. Medium grained.	2.4
0.9				2.3
1				2.2
1.1			SAND Light yellow, wet. Gravels at 1.4m.	2.1
1.2				2
1.3				1.9
1.4				1.8
1.5			Sandy LOAM Grey, wet. Medium grained.	1.7
1.6			Loamy SAND Grey, wet. Medium grained.	1.6
1.7				1.5
1.8				1.4
1.9				1.3
2			Termination Depth at:2 m	1.2

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produced by ESlog.ESdat.net on 07 Jan 2019

Soil Conservation Service

HAND AUGER LOG XS01-HA03

PROJECT NUMBER SCS3039
PROJECT NAME Middle Creek Sand Extent
CLIENT Northern Beaches Council
ADDRESS Wakehurst Parkway, Oxford Falls NSW

DRILLING DATE 5/12/2018
TOTAL DEPTH 2

COORDINATES 338269.2, 6267920
COORD SYS GDA 94 / MGA Zone 56
HEIGHT DATUM AHD
SURFACE RL 3.24

COMMENTS

LOGGED BY RMH

Depth (m)	Graphic Log	Moisture	Material Description	R. L (m)
0.1		D	LOAM (Top Soil) Brown, moist, spongy to firm. Organics, roots.	3.2
0.2			Clayey SAND Brown with minor yellow clean sand lense, moist. Fine grained.	3.1
0.3			Silty LOAM Brown, moist, firm.	3
0.4				2.9
0.5				2.8
0.6				2.7
0.7			Sandy LOAM Brown, moist, slight to firm.	2.6
0.8				2.5
0.9			SAND Orange/Yellow, moist. Fine grained.	2.4
1				2.3
1.1			Loamy SAND Grey, moist. Fine grained	2.2
1.2		W		2.1
1.3			Loamy SAND Orange/Yellow, wet. Fine grained, colour change at 1.40 m to grey.	2
1.4				1.9
1.5				1.8
1.6				1.7
1.7			Borehole completed at 1.60 m (Water table reached therefore no sample could be obtained)	1.6
1.8				1.500
1.9				1.400
2				1.300
			Termination Depth at:2 m	1.200

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produced by ESlog.ESdat.net on 07 Jan 2019

NSW GOVERNMENT Soil Conservation Service

HAND AUGER LOG XS01-HA04

PROJECT NUMBER SCS3039
PROJECT NAME Middle Creek Sand Extent
CLIENT Northern Beaches Council
ADDRESS Wakehurst Parkway, Oxford Falls NSW

DRILLING DATE 5/12/2018
TOTAL DEPTH 2

COORDINATES 338282.4, 6267904
COORD SYS GDA 94 / MGA Zone 56
HEIGHT DATUM AHD
SURFACE RL 3.39

COMMENTS Sample site top of bank (right) flood runner.

LOGGED BY RMH

Depth (m)	Graphic Log	Moisture	Material Description	R. L (m)
0		D	SAND Grey, moist, loose. Medium grained.	3.3
0.1			SAND (Flood Couplet Sequence) Brown with minor alternating yellow clean sand layers, moist. Fine grained, organics, roots.	3.2
0.2				3.1
0.3			Clayey SAND Grey, moist.	3
0.4				2.9
0.5				2.8
0.6			SAND Yellow, moist. Fine grained.	2.7
0.7				2.6
0.8		W	Sandy LOAM Grey, wet, slight to firm.	2.5
0.9			Silty CLAY Grey, wet, firm.	2.4
1				2.3
1.1			Fine Sandy LOAM Dark grey, wet, just firm.	2.2
1.2			Borehole completed at 1.20 m (water table reached therefore no sample could be obtained)	2.1
1.3				2
1.4				1.9
1.5				1.8
1.6				1.7
1.7				1.6
1.8				1.5
1.9				1.4
2			Termination Depth at:2 m	1.3

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NSW GOVERNMENT Soil Conservation Service

HAND AUGER LOG XS02-HA01

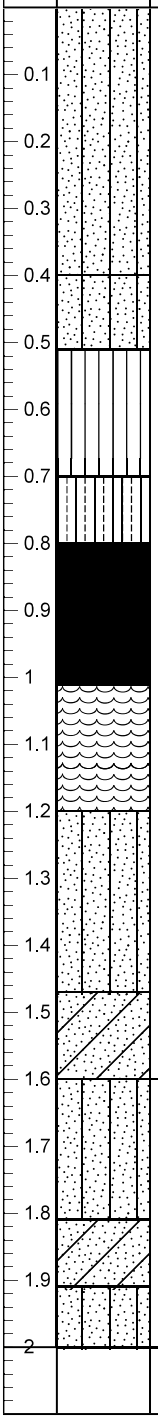
PROJECT NUMBER SCS3039
PROJECT NAME Middle Creek Sand Extent
CLIENT Northern Beaches Council
ADDRESS Wakehurst Parkway, Oxford Falls NSW

DRILLING DATE 27/11/2018
TOTAL DEPTH 2

COORDINATES 338219.6, 6267790
COORD SYS GDA 94 / MGA Zone 56
HEIGHT DATUM AHD
SURFACE RL 4.15

COMMENTS Top of Bank (right)

LOGGED BY RMH



Depth (m)	Moisture	Material Description	R. L (m)
0.1	D	Loamy SAND (Flood Couplet Sequence) Brown with minor alternating yellow clean sand layers, moist. Medium grained, organics, roots.	4.1
0.2			4
0.3			3.9
0.4			3.8
0.5		Loamy SAND Brown, moist. Medium grained, organics, roots.	3.7
0.6		Sandy LOAM Dark brown, moist, slight to firm.	3.6
0.7			3.5
0.8		Sandy Clay LOAM Dark brown, moist, strong.	3.4
0.9		Fine Sandy LOAM Dark brown, moist, just firm.	3.3
1			3.2
1.1		Silty LOAM Grey, moist, firm.	3.1
1.2			3
1.3		Loamy SAND Dark brown, moist. Yellow clean sand lense at 1.45 m (approx. 0.01 m thick). Medium grained.	2.9
1.4			2.8
1.5		Clayey SAND Dark brown, moist, slight. Medium grained.	2.7
1.6	W	Loamy SAND Dark brown, moist. Medium grained.	2.6
1.7			2.5
1.8		Clayey SAND Dark brown, moist, slight. Medium grained.	2.4
1.9		Loamy SAND Grey, moist. Medium grained.	2.3
2		Termination Depth at:2 m	2.2
			2.1

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produced by ESlog.ESdat.net on 09 Jan 2019

NSW GOVERNMENT Soil Conservation Service

HAND AUGER LOG XS02-HA02

PROJECT NUMBER SCS3039
PROJECT NAME Middle Creek Sand Extent
CLIENT Northern Beaches Council
ADDRESS Wakehurst Parkway, Oxford Falls NSW

DRILLING DATE 27/11/2018
TOTAL DEPTH 2

COORDINATES 338206, 6267799
COORD SYS GDA 94 / MGA Zone 56
HEIGHT DATUM AHD
SURFACE RL 4.01

COMMENTS

LOGGED BY RMH

Depth (m)	Graphic Log	Moisture	Material Description	R. L (m)
0.1		D	Loamy SAND (Flood Couplet Sequence) Brown with minor alternating yellow clean sand layers, moist. Medium grained, organics, roots.	4
0.2				3.9
0.3				3.8
0.4				3.7
0.5				3.6
0.6				3.5
0.7				3.4
0.8			SAND (Flood Couplet Sequence) Brown with minor alternating yellow clean sand layers, moist. Medium grained, organics, roots.	3.3
0.9			Sandy LOAM Grey, moist, slight to just firm.	3.2
1				3.1
1.1			Clayey SAND Grey, wet, slight. Medium grained.	3
1.2			Sandy LOAM Brown, moist, slight to just firm.	2.9
1.3				2.8
1.4				2.7
1.5		W	Loamy SAND Grey, moist. Medium grained.	2.6
1.6			Fine Sandy LOAM Dark grey, wet, Firm.	2.5
1.7				2.4
1.8				2.3
1.9			Sandy LOAM Dark brown, wet, slight to just firm.	2.2
2			Termination Depth at:2 m	2.1
				2

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NSW GOVERNMENT Soil Conservation Service

HAND AUGER LOG XS02-HA03

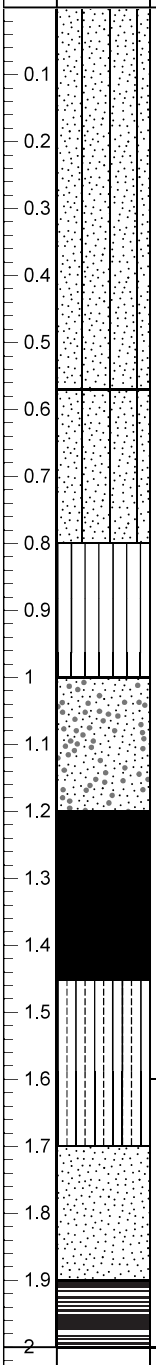
PROJECT NUMBER SCS3039
PROJECT NAME Middle Creek Sand Extent
CLIENT Northern Beaches Council
ADDRESS Wakehurst Parkway, Oxford Falls NSW

DRILLING DATE 27/11/2018
TOTAL DEPTH 2

COORDINATES 338201.5, 6267802
COORD SYS GDA 94 / MGA Zone 56
HEIGHT DATUM AHD
SURFACE RL 3.92

COMMENTS

LOGGED BY RMH



Depth (m)	Moisture	Material Description	R. L (m)
0	D	Loamy SAND (Flood Couplet Sequence) Brown with minor alternating yellow clean sand layers, moist. Medium grained, organics, roots.	3.9
0.6		Loamy SAND Brown, moist. Medium grained.	3.3
0.8		Sandy LOAM Brown, moist, slight to just firm. Charcoal inclusions throughout.	3.1
1		SAND (Flood Couplet Sequence) Brown with minor alternating yellow clean sand layers, moist. Medium grained.	2.9
1.2		Fine Sandy LOAM Dark grey, moist, firm.	2.7
1.5		Sandy Clay LOAM Dark Brown, moist, strong.	2.4
1.6	W		2.3
1.7		SAND Dark grey, wet. Medium grained.	2.2
1.9		Light CLAY Dark brown, wet, firm to strong.	2
2		Termination Depth at:2 m	1.9

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Soil Conservation Service

HAND AUGER LOG XS02-HA04

PROJECT NUMBER SCS3039
PROJECT NAME Middle Creek Sand Extent
CLIENT Northern Beaches Council
ADDRESS Wakehurst Parkway, Oxford Falls NSW

DRILLING DATE 27/11/2018
TOTAL DEPTH 2

COORDINATES 338195.8, 6267807
COORD SYS GDA 94 / MGA Zone 56
HEIGHT DATUM AHD
SURFACE RL 3.64

COMMENTS

LOGGED BY RMH

Depth (m)	Graphic Log	Moisture	Material Description	R. L (m)
0.1		D	Loamy SAND (Flood Couplet Sequence) Brown with minor alternating yellow clean sand layers, moist. Medium grained, organics, roots.	3.6
0.2				3.5
0.3				3.4
0.4				3.3
0.5				3.2
0.6				3.1
0.7				3
0.8				2.9
0.9			Sandy LOAM Grey, moist, slight to just firm.	2.8
1				2.7
1.1				2.6
1.2				2.5
1.3				2.4
1.4			Fine Sandy LOAM Dark grey, moist, firm.	2.3
1.5			Sandy CLAY Dark grey, moist, firm to strong.	2.2
1.6		W	Silty Clay LOAM Black, wet, firm.	2.1
1.7				2
1.8				1.9
1.9				1.8
2				1.7
			Termination Depth at:2 m	1.6

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NSW GOVERNMENT Soil Conservation Service

HAND AUGER LOG XS03-HA01

PROJECT NUMBER SCS3039
PROJECT NAME Middle Creek Sand Extent
CLIENT Northern Beaches Council
ADDRESS Wakehurst Parkway, Oxford Falls NSW

DRILLING DATE 27/11/2018
TOTAL DEPTH 2

COORDINATES 337963.8, 6267711
COORD SYS GDA 94 / MGA Zone 56
HEIGHT DATUM AHD
SURFACE RL 3.44

COMMENTS

LOGGED BY RMH

Depth (m)	Graphic Log	Moisture	Material Description	R. L (m)
0.1		D	Silty CLAY Dark brown, moist, firm. Organics, roots to approx. 0.1 m	3.4
0.2				3.3
0.3				3.2
0.4				3.1
0.5				3
0.6			Sandy CLAY Dark brown, moist, firm. Some coarse sand grains throughout.	2.9
0.7				2.8
0.8			Silty CLAY Dark grey, moist, firm.	2.7
0.9				2.6
1		W	Sandy CLAY Dark brown, moist, firm.	2.5
1.1				2.4
1.2			SAND Dark brown, wet. Medium grained.	2.3
1.3			Borehole completed at 1.20 m (water table reached therefore no sample could be obtained)	2.2
1.4				2.1
1.5				2
1.6				1.9
1.7				1.8
1.8				1.7
1.9				1.6
2				1.500
			Termination Depth at:2 m	1.400

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Soil Conservation Service

HAND AUGER LOG XS03-HA02

PROJECT NUMBER SCS3039
PROJECT NAME Middle Creek Sand Extent
CLIENT Northern Beaches Council
ADDRESS Wakehurst Parkway, Oxford Falls NSW

DRILLING DATE 3/12/2018
TOTAL DEPTH 2

COORDINATES 337957.5, 6267692
COORD SYS GDA 94 / MGA Zone 56
HEIGHT DATUM AHD
SURFACE RL 3.76

COMMENTS Floodplain (right) - boggy/swampy area 70m from base of road batter.

LOGGED BY RMH

Depth (m)	Graphic Log	Moisture	Material Description	R. L (m)
0.1		D	LOAM (Top Soil) Brown, dry, spongy to firm. Organics, roots.	3.7
0.2			Clay LOAM Brown, moist, strong. Charcoal inclusions throughout.	3.6
0.3				3.5
0.4				3.4
0.5			Sandy Clay LOAM Dark grey, moist to wet, firm.	3.3
0.6				3.2
0.7				3.1
0.8		W		3
0.9				2.9
1				2.8
1.1				2.7
1.2				2.6
1.3				2.5
1.4				2.4
1.5				2.3
1.6			Clayey SAND Dark grey, wet. Medium grained.	2.2
1.7				2.1
1.8				2
1.9				1.9
2				1.8
			Termination Depth at:2 m	1.7

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Soil Conservation Service

HAND AUGER LOG XS03-HA03

PROJECT NUMBER SCS3039
PROJECT NAME Middle Creek Sand Extent
CLIENT Northern Beaches Council
ADDRESS Wakehurst Parkway, Oxford Falls NSW

DRILLING DATE 3/12/2018
TOTAL DEPTH 2

COORDINATES 337949.8, 6267670
COORD SYS GDA 94 / MGA Zone 56
HEIGHT DATUM AHD
SURFACE RL 4.64

COMMENTS Top of Bank (Left)

LOGGED BY RMH

Depth (m)	Graphic Log	Moisture	Material Description	R. L (m)
0		D	Sandy LOAM Light brown, moist, slight to just firm. Organics, roots.	4.6
0.1				4.5
0.2			Loamy SAND Brown, moist. Fine grained.	4.4
0.3				4.3
0.4				4.2
0.5				4.1
0.6				4
0.7			SAND Yellow, moist. Medium grained.	3.9
0.8			Loamy SAND (Flood Couplet/Overbank Sequence) Brown with minor alternating yellow clean sand layers, moist. Medium grained.	3.8
0.9				3.7
1				3.6
1.1			Loamy SAND Brown, moist. Fine grained.	3.5
1.2				3.4
1.3			SAND Yellow, moist. Medium grained.	3.3
1.4				3.2
1.5			Loamy SAND Grey, moist to wet. Fine grained.	3.1
1.6		W		3
1.7				2.9
1.8				2.8
1.9				2.7
2			Termination Depth at:2 m	2.6

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Soil Conservation Service

HAND AUGER LOG XS03-HA04

PROJECT NUMBER SCS3039
PROJECT NAME Middle Creek Sand Extent
CLIENT Northern Beaches Council
ADDRESS Wakehurst Parkway, Oxford Falls NSW

DRILLING DATE 3/12/2018
TOTAL DEPTH 2

COORDINATES 337943, 6267651
COORD SYS GDA 94 / MGA Zone 56
HEIGHT DATUM AHD
SURFACE RL 3.88

COMMENTS Low lying swampy area 70 m from toe of batter.

LOGGED BY RMH

Depth (m)	Graphic Log	Moisture	Material Description	R. L (m)
0.1		D	Silty LOAM Brown, moist, firm. Organics, roots.	3.8
0.2				3.7
0.3				3.6
0.4			Clay LOAM Dark brown, moist, strong.	3.5
0.5				3.4
0.6		W	Sandy CLAY Dark brown, moist, firm.	3.3
0.7				3.2
0.8				3.1
0.9			Sandy Clay LOAM Dark grey, wet, strong.	3
1				2.9
1.1				2.8
1.2				2.7
1.3			Borehole completed at 1.20 m (water table reached therefore no sample could be obtained)	2.6
1.4				2.5
1.5				2.4
1.6				2.3
1.7				2.2
1.8				2.1
1.9				2
2				1.9
			Termination Depth at:2 m	1.8

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NSW GOVERNMENT Soil Conservation Service

HAND AUGER LOG XS07-HA01

PROJECT NUMBER SCS3039
PROJECT NAME Middle Creek Sand Extent
CLIENT Northern Beaches Council
ADDRESS Wakehurst Parkway, Oxford Falls NSW

DRILLING DATE 4/12/2018
TOTAL DEPTH 2

COORDINATES 337268.1, 6267322
COORD SYS GDA 94 / MGA Zone 56
HEIGHT DATUM AHD
SURFACE RL 6.55

COMMENTS

LOGGED BY RMH

Depth (m)	Graphic Log	Moisture	Material Description	R. L (m)
0.1		D	Silty LOAM Dark brown, moist, firm. Organics, roots.	6.5
0.2			Disturbed Material/Rubble Fill (brick, gravel) Reddish brown, moist, non cohesive.	6.4
0.3			Silty Clay LOAM Dark brown, moist to wet, firm. Large charcoal inclusions at 1.04 m (10 to 20 mm length).	6.3
0.4				6.2
0.5				6.1
0.6				6
0.7				5.9
0.8		W		5.8
0.9				5.7
1				5.6
1.1				5.5
1.2				5.4
1.3			Borehole completed at 1.20 m (water table reached therefore no sample could be obtained)	5.3
1.4				5.2
1.5				5.1
1.6				5
1.7				4.9
1.8				4.8
1.9				4.7
2				4.6
			Termination Depth at:2 m	4.5

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Soil Conservation Service

HAND AUGER LOG XS07-HA02

PROJECT NUMBER SCS3039
PROJECT NAME Middle Creek Sand Extent
CLIENT Northern Beaches Council
ADDRESS Wakehurst Parkway, Oxford Falls NSW

DRILLING DATE 4/12/2018
TOTAL DEPTH 2

COORDINATES 337281.5, 6267319
COORD SYS GDA 94 / MGA Zone 56
HEIGHT DATUM AHD
SURFACE RL 7.09

COMMENTS

LOGGED BY RMH

Depth (m)	Graphic Log	Moisture	Material Description	R. L (m)
0		D	SAND Yellow, dry, loose. Fine grained, organics, roots.	7
0.6			Sandy LOAM Brown, moist, slight to just firm. Fine grained.	6.5
0.7			Silty Clay LOAM Brown, moist, strong.	6.4
0.8			Loamy SAND Yellow/brown, moist.	6.3
0.9			LOAM Dark brown, moist, spongy to firm.	6.2
1.2			Clayey SAND Brown, moist, slight. Fine grained.	5.9
1.3			Sandy LOAM Grey/brown, moist, slight to just firm.	5.8
1.4			Charcoal Layer	5.7
1.5		W	Sandy CLAY Dark grey, wet, firm. Pebble sized inclusions at 1.5 m	5.6
2			Termination Depth at:2 m	5

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HAND AUGER LOG XS07-HA03

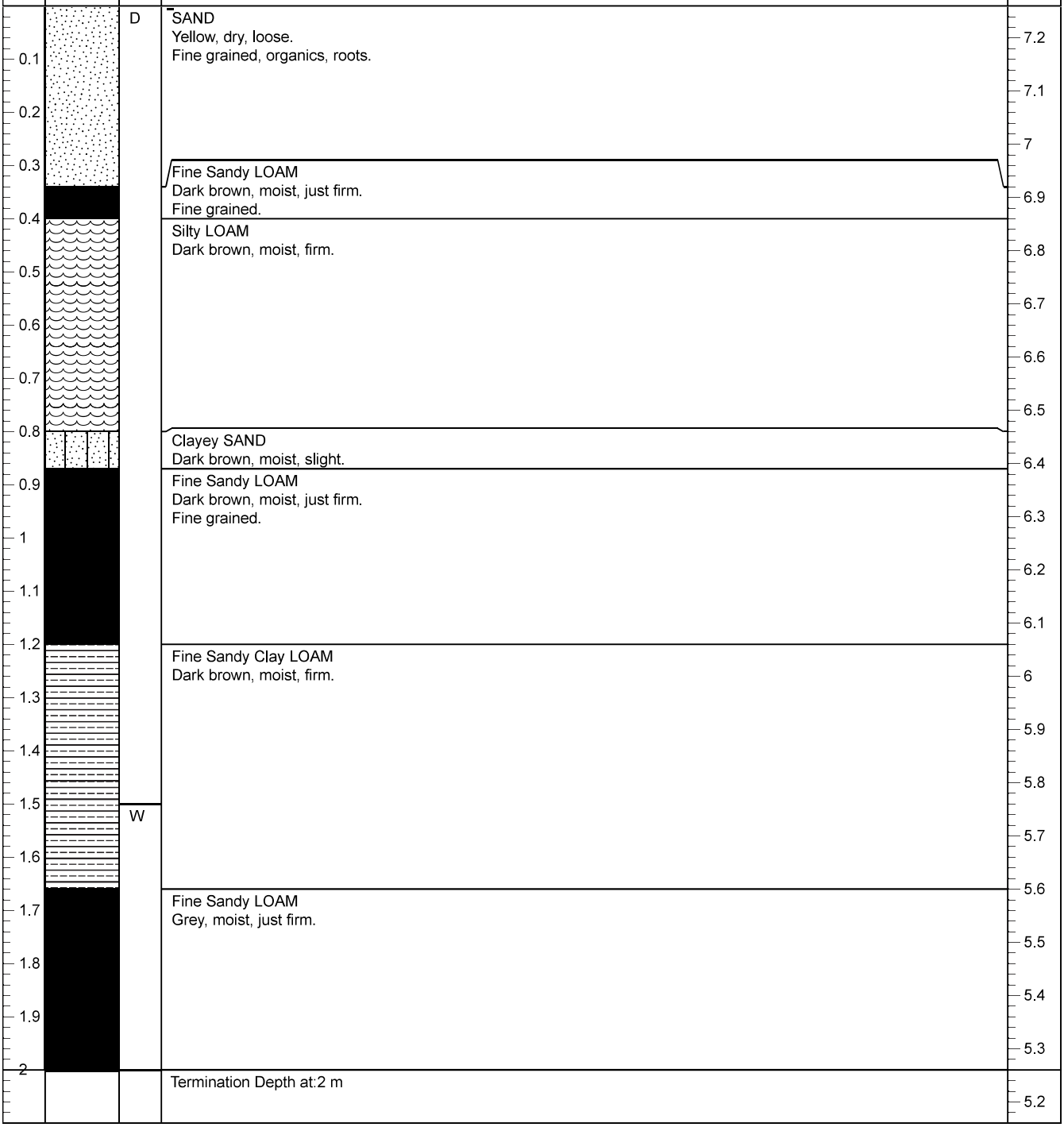
PROJECT NUMBER SCS3039
PROJECT NAME Middle Creek Sand Extent
CLIENT Northern Beaches Council
ADDRESS Wakehurst Parkway, Oxford Falls NSW

DRILLING DATE 4/12/2018
TOTAL DEPTH 2

COORDINATES 337292.8, 6267318
COORD SYS GDA 94 / MGA Zone 56
HEIGHT DATUM AHD
SURFACE RL 7.26

COMMENTS Top of Bank (left)

LOGGED BY RMH



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HAND AUGER LOG XS08-HA01

PROJECT NUMBER SCS3039
PROJECT NAME Middle Creek Sand Extent
CLIENT Northern Beaches Council
ADDRESS Wakehurst Parkway, Oxford Falls NSW

DRILLING DATE 5/12/2018
TOTAL DEPTH 2

COORDINATES 338141.1, 6267724
COORD SYS GDA 94 / MGA Zone 56
HEIGHT DATUM AHD
SURFACE RL 3.46

COMMENTS Sample site located transition between floodplain to swamp environment.

LOGGED BY RMH

Depth (m)	Graphic Log	Moisture	Material Description	R. L (m)
0.1		D	LOAM (Top Soil) Brown, moist, spongy to firm. Fine grained, organics, roots, charcoal inclusions at 0.20 m.	3.4
0.2				3.3
0.3				3.2
0.4				3.1
0.5		W	Sandy Clay LOAM Dark brown to grey, wet, strong. Medium grained (sand component).	3
0.6				2.9
0.7				2.8
0.8				2.7
0.9			Sandy CLAY Grey, wet.	2.6
1				2.5
1.1				2.4
1.2			Heavy CLAY Yellow / grey, very strong.	2.3
1.3				2.2
1.4				2.1
1.5				2
1.6			Refusal at 1.6 m.	1.9
1.7				1.8
1.8				1.7
1.9				1.6
2				1.500
			Termination Depth at:2 m	1.400

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HAND AUGER LOG XS08-HA02

PROJECT NUMBER SCS3039
PROJECT NAME Middle Creek Sand Extent
CLIENT Northern Beaches Council
ADDRESS Wakehurst Parkway, Oxford Falls NSW

DRILLING DATE 5/12/2018
TOTAL DEPTH 2

COORDINATES 338145.3, 6267715
COORD SYS GDA 94 / MGA Zone 56
HEIGHT DATUM AHD
SURFACE RL 4.13

COMMENTS

LOGGED BY RMH

Depth (m)	Graphic Log	Moisture	Material Description	R. L (m)
0.1		D	LOAM (Top Soil) Brown, moist, spongy to firm. Fine grained, organics, roots.	4.1
0.2				4
0.3				3.9
0.4			SAND Yellow, moist. Medium grained.	3.8
0.5			SAND (Flood Couplet Sequence) Brown with minor alternating yellow clean sand layers, moist. Medium grained.	3.7
0.6				3.6
0.7			Clayey SAND Black, moist, loose. Medium grained.	3.5
0.8			SAND Yellow, moist, loose. Medium grained, sand lense.	3.4
0.9			Sandy LOAM Dark brown, moist, slight to just firm.	3.3
1			SAND Light brown, moist, loose. Medium grained.	3.2
1.1			Clayey SAND Dark brown, moist. Medium grained.	3.1
1.2			SAND Light brown, moist, loose. Medium grained.	3
1.3			Loamy SAND Brown, moist. Fine grained.	2.9
1.4				2.8
1.5		W	Sandy Clay LOAM Brown, wet, strong.	2.7
1.6				2.6
1.7			Borehole completed at 1.60 m (water table reached therefore no sample could be obtained)	2.5
1.8				2.4
1.9				2.3
2				2.2
			Termination Depth at:2 m	2.1

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HAND AUGER LOG XS08-HA03

PROJECT NUMBER SCS3039
PROJECT NAME Middle Creek Sand Extent
CLIENT Northern Beaches Council
ADDRESS Wakehurst Parkway, Oxford Falls NSW

DRILLING DATE 5/12/2018
TOTAL DEPTH 2

COORDINATES 338148.8, 6267706
COORD SYS GDA 94 / MGA Zone 56
HEIGHT DATUM AHD
SURFACE RL 4.26

COMMENTS Top of Bank (left)

LOGGED BY RMH

Depth (m)	Graphic Log	Moisture	Material Description	R. L (m)
0		D	Sandy LOAM (Top Soil) Brown, moist, slight to just firm. Fine grained, organics, roots.	4.2
0.1				4.1
0.2			SAND Yellow, moist. Fine grained.	4
0.3				3.9
0.4				3.8
0.5				3.7
0.6				3.6
0.7				3.5
0.8				3.4
0.9				3.3
1				3.2
1.1			Sandy LOAM Brown, moist. Fine grained.	3.1
1.2			SAND Brown, moist.	3
1.3				2.9
1.4			Fine Sandy LOAM Brown, moist, just firm. Fine grained.	2.8
1.5			Clayey SAND Grey, wet. Fine grained.	2.7
1.6		W		2.6
1.7				2.5
1.8				2.4
1.9			SAND Grey, wet. Fine grained.	2.3
2			Termination Depth at:2 m	2.2

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HAND AUGER LOG XS08-HA04

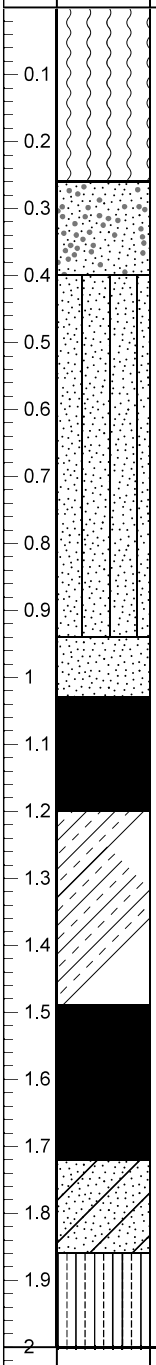
PROJECT NUMBER SCS3039
PROJECT NAME Middle Creek Sand Extent
CLIENT Northern Beaches Council
ADDRESS Wakehurst Parkway, Oxford Falls NSW

DRILLING DATE 5/12/2018
TOTAL DEPTH 2

COORDINATES 338155.5, 6267694
COORD SYS GDA 94 / MGA Zone 56
HEIGHT DATUM AHD
SURFACE RL 4.41

COMMENTS Top of Bank (right)

LOGGED BY RMH



Depth (m)	Moisture	Material Description	R. L (m)
0	D	LOAM (Top Soil) Brown, moist, spongy to firm. Fine grained, organics, roots, visible sand grains top 0.02m	4.5
0.1			4.4
0.2			4.3
0.3		SAND (Flood Couplet Sequence) Brown with minor alternating yellow clean sand layers, moist. Medium grained.	4.2
0.4		Loamy SAND Brown, moist.	4.1
0.5			4
0.6			3.9
0.7			3.8
0.8			3.7
0.9			3.6
1		SAND Yellow, moist. Fine grained, medium to large pebble inclusions.	3.5
1.1		Fine Sandy LOAM Brown, moist, firm.	3.4
1.2		Sandy CLAY Dark brown, moist, firm. Fine grained.	3.3
1.3			3.2
1.4			3.1
1.5		Fine Sandy LOAM Dark brown, moist, firm.	3
1.6			2.9
1.7		Clayey SAND Brown, moist, slight.	2.8
1.8			2.7
1.9		Sandy Clay LOAM Dark grey, moist, strong.	2.6
2		Termination Depth at:2 m	2.5

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APPENDIX G – Soil Contamination Report

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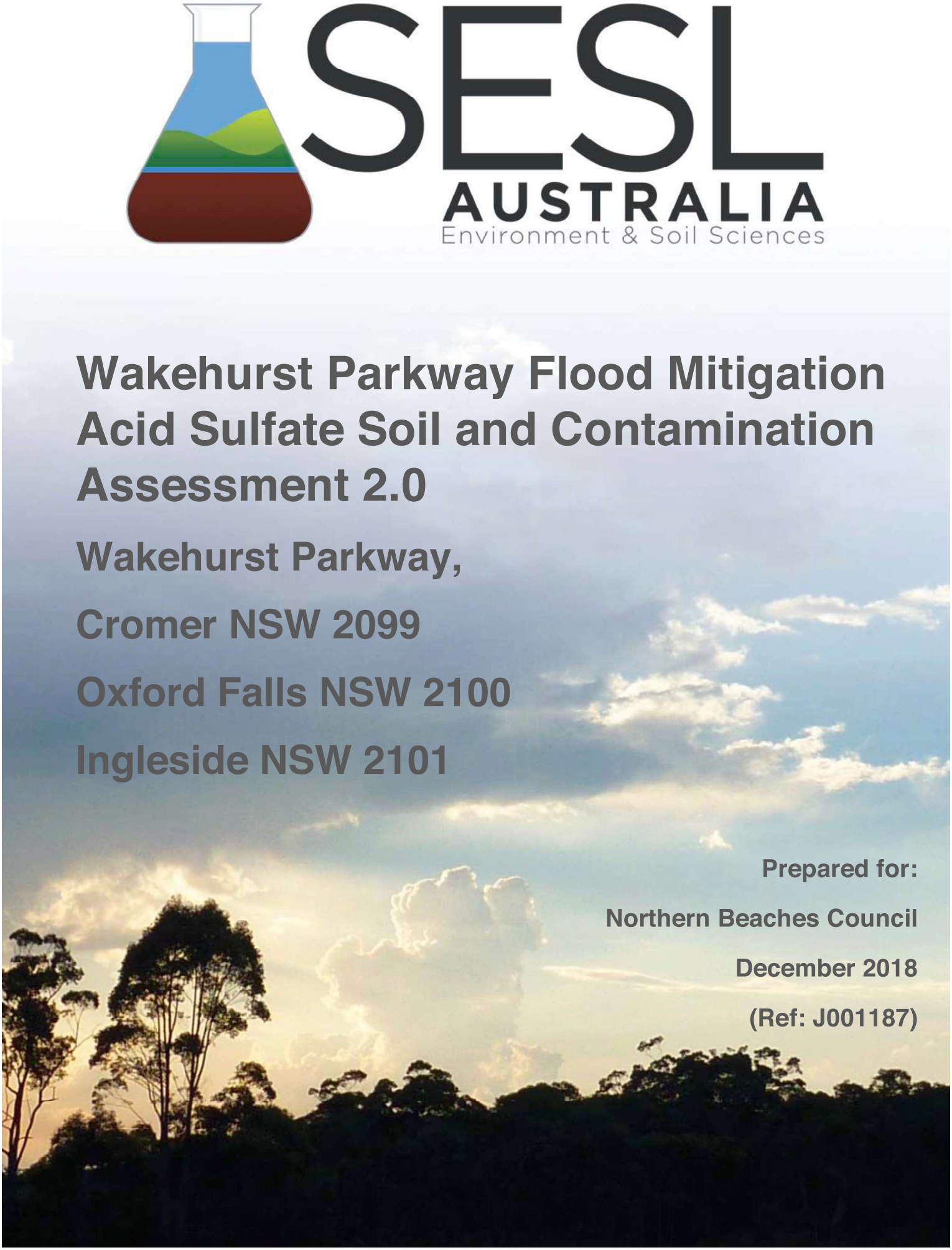

Wakehurst Parkway Flood Mitigation Acid Sulfate Soil and Contamination Assessment 2.0

Wakehurst Parkway,

Cromer NSW 2099

Oxford Falls NSW 2100

Ingleside NSW 2101

Prepared for:

Northern Beaches Council

December 2018

(Ref: J001187)

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ABBREVIATIONS

AHD	Australian Height Datum
ANZECC	Australian and New Zealand Environment and Conservation Council
ASC NEPM 2013	Assessment of Site Contamination National Environment Protection (Assessment of Site Contamination) Measure 1999 (April 2013), NEPC 2013, Canberra.
ASS	Acid Sulfate Soils
AASS	Actual Acid Sulfate Soils
BaP	Benzo(a)pyrene
BTEX	Benzene, Toluene, Ethylbenzene and Xylenes
BTEXN	Benzene, Toluene, Ethylbenzene, Xylenes and Naphthalene
CLM	Contaminated Land Management Act
COC	Chain of Custody
CPAHs	Carcinogenic Polycyclic Aromatic Hydrocarbons
DEC	Department of Environment and Conservation NSW
DECC	Department of Environment and Climate Change NSW
DECCW	Department of Environment, Climate Change and Water NSW
DP	Deposited Plan
EILs	Ecological Investigation Levels.
ENM	Excavated Natural Material
EPA	NSW Environmental Protection Authority
ESLs	Ecological Screening Levels
GILs	Groundwater Investigation Levels
HILs	Health Investigation Levels
HSLs	Health Screening Levels
LGA	Local Government Area
LOR	Limit of Reporting
MAHs	Monocyclic Aromatic Hydrocarbons
MCMS	Material Compliance Management System
NATA	The National Association of Testing Authorities
NEPM	National Environment Protection Measure
NHMRC	National Health Medical Research Council
NSW	New South Wales
OCP	Organochlorine Pesticides
OPP	Organophosphate Pesticides
PAH	Polycyclic Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyl
PCOC	Potential Contaminants of Concern
PASS	Potential Acid Sulfate Soils
PID	Photo Ionisation Detector
POEO	Protection of the Environment Operation
PPM	Parts Per Million
PVC	Polyvinyl Chloride
QA	Quality Assurance
QC	Quality Control
RPD	Relative Percent Difference
RSL	Regional Screening Levels
SAC	Site Assessment Criteria
SESL	SESL Australia Pty Limited
SMF	Synthetic Mineral Fibre
SPOCAS	Suspension Peroxide Oxidation – Combined Acidity and Sulfate
SVOC	Semi-Volatile Organic Compounds
TEQ	Toxic Equivalence Quotient
TCLP	Toxicity Contaminant Leaching Procedure
TPH	Total Petroleum Hydrocarbons
TRH	Total Recoverable Hydrocarbon
TRH F1	Total Recoverable Hydrocarbon C6-C10 minus BTEX
UCL	Upper Confidence Limit
VENM	Virgin Excavated Natural Material
VOC	Volatile Organic Compounds
VSAQP	Validation Sampling, Analysis and Quality Plan

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1 EXECUTIVE SUMMARY

SESL Australia Pty Limited (SESL) was engaged by Northern Beaches Council to conduct an Acid Sulfate Soil (ASS) and Contamination Investigation at the site of expected soil disturbance associated with the proposed flood mitigation construction and earthworks. This investigation included the assessment of soils within the vicinity of six (6) proposed culvert upgrades and creek sediment removal, adjacent to Wakehurst Parkway, within the suburbs of Cromer (NSW 2099), Ingleside (NSW 2101) and Oxford Falls (NSW 2100).

The environmental assessment works undertaken during this ASS Investigation comprised of the following:

- Visual inspection of the locations of proposed site works on 3/10/2018, 26/10/2018 and 31/10/2018;
- Collection and analysis of 19 soil samples for sPOCAS analysis;
- Collection and analysis of 22 soil samples for acid sulfate screens;
- Collection and analysis of 33 soil samples for contamination analysis;
- Preparation of this report detailing methodologies used during this investigation, results, management strategies and conclusions regarding the acid sulfate soil risk associated with the proposed development at the site.

Investigative work was conducted in accordance with the following applicable guidelines:

- Acid Sulfate Soils Manual (NSW Acid Sulfate Soils Management Advisory Committee, 1998); and
- Assessing and Managing Acid Sulfate Soils - Guidelines for and Management in NSW Coastal Areas (EPA, 1995).
- NSW EPA Waste Classification Guidelines – Part 1: Classifying Waste (2014);

This report is based on the field data obtained from the samples collected from the proposed inlet and outlet locations of six culverts in the investigation area and material collected from the subject sediments at Middle Creek (The Bends).

Based on the findings of this assessment undertaken by SESL, the soils within the proximity of some of the proposed culvert locations are considered to be potential and actual acid sulfate soil. SESL recommends that the proposed excavation works must be managed under the site-specific Acid Sulfate Soil Management Plan (ASSMP).

Based on limited assessment and in accordance with the *NSW EPA Waste Classification Guidelines – Part 1: Classifying Waste (2014)*, the soils proposed for excavation within the proximity of the culverts meet the criteria for General Solid Waste. In accordance with landfill's Environmental Protection Licenses (EPL), the material is **not** considered suitable for recycling due to elevated benzo(a)pyrene, nickel and lead.

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Soils proposed for excavation within the subject area of Middle Creek (The Bends) are considered to not be Acid Sulfate Soils, and do not require management under an ASSMP. SESL suggests that the observed acidity is likely the result of extensive organic matter within the subject materials, and not the result of present sulfur.

In accordance with the *NSW EPA Waste Classification Guidelines – Part 1: Classifying Waste (2014)*, all samples collected from within creek sediments meet the criteria for General Solid Waste. However, based on the results of this limited assessment, SESL recommends that the subject soils proposed for excavation will meet the requirements for classification as Excavated Natural Material (ENM), and that consideration should be given to further assessment for the classification of these soils as ENM, to reduce the cost of offsite disposal.

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2 INTRODUCTION

SESL Australia Pty Limited (SESL) was engaged by Northern Beaches Council to conduct an Acid Sulfate Soil (ASS) and Contamination Investigation at the site of expected soil disturbance associated with the proposed flood mitigation construction and earthworks. This investigation included the assessment of soils within the vicinity of six (6) proposed culvert upgrades and creek sediment removal, adjacent to Wakehurst Parkway, within the suburbs of Cromer (NSW 2099), Ingleside (NSW 2101) and Oxford Falls (NSW 2100).

SESL understands that the proposed works at the site involve the excavation of site soils for the construction and/or redevelopment of culverts under Wakehurst Parkway, and the excavation and removal of sediments within a stretch of Middle Creek that have built up over a significant period. This Acid Sulfate Soil and Contamination Assessment is limited to the portion of the site affected by the proposed excavation works for the proposed culverts and sediment within Middle Creek. The site locality and layout is provided in Figure 1 & 2 of this report.

2.1 PURPOSE AND SCOPE

The environmental assessment works undertaken during this investigation comprised of the following:

- Visual inspection of the site on 3/10/2018, 26/10/2018 and 31/10/2018;
- Collection of soil samples from the proposed maximum excavation depth from proposed inlet and outlet locations (where accessible) of six (6) culverts;
- Collection of sediment samples from Middle Creek;
- Analysis of 26 soil samples for sPOCAS analysis;
- Analysis of 22 soil samples for acid sulfate screen;
- Analysis of 33 soil samples for contamination analysis; and
- Preparation of this report detailing methodologies used during this investigation, results, management strategies and conclusions regarding the acid sulfate soil and contamination risk associated with the proposed works for the culverts at this site.

Investigative work was conducted in accordance with the following applicable guidelines:

- Acid Sulfate Soils Manual (NSW Acid Sulfate Soils Management Advisory Committee, 1998); and
- Assessing and Managing Acid Sulfate Soils - Guidelines for and Management in NSW Coastal Areas (EPA, 1995); and
- NSW EPA Waste Classification Guidelines – Part 1: Classifying Waste (2014).

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2.2 DEFINITION OF ACID SULFATE SOILS

Acid sulfate soil is the common name given to naturally occurring sediments and soils containing iron sulphides (principally iron sulphide or iron disulphide or their precursors). The exposure of the sulfide in these soils to oxygen by drainage or excavation leads to the generation of sulfuric acid.

Acid sulfate soils (ASS) include actual acid sulfate soils or potential acid sulfate soils. Actual and potential acid sulfate soils are often found in the same profile, with actual acid sulfate soils generally overlying potential acid sulfate soil horizons.

Actual acid sulfate soils are soils containing highly acidic soil layers caused by the oxidation of soils that are rich in iron sulphides. This oxidation produces acidity in excess of the soil's capacity to neutralise it and results in soils of pH of 4 or less. These soils can usually be identified by the presence of pale yellow mottles and coatings of jarosite.

Potential acid sulfate soils (PASS) are soils that contain iron sulphides that have not been exposed to air and oxidised. The field pH of these soils in the undisturbed state is 4 or more and is commonly neutral or slightly alkaline. However, they pose a considerable environmental risk when disturbed, as they will become more acidic when exposed to air and oxidised.

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3 SITE DESCRIPTION

3.1 SITE LOCATION

The location of the assessment was limited to select areas, including six (6) culverts and a section of Middle Creek. Five (5) of the six (6) culverts assessed are located along a 4 km stretch of Wakehurst Parkway, and are accessible from the road verge either side of the road. The final culvert assessed is located and accessible from within the Sydney Academy of Sport and Recreation. The section of Middle Creek subject to this investigation lies runs parallel to Wakehurst Parkway, on the northern side of the road. Refer to Figure 1 for site layout.

3.2 SITE IDENTIFICATION

The following details describe the portion of land subjected to the investigation:

Table 1 – Site Identification

Site Address	Wakehurst Parkway Cromer (NSW 2099), Ingleside (NSW 2101) and Oxford Falls (NSW 2100)
Local Government Area	Northern Beaches Council
Current Zoning	SP2 Infrastructure, RE1 Public Recreation, SP1 Special Activities
Distance from Sydney CBD	Approximately 17 km North of the Sydney CBD
Geographical Coordinates	33°43'00"S 151°16'00"E
Site Elevation	Approximately 0-75 m AHD

3.3 SITE LAYOUT AND INFRASTRUCTURE

The site layout and location of this investigation area can be viewed in Figure 1. The site is along a road corridor on land owned or managed by Northern Beaches Council (formerly Warringah Council before amalgamation). Near the northern portion of the site, there is a large rural residential property. Wakehurst Parkway runs through bushland and is adjacent to Middle Creek. The eastern border of the investigation areas is marked by the Sydney Academy of Sport and Recreation and the south-western boundary is marked by Oxford Falls.

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4 ENVIRONMENTAL SETTING

4.1 DESCRIPTION OF GEOLOGY

The *Soil Landscapes of the Sydney 1:100 000 Sheet Map (Chapman and Murphy, 1989*) identifies the majority of the site to be within the Deep Creek Alluvial Landscape Group, the Hawkesbury Colluvial Landscape Group, the Oxford Falls Transferral Landscape Ground and Disturbed Terrain.

The majority of the investigation area is situated within the Deep Creek Landscape Group, which typically consists of level to gently undulating alluvial floodplain. Soils are deep on well-drained terraces with siliceous sands on current floodplain and humus podzols in low lying areas. Limitations associated with this soil landscape include flooding hazard, extreme soil erosion hazard, sedimentation hazard, localised very low fertility and permanently high watertables. This soil landscape was observed across the site as well as a mix of material collecting in inlet areas including some anthropogenic foreign materials.

The Oxford Falls Landscape Group typically consists of moderately deep to deep earthy sands, yellow earths, siliceous sands on slopes, deep leached sands, podzols and grey earths on valley floors. Limitations of this soil landscapes very high soil erosion hazard, perched watertables and swamps, highly permeable soil', very low to low soil fertility and localised rock outcrop.

Disturbed terrain has various characteristic and associated limitations which are largely dependent on the nature of the disturbed soil or fill.

4.2 DESCRIPTION OF HYDROLOGY

A groundwater bore search was undertaken using the groundwater database under Office of Water, Department of Primary Industries (http://allwaterdata.water.nsw.gov.au). Five groundwater bores were located within a one-kilometre radius of the site. All five bores are registered for domestic use. The following domestic bores registered are within approximately one kilometre of the proposed culvert locations:

- GW032798 (SWL: N/A; Intended purpose: Domestic)
- GW029540 (SWL: N/A; Intended purpose: Stock/domestic)
- GW035940 (SWL: N/A; Intended purpose: Irrigation)
- GW108976 (SWL: 30m; Intended purpose: Stock/domestic)
- GW108250 (SWL: 21m; Intended purpose: Recreation (groundwater)

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4.3 DESCRIPTION OF WORKS

SESL has been advised that the proposed works include the significant earth works associated with the upgrading and construction of six (6) culverts along Wakehurst Parkway, as well as the excavation and offsite disposal of sediment build-up within the subject section of Middle Creek, adjacent to Wakehurst parkway.

4.4 ACID SULFATE SOIL OCCURRENCE

The ASS maps identify 5 classes of land, with Class 1 being the highest at risk of ASS. The Warringah Local Environment Plan (LEP) 2011 Acid Sulfate Soil Map indicates the site to be within Class 2, Class 3 and Class 5 risk areas. The ASS maps further identify the types of work likely to present an environmental risk if undertaken. If these types of works are proposed, then further investigation is required to determine ASS impacts, as shown in the **Error! Reference source not found.** below.

Table 2 – Acid Sulfate Soil Classes Present at the Site

Class	Works
2	▪ Works below natural ground surface Works by which the water table is likely to be lowered
3	▪ Works beyond 1 meter below natural ground surface ▪ Works by which the water table is likely to be lowered beyond 1 meter below natural ground surface
5	▪ Works within 500 meters of adjacent Class 1, 2, 3 or 4 land which are likely to lower the water table below 1 meter AHD on adjacent Class 1, 2, 3 or 4 land

SESL understands excavation works below ground surface are required as part of the proposed works, therefore the requirement for assessment is triggered. See LEP Acid Sulfate Risk Map in Appendix B (LEP map 7).

The Acid Sulfate Soils Management Advisory Committee (ASSMAC) Guidelines 1998 considers the following geomorphic conditions when determining the ASS risk status of a given area:

- Sediments of recent geological age (Holocene) ~ 6000 to 10,000 years old;
- Soil horizons less than 5m AHD (Australian Height Datum);
- Marine or estuarine sediment and tidal lakes;
- In coastal wetlands or back swamp areas, waterlogged or scalded areas; interdune swales or coastal sand dunes;
- In areas where the dominant vegetation is mangroves, reeds, rushes and other swamp tolerant and marine vegetation such as swamp mahogany (Eucalyptus robusta), paperbark (Melaleuca quinquenervia) and swamp oak (Casuarina glauca);
- In areas identified in geological descriptions or in maps bearing sulphide minerals, coal deposits or former marine shales/ sediments; and

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- Deeper older estuarine sediments >10m below the ground surface, Holocene or Pleistocene age (only an issue if deep excavation or drainage is proposed).

4.5 PROXIMITY TO LOCAL SENSITIVE ENVIRONMENTS

According to the *UPSS Regulation Sensitive Zone Map for Warringah Council* (2010), the site of the proposed works is entirely within an environmentally sensitive zone.

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5 RELEVANT GUIDELINES FOR ACID SULFATE SOIL ASSESSMENT & MANAGEMENT

5.1 RELEVANT GUIDELINES

Assessment criteria will be based on the *Acid Sulfate Soils Manual* (Acid Sulfate Soils Management Advisory Committee [ASSMAC] 1998 which incorporate the following guidelines:

- The Acid Sulfate Soils Assessment Guidelines 1998;
- The Acid Sulfate Soils Planning Guidelines 1998;
- The Acid Sulfate Soils Management Guidelines 1998; and
- The Acid Sulfate Soils Laboratory Method Guidelines 1998.

The ASS Manual developed by ASSMAC provides advice on best practice in planning, assessment and management of activities in areas containing acid sulfate soils. These guidelines update and expand on the *Environmental Guidelines: Assessing and Managing Acid Sulfate Soils* issued by the EPA in 1995.

5.2 THE ACID SULFATE SOILS ASSESSMENT GUIDELINES (ASSMAC 1998)

The Acid Sulfate Soils Assessment Guidelines have been developed primarily for proponents of activities that are likely to disturb acid sulfate soils, and for councils and government authorities responsible for assessing these proposals. The guidelines recommend the adoption of best management practice in the planning, design and undertaking of activities that disturb acid sulfate soils.

The guidelines outline the following:

- How to undertake a preliminary assessment to confirm if acid sulfate soils are present on site, and if present, the likelihood of the works to disturb the soils and potential impacts of works;
- How to develop mitigation and management strategies for a particular proposal and the preparation of an acid sulfate soil management plan;
- Steps in the assessment and approval process and matters that should be included in an application for approval of works disturbing acid sulfate soils; and
- Matters that approval authorities should consider in making a decision in relation to works disturbing acid sulfate soils.

The guidelines apply to all the following activities undertaken in areas likely to affect or use coastal sediments, warrant an assessment of the risk of exposing acid sulfate soil:

- Excavation or disturbance of acid sulfate soil (i.e. roads and foundation constructions, drainage works, land forming works, flood mitigation works, dams and aquaculture ponds, sand or gravel extraction,

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dredging). When acid sulfate materials are being excavated, attention must be given to the excavation site as well as the location where the excavated material is placed or used;

- Lowering the water table (i.e. new drainage works, deepening existing drains, groundwater use, dams de-watering, wetlands or quarries, dredging works lowering river bed);
- Use of acid sulfate soil (i.e. aquaculture pond walls, dams, flood mitigation works, imported fill material, reclamation or foreshore works);
- Physical habitat modification for mosquito control (i.e. runnelling, drainage and selective ditching to remove water or allow predatory fish access to dial pools).

The guidelines provide the action criteria to interpret analytical results that trigger the need for a management plan based on the percentage of oxidisable sulfur for broad categories of soil types.

5.3 The Acid Sulfate Soils Planning Guidelines (ASSMAC 1998)

The Acid Sulfate Soils Planning Guidelines supplements Local Environmental Plans (LEP) as a key regulatory mechanism to ensure sustainable management of acid sulfate soils in the coastal zone. The zoning and development control provisions in LEPs provide councils with the opportunity to ensure that land uses are carried out in an appropriate manner and that any intensification of land use does not pose unacceptable risks to the environment.

The LEP establishes a two-stage assessment.

1. Prior to undertaking works in an area mapped as having a likely risk that acid sulfate soils are present, a person may:

- Accept that acid sulfate soils are present and proceed to preparing a development application and an acid sulfate soils management plan or;
- Undertake a Preliminary Assessment to confirm whether an acid sulfate soils management plan is required. The ASS Assessment Guidelines set out the steps in a preliminary assessment. After the person has completed the preliminary assessment and ascertained that an acid sulfate soils management plan is not required, they must present their preliminary assessment to their local council seeking agreement with their decision. If council agrees in writing that an acid sulfate soils management plan is not required, then a development application is not required. If not, then the person must submit an acid sulfate soils management plan and obtain development consent prior to undertaking the works.

2. Where required, an acid sulfate soils management plan must be prepared in accordance with the *ASS Assessment Guidelines* and is to be reviewed by both the council and the Department of Land and Water Conservation.

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The Department of Land and Water Conservation has prepared Acid Sulfate Soil Risk Maps for the coastal areas in NSW that predicts the distribution of acid sulfate soils based on an understanding of the factors that led to their formation reinforced by extensive soil surveying. The Acid Sulfate Soil Risk Maps have also been converted into Acid Sulfate Soil Planning Maps for use with Local Environmental Plans.

The Acid Sulfate Soil Planning Maps establish five classes (Table 2) of land based on the probability of acid sulfate soils occurrence and the type of works that might disturb them. The five classes in the Acid Sulfate Soils Planning Maps were developed by:

- Amalgamating risk classes in the Acid Sulfate Soils Risk Maps and relating them to the expected depth of occurrence of acid sulfate soils materials based on geomorphology; in amalgamating these classes the precautionary principle was applied with a conservative estimation of expected depths;
- Matching the expected depth of occurrence of acid sulfate soil materials with the depths that works would be expected to disturb soils by excavation or reduction in water table depths; and
- Including areas marked on the Acid Sulfate Soils Risk Maps as disturbed terrain. Where disturbed terrain occurred, the likely level of the natural ground surface was determined by stereoscopic examination of air photo pairs of adjacent lands. Disturbed terrain is land where soil, or other material, has been either removed or imported to significantly change the ground surface.

Table 3 – Acid Sulfate Soil Planning Map Risk Class

Class	Works
1	▪ Any works
2	▪ Works below natural ground surface Works by which the water table is likely to be lowered
3	▪ Works beyond 1 meter below natural ground surface ▪ Works by which the water table is likely to be lowered beyond 1 meter below natural ground surface
4	▪ Works beyond 2 meters below natural ground surface ▪ Works by which the water table is likely to be lowered beyond 2 meters below natural ground surface
5	▪ Works within 500 meters of adjacent Class 1, 2, 3 or 4 land which are likely to lower the water table below 1 meter AHD on adjacent Class 1, 2, 3 or 4 land

5.4 THE ACID SULFATE SOILS MANAGEMENT GUIDELINES (ASSMAC 1998)

The Acid Sulfate Soils Management Guidelines outline the best practice in managing the impacts of proposed works in areas likely to contain acid sulfate soils. It provides mitigation and management strategies focusing on minimising the disturbance of acid sulfate soils and to mitigate and impacts if disturbance is necessary.

This guideline forms the assessment criteria and foundation for an ASSMP if acid sulfate soils is found on site. The guidelines also outline techniques to manage extracted acid sulfate materials, remediate degraded areas affected by acid sulfate soils and advices on selecting standardised material to be applied for treatment.

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5.5 THE ACID SULFATE SOILS LABORATORY METHOD GUIDELINES (ASSMAC 1998)

The Acid Sulfate Soils Laboratory Method Guidelines provides the standard methods for routine laboratory analysis of soil samples to provide information for the assessment and management of acid sulfate soils. This guideline also recommends best practice methods in the sampling, handling and transport of soil samples.

The guidelines focus on a standardised approach to routine laboratory determination of actual and potential acid production from oxidation of iron sulfides, mainly pyrite (FeS_2) in estuarine and coastal sediments. It outlines methods for acid sulfate soil related analytical work including the amount of neutralizing material required for acid sulfate soil management/treatment.

A sampling and analysis program should be designed to understand the risks of disturbing acid sulfate soils and to provide information to develop a management strategy. The level of investigation and analysis will depend on the characteristics of the site (particular site variability), the type of disturbance proposed and the sensitivity of the surrounding environment. The guidelines outline recommendation on the number of sampling sites required based on the size of the site, field analysis, sample handling, transportation and storage for all laboratory analytical works.

5.6 WASTE CLASSIFICATION

The NSW EPA Waste Classification Guidelines: Part 1 Classifying Waste (2014) is a set of guidelines used to classify waste materials for the purpose of offsite disposal. This document details a six-step procedure for determining the type of waste and the waste classification. Part of the procedure, for materials not classified as special waste or pre-classified waste, is a comparison of analytical data initially against contaminant threshold (CT) values specific to a waste category. Alternatively, the data can be assessed against specific contaminant concentration (SCC) thresholds when used in conjunction with toxicity characteristic leaching procedure (TCLP) thresholds.

All soil identified for offsite disposal requires a waste classification according to the NSW Environmental Protection Authority *Waste Classification Guidelines Part 1: Classifying Waste* (NSW EPA 2014). All acid sulfate soils must satisfy the disposal criteria as identified in the NSW EPA *Waste Classification Guidelines Part 4: Acid Sulfate Soils* (NSW EPA, 2014).

Testing for non-liquid waste is to include (but not limited to) a heavy metal screen (M8), Total Petroleum Hydrocarbons (TPH), BTEX, Organochlorine Pesticides (OCP), Polychlorinated Biphenyls (PCB) and Polycyclic Aromatic Hydrocarbons (PAH). Testing ratios to be advised by supervising Environmental Scientist.

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6 SITE INSPECTION AND SAMPLING

6.1 CULVERT SITE INSPECTION AND SAMPLING EVENTS

SESL's Environmental Scientist Andrew Jacovides and Graduate Environmental Scientist Stuart Jamieson attended the sites of six (6) proposed culvert locations on 3/10/2018, and Andrew Jacovides attended site on 26/10/2018 to collect samples from the final two (2) proposed culvert locations. Where possible, samples were taken from the surface topsoil material and from the next horizon in the profile.

In addition to contamination analysis, acid sulfate soil screen and/or sPOCAS analysis, samples were also collected for geotechnical tests for Atterberg Limits (liquid limit, plastic limit, plasticity index and linear shrinkage) (not within the scope of this report). A summary of the samples collected as part of this investigation is provided in Table 4.

Table 4 – Summary of Samples Collected at the Site of Proposed Culverts

Sample Name	Sample Depth approx.(mm)	Sample Location Description
Culvert 1	800	Northern side of Wakehurst Parkway, within vegetation approximately 5-10 m from the road. 0-400: Brown sandy loam (topsoil) with organics 400-800: Brown sandy clay
Culvert 2	500	Southern side of Wakehurst Parkway, within bog-like area, approximately 5-10 m from the road. 0-500: Brown sandy clay (high moisture content)
Culvert 3	500	Southern side of Wakehurst Parkway, within bog-like area, approximately 5-10 m from the road. 0-500: Brown sandy clay
Culvert 4	500	Northern side of Wakehurst Parkway, within vegetation approximately 5-10 m from the road. 0-400: Brown loamy fill, with general rubbish and building wastes 400-500: Brown clayey sand
Culvert 5	500	Eastern side of Wakehurst Parkway, approximately 5 m from the road 0-300: Road base/fill 300-500: Clayey sand/sandy clay
Culvert 6	500	Western side of Wakehurst Parkway, approximately 5 m from the road 0-300: Road base/fill 300-500: Clayey sand/sandy clay
Culvert 7 – Above Retaining Wall	500	Eastern side of Wakehurst Parkway, approximately 5 m from the road. Sample collected from above the retaining wall Brown sandy clay
Culvert 8 - Midbank	500	Western side of Wakehurst Parkway, approximately 5 m from the road. Sample taken from halfway down the creek bank. Brown clayey sand
Culvert 9	500	Collected from the mid-bank adjacent to the existing culvert (western side). 0-300: Dark brown organic matter 0-500: Highly organic grey sandy clay

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Culvert 10	500	Collected from the mid-bank adjacent to the existing culvert (eastern side). 0-300: Dark brown organic matter 0-500: Highly organic grey sandy clay
Culvert 11	300 - 700	Southern side of Wakehurst Parkway, halfway down embankment 5-10 m from the road 0-400: brown highly organic loam 400-700: Organic sandy clay/clayey sand
Culvert 12	300 - 700	Northern side of Wakehurst Parkway, halfway down embankment 5-10 m from the road 0-400: brown highly organic loam 400-700: Organic sandy clay/clayey sand

6.2 THE BENDS – MIDDLE CREEK INSPECTION

SESL's Environmental Scientist Andrew Jacovides and Graduate Environmental Scientist Stuart Jamieson conducted site inspection and sampling of the subject section of Middle Creek on 31/10/2018. Boreholes were constructed utilising hand equipment (hand auger) within the areas observed to be subject to sediment build-up, systematically along the accessible section of the creek. Boreholes were constructed for the purpose of soil profile inspection and sampling. Samples were collected within different soil horizons for the purpose of laboratory analysis (contamination screening and acid sulfate soils presence determination). Access was unavailable on the western side of the proposed investigation area, due to the presence of significant vegetation.

A summary of the soil profile observations is provided in Table 5

Table 5 – Summary of Samples Collected within the Subject Section of Middle Creek

Sample Name	Sample Depth approx.(mm)	Soil Profile Description
BH1	0-200 500-600 800-900	0-700: White/yellow course sand 700-900 Dark brown sandy loam
BH2	0-200 500-600 1100-1200	0-200: Course sand with significant organics 200-800: Course Sand 800-1200: Loamy sand
BH3	0-200 200-300 800-900	0-250: Course sand 250-300: Brown sandy loam 300-10000: Course sand
BH4	0-200 300-400 500-700	0-500: Course sand 500-800: Dark brown sandy clay loam
BH5	0-200 500-600 700-800	0-700: Course sand with minor loam inclusions 700-800: Dark brown sandy clay loam, plastic inclusions
BH6	0-200 300-400 550-700	0-550: Course sand with minor loam inclusions 550-700: Dark brown sandy clay loam

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BH7	0-200 400-600 800-1000	0-600: course sand with minor loam inclusions 600-1000: dark brown sandy clay loam

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7 LABORATORY ASSESSMENT

7.1 ACID SULFATE SOIL ASSESSMENT

Assessment of acid sulfate soil conditions and the impacts of the proposed development are based on information provided in the Acid Sulfate Soil Assessment Guidelines presented in the ASSMAC *Acid Sulfate Soil Manual* (1998). The guidelines include information on assessment of the likelihood that the site lies within an acid sulfate soil area, the need for an acid sulfate soil management plan, and the development of mitigation methods for the proposed development.

In order to assess the presence of actual or potential acid sulfate soil, soil samples are screened for pH. Samples were obtained in relation to soil horizon change, the presence of odour or acid sulfate soil colouration.

In the event that the pH screens results indicate potential PASS or AASS, Suspended Peroxide Oxidation-Combined Acidity and Sulfate (sPOCAS) is to be undertaken to confirm the actual acidity and sulfur trail of the material.

The laboratory results are to be compared to the "action criteria" presented in the Acid Sulfate Soil Manual (ASSMAC, 1998). These "action criteria" define the need to prepare a management plan and are based on the percentage of oxidisable sulfur (or equivalent Total Potential Acidity) for broad categories of soil types.

Table 6 – Action criteria based on ASS soil analysis for three broad texture categories

Type of Material		Action Criteria 1–1000 tonnes ASS disturbed		Action Criteria if more than 1000 tonnes disturbed	
Texture range. McDonald et al. (1990)	Approx. clay content *(%<0.02mm)*	Sulfur trail *% S oxidisable (oven-dry basis) e.g. S_{TOS} or S_{POS}*	Acid trail *mol H^+/tonne (oven-dry basis) e.g. TPA of TSA*	Sulfur trail *% S oxidisable (oven-dry basis) e.g. S_{TOS} or S_{POS}*	Acid trail *mol H+/tonne (oven-dry basis) e.g. TPA of TSA*
Coarse Texture Sands to loamy sands	≤5	**0.03**	**18**	0.03	18
Medium Texture Sandy loams to light clays	5 - 40	0.06	36	0.03	18
Fine Texture Medium to heavy clays and silty clays	≥40	0.1	62	0.03	18

(ASSMAC 1998) **BOLD** – indicates adopted criteria

The "action criteria" for coarse textured soils (sands to loamy sands) has been adopted for this assessment based on the loamy sands encountered on site.

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Levels of oxidisable sulfur within a soil or sediment indicate the risk to the environment on disturbance of the soils. For soils with results greater than the "action criteria" a soil management plan must be developed to manage the potential harm to the environment.

7.2 CONTAMINATION ASSESSMENT

The analysis of soil samples was undertaken against the criteria outlined in the *NSW EPA Waste Classification Guidelines – Part 1: Classifying Waste (2014)*. The samples taken from the surface material underwent an acid sulfate screen and were analysed for the following chemical attributes:

- Heavy metals (As, Cd, Cr, Cu, Pb, Hg, Ni and Zn);
- Polycyclic aromatic hydrocarbons (PAH);
- Total petroleum hydrocarbons C_6 to C_{36} (TPH);
- Benzene, Toluene, Ethylbenzene and Xylenes (BTEX);
- Organochlorine Pesticides (OCP); and
- Polychlorinated Biphenyls (PCB).

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8 RESULTS

8.1 ACID SULFATE SOIL ASSESSMENT - CULVERTS

Soils within the investigation consist of a range of materials in the upper profile depending on their location, including topsoil, fill material, boggy material with high organics. The lower profile overall was more consistent between sample locations, predominantly consisting of either a sandy clay or clayey sand. Bricks, concrete, plastic, demolition waste and general rubbish was found at several locations.

Samples were collected on either side of each of the six (6) proposed culvert locations, with near surface and subsurface samples collected at each location. A summary of the screen results is provided in **Error! Reference source not found.** (See Appendix C for SESL results summary).

Table 7 - Summary of Acid Sulfate Screens at Culverts.

Location (Sample depth)	Soil Description	pH H_2O	pH H_2O_2
Culvert 1 0 – 100mm	Dark Brown topsoil	6.63	3.97
Culvert 3 Surface	Dark brown boggy material with heavy vegetation on top	5.75	2.64
Culvert 4 Surface	Dark brown fill with bricks, rubbish and demo waste nearby	7.04	4.24
Culvert 5 Surface	Dark brown road base fill	7.57	5.28
Culvert 6 Surface	Dark brown road base fill	6.79	3.58
Culvert 7 Creek Sediment	Sand with organics on riverbed	6.51	3.06
Culvert 9 Surface	Black organic sandy sediment with lots of roots	3.86	2.12
Culvert 10 Surface	Black organic sandy sediment with lots of roots	5.8	2.8

Note:
H_2O denotes water
H_2O_2 denotes hydrogen peroxide

Eighteen samples were collected from the inlet and outlet locations of six (6) proposed culverts along the investigation area. Twelve (12) samples from the lower profile were analysed using sPOCAS methodology. Samples were collected and observations were recorded. **Error! Reference source not found.**Outlines of the results of the sPOCAS analysis conducted are shown in Table 5 and Appendix C: SESL Results Summary.

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Table 8 – Summary of sPOCAS Test Results at Culverts

Location (Sample depth)	Soil Description	pH_{KCl}	pH_{FOX}	TAA H^+/tonne	TPA H^+/tonne	TSA H^+/tonne	S_{pos} %	Lime Requirement (kg $CaCO^3$/t)
Culvert 1 800mm	Brown sandy clay	7.0	5.6	<2	**62**	**62**	0.029	4
Culvert 2 500mm	Wet dark brown sandy clay	**4.3**	**3.4**	**147**	**496**	**349**	**0.186**	21
Culvert 3 500mm	Sandy clay	6.0	6.0	6	**55**	**49**	<0.020	<1
Culvert 4 500mm	Clayey sand	**4.7**	**4.4**	**38**	**112**	**74**	<0.020	3
Culvert 5 500mm	Clayey sand/ sandy clay	6.2	6.1	6	**35**	**29**	<0.020	<1
Culvert 6 500mm	Clayey sand/ sandy clay	5.4	**4.9**	16	**84**	**68**	<0.020	1
Culvert 7 Above Retaining Wall	Brown clayey sand	6.0	6.9	5	<2	<2	<0.020	<1
Culvert 8 Midbank	Brown clayey sand	5.9	**4.4**	13	**167**	**153**	**0.093**	5
Culvert 9 Surface	Black organic sandy sediment with lots of roots	5.6	**3.6**	<2	**28**	**27**	**0.039**	2
Culvert 9 500mm	Grey sandy clay, sulfidic odour	6.1	6.7	7	<2	<2	0.027	2
Culvert 10 500mm	Sandy organic sediment	5.9	**3.6**	3	**92**	**89**	<0.020	<1
Culvert 11 300–700mm	Organic sandy clay/clayey sand	5.0	**3.5**	**24**	**28**	4	**0.043**	4
Culvert 12 300-700mm	Organic sandy clay/clayey sand	**4.8**	**3.9**	**25**	**40**	15	<0.020	2

Values exceeding action criteria are identified in **Bold Underlined**
Action criteria are defined as:
Coarse textured soil
pH = <5
%Spos = >0.03
TAA/TSA/TPA = > 18mol H^+/tonne

Eight of the thirteen samples analysed by sPOCAS methodology exceed the action criteria for pH after oxidation. Four out of thirteen samples had titratable actual acidity above the guidelines with seven additional samples above the detection limit. Eleven samples exceeded the recommended levels for titratable peroxide acidity, and nine also had readings for titratable sulfidic acidity exceeding the action criteria and an additional two samples above the detection limit. Sulfur was above the action the limit of reporting in six samples (S_{pos}) and with four exceeding the action criteria. Other organics may also be present in samples and may contribute to the low pH values when the sample is oxidised. Therefore, based on the results, site soils encountered during

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this investigation consist of sandy loams, clayey sands, sand and clay and should be considered actual (AASS) and potential (PASS) acid sulfate soil and will require treatment as per an Acid Sulfate Soil Management Plan.

Required liming rates varied significantly, with up to 21 kg lime / tonne required for the soils at Culvert 2. Methodology to the management of acid sulfate soils must be prepared in a site-specific acid sulfate soil management plan.

8.2 CONTAMINATION ASSESSMENT - CULVERTS

The analysis of soil samples was undertaken against the criteria outlined in the *NSW EPA Waste Classification Guidelines – Part 1: Classifying Waste (2014)*. The samples taken from the surface material underwent an acid sulfate screen and were analysed for the following chemical attributes:

- Heavy metals (As, Cd, Cr, Cu, Pb, Hg, Ni and Zn);
- Polycyclic aromatic hydrocarbons (PAH);
- Total petroleum hydrocarbons C_6 to C_{36} (TPH);
- Benzene, Toluene, Ethylbenzene and Xylenes (BTEX);
- Organochlorine Pesticides (OCP); and
- Polychlorinated Biphenyls (PCB).

Environmental sampling was performed under the following procedure:

- Decontamination of all sampling equipment between sampling and use of disposable equipment (i.e. gloves);
- Labeling of sampling containers with individual and unique identification; and
- Controlled under chain of custody procedures.

The results were compared to the *NSW EPA Waste Classification Guidelines – Part 1: Classifying Waste (2014)* to determine an appropriate waste classification for the offsite disposal of the subject materials. One or more contaminants were elevated above the threshold for General Solid Waste (GSW) in six (6) of the twelve samples assessed, prior to TCLP analysis. Elevated contaminants included benzo(a)pyrene, lead and nickel.

Samples exceeding the threshold for GSW underwent Toxicity Characteristic Leaching Procedure (TCLP) in order to attempt to reduce the severity of the waste classification. These samples were found to be within the criteria for **General Solid Waste** in accordance with the *NSW EPA Waste Classification Guidelines – Part 1: Classifying Waste (2014).* In accordance with landfill's Environmental Protection Licences (EPL), the materials are **not** considered suitable for recycling. Refer to Figure 1 for sample locations.

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All samples analysed for contaminants were collected from near surface soils, as these soils are the most likely to be impacted.

8.3 Acid Sulfate Soil Assessment – The Bends

Samples were collected from the creek bank sediment within the subject area of Middle Creek ("The Bends" investigation area), see Figure 1. Three samples were collected from each of the sampling locations (boreholes). A single sample (the most likely to be acid sulfate soil, based on site observations) from each borehole was analysed for the sPOCAS suite, while each of the remaining samples were subject to acid sulfate screen analysis to determine potential risk of acid sulfate soil. A summary of the acid sulfate screen results for these samples is provided in Table 9.

Table 9 – Summary of Acid Sulfate Screens – The Bends

Location (Sample depth)	Soil Description	pH H_2O	pH H_2O_2
BH1 Surface	White-yellow coarse sand	6.87	3.32
BH1 800 – 900 mm	Dark brown sandy loam	6.29	2.66
BH2 0 – 200 mm	Coarse sand with organics	6.49	2.41
BH2 500 – 600 mm	Coarse sand	6.51	2.80
BH3 0 – 200 mm	Coarse sand	6.36	2.89
BH3 200 – 300 mm	Brown sandy loam lens	6.13	3.30
BH4 0 – 200 mm	Sand	6.12	2.52
BH4 500 – 700 mm	Dark brown sandy clay loam	6.03	3.21
BH5 0 – 200 mm	Coarse sand with some loam	6.16	2.70
BH5 700 – 800 mm	Dark brown sandy clay loam	5.8	2.82
BH6 0 – 200 mm	Coarse sand with some loam	6.1	2.47
BH6 550 – 700 mm	Dark brown sandy clay loam	5.79	2.90
BH7 0 – 200 mm	White-yellow coarse sand with some loam	5.88	2.34
BH7 800 – 1000 mm	Dark brown sandy clay loam	5.84	2.75

Significant drops were observed in a number of these acid sulfate screens, indicating a potential for acid sulfate soils to exist. In order to more accurately assess the potential for the subject soils to be acid sulfate, sPOCAS

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analysis was undertaken on eight (8) samples that showed the most significant pH drop following oxidation. A summary of these results of sPOCAS analysis is provided in Table 10.

Table 10 – Summary of sPOCAS results for The Bends

Location (Sample depth)	Soil Description	pH_{KCl}	pH_{FOX}	TAA H^+/tonne	TPA H^+/tonne	TSA H^+/tonne	S_{pos} %	Lime Requirement (kg $CaCO^3$/t)
BH1 500-600mm	White-yellow coarse sand	6.6	5.6	<2	<2	<2	0.020	<1
BH1 800-900mm	Dark brown sandy loam	**4.9**	**4.1**	17	**18**	<2	0.024	2
BH2 0-200mm	Coarse sand with organics	**4.8**	**3.3**	15	**18**	3	<0.020	1
BH2 1100-1200mm	Coarse sand with loam	5.5	**4.4**	11	<2	<2	<0.020	<1
BH3 800-900mm	Coarse sand	5.7	**4.6**	2	5	3	<0.020	<1
BH4 0-200mm	Sand	5.1	5.4	13	<2	<2	0.021	2
BH4 300-400mm	Sand	5.3	**4.4**	18	<2	<2	<0.020	1
BH5 0-200mm	Coarse sand with some loam	5.3	**4.3**	8	<2	<2	0.021	2
BH5 500-600mm	Coarse sand with some loam	5.3	**4.2**	9	<2	<2	<0.020	<1
BH6 0-200mm	Coarse sand with some loam	5.5	**4.3**	3	<2	<2	<0.020	<1
BH6 300-400mm	Coarse sand with some loam	5.3	**4.2**	11	<2	<2	<0.020	<1
BH7 0-200mm	White-yellow coarse sand with some loam	5.2	**3.4**	8	<2	<2	0.020	<1
BH7 400-600mm	White-yellow coarse sand with some loam	5.1	**4.3**	**18**	<2	<2	0.020	1

Values exceeding action criteria are identified in **Bold Underlined**
Action criteria are defined as:
Coarse textured soil
pH = <5
%Spos = >0.03
TAA/TSA/TPA = > 18mol H^+/tonne

Eleven of the thirteen samples from 'The Bends' analysed by sPOCAS methodology exceed the action criteria for pH after oxidation. One out of thirteen samples had titratable actual acidity above the action criteria with eleven additional samples above the detection limit. Two samples exceeded the action criteria for titratable peroxide acidity with an additional sample above the detection limit. Two samples had readings for titratable sulfidic acidity above the detection limit. Sulfur was present in six samples (S_{pos}), though none exceeded the action criteria threshold. Other organics may also be present in samples and may contribute to the low pH

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values when the sample is oxidised. Due to the absence of sulfur and very low calculated liming rate, SESL considers the sediments assessed from the subject area along Middle Creek to not be acid sulfate soils, and suggests that the minor acidity observed is the result of organic matter within the soils.

8.4 CONTAMINATION ASSESSMENT – THE BENDS

The analysis of soil samples was undertaken against the criteria outlined in the *NSW EPA Waste Classification Guidelines – Part 1: Classifying Waste (2014)*. The samples taken from the surface material underwent an acid sulfate screen and were analysed for the following chemical attributes:

- Heavy metals (As, Cd, Cr, Cu, Pb, Hg, Ni and Zn);
- Polycyclic aromatic hydrocarbons (PAH);
- Total petroleum hydrocarbons C_6 to C_{36} (TPH);
- Benzene, Toluene, Ethylbenzene and Xylenes (BTEX);
- Organochlorine Pesticides (OCP); and
- Polychlorinated Biphenyls (PCB).

Environmental sampling was performed under the following procedure:

- Decontamination of all sampling equipment between sampling and use of disposable equipment (i.e. gloves);
- Labeling of sampling containers with individual and unique identification; and
- Controlled under chain of custody procedures.

The results were compared to the *NSW EPA Waste Classification Guidelines – Part 1: Classifying Waste (2014).* For all samples collected at Middle Creek at The Bends which underwent the contamination screen, analysed contaminants were found to be within the criteria for **General Solid Waste** in accordance with the *NSW EPA Waste Classification Guidelines – Part 1: Classifying Waste (2014).* In accordance with landfill's Environmental Protection Licences (EPL), the materials are **not** considered suitable for recycling. Refer to Figure 1 for sample locations.

Based on the limited assessment, SESL considers it likely that the subject soils proposed for excavation will meet the requirements for classification as Excavated Natural Material (ENM), in accordance with the NSW EPA Excavated Natural Material Order, 2014. SESL recommends that should the materials be proposed for offsite disposal, additional analysis should be undertaken to determine compliance with the ENM order, to significantly reduce the costs of offsite disposal.

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9 CONCLUSIONS AND RECOMMENDATIONS

Based on the findings of this assessment undertaken by SESL, the soils within the proximity of some of the proposed culvert locations are considered to be potential and actual acid sulfate soil. SESL recommends that the proposed excavation works must be managed under the site-specific Acid Sulfate Soil Management Plan (ASSMP).

Based on limited assessment and in accordance with the *NSW EPA Waste Classification Guidelines – Part 1: Classifying Waste (2014)*, the soils proposed for excavation within the proximity of the culverts meet the criteria for General Solid Waste. In accordance with landfill's Environmental Protection Licenses (EPL), the material is **not** considered suitable for recycling due to elevated benzo(a)pyrene, nickel and lead.

Soils proposed for excavation within the subject area of Middle Creek (The Bends) are considered to not be Acid Sulfate Soils, and do not require management under an ASSMP. SESL suggests that the observed acidity is likely the result of extensive organic matter within the subject materials, and not the result of present sulfur.

In accordance with the *NSW EPA Waste Classification Guidelines – Part 1: Classifying Waste (2014)*, all samples collected from within creek sediments meet the criteria for General Solid Waste. However, based on the results of this limited assessment, SESL recommends that the subject soils proposed for excavation will meet the requirements for classification as Excavated Natural Material (ENM), and that consideration should be given to further assessment for the classification of these soils as ENM, to reduce the cost of offsite disposal.

This report is based on the field data obtained from the samples collected from the proposed inlet and outlet locations of six culverts in the investigation area and material collected from the subject sediments at Middle Creek (The Bends). If any materials are identified during excavation that is different to what has been described in this report, additional assessment may be required.

The principal and sub-contractors must ensure that transportation of soil materials occurs lawfully, and that the facilities to which the material is transported (whether for disposal or treatment) is appropriately licensed to receive waste materials.

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10 LIMITATIONS

This report only covers the site conditions at the time of investigation. Should there be any variation in the site conditions beyond this date, such as imported fill, chemical spillage, illegal dumping, further assessment will be required.

This report is for the use of the client and any relevant authorities that rely on the information for development applications and approval processes. Any reliance on this report by third parties shall be at such parties' sole risk. This report shall only be presented in full and may not be used to support any other objective other than those set out in the report.

SESL's assessment is necessarily based on the result of limited site investigations and upon the restricted program of visual assessment of the surface and consultation of available records. Neither SESL, nor any other reputable consultant, can provide unqualified warranties nor does SESL assume any liabilities for site conditions not observed, or accessible during the time of investigations.

No site investigations can be thorough enough to provide absolute confirmation of the presence or absence of substances, which may be considered contaminating, hazardous or polluting. Similarly, the level of testing undertaken cannot be considered to unequivocally characterise the degree or extent of contamination on site. In addition, regulatory or guideline criteria for the evaluation of environmental soil and groundwater quality are frequently being reviewed and concentrations of contaminants which are considered acceptable at present may in the future be considered to exceed acceptance criteria. Similar conditions may prevail in regard to site remediation standards as different regulatory mechanisms are developed and implemented.

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11 REFERENCES

Acid Sulfate Soil Planning Guidelines, NSW Acid Sulfate Soils Management Advisory Committee (1998).

Environmental Protection Authority, Assessing and Managing Acid Sulfate Soils – Guidelines for Management in NSW Coastal Area, 1995).

Chapman GA and Murphy CL, 1989, Soil Landscapes of the Sydney 1:100,000 Sheet report, Department of Conservation and Land Management, Sydney.

UPSS Regulation Sensitive Zone Map for Warringah Council, Department of Environment, Climate Change and Water (NSW 2010).

Waste Classification Guidelines Part 1: Classifying Waste, NSW Environmental Protection Authority (NSW EPA, 2014).

Waste Classification Guidelines Part 4: Acid Sulfate Soils, Department of Environment and Climate Change (NSW 2014).

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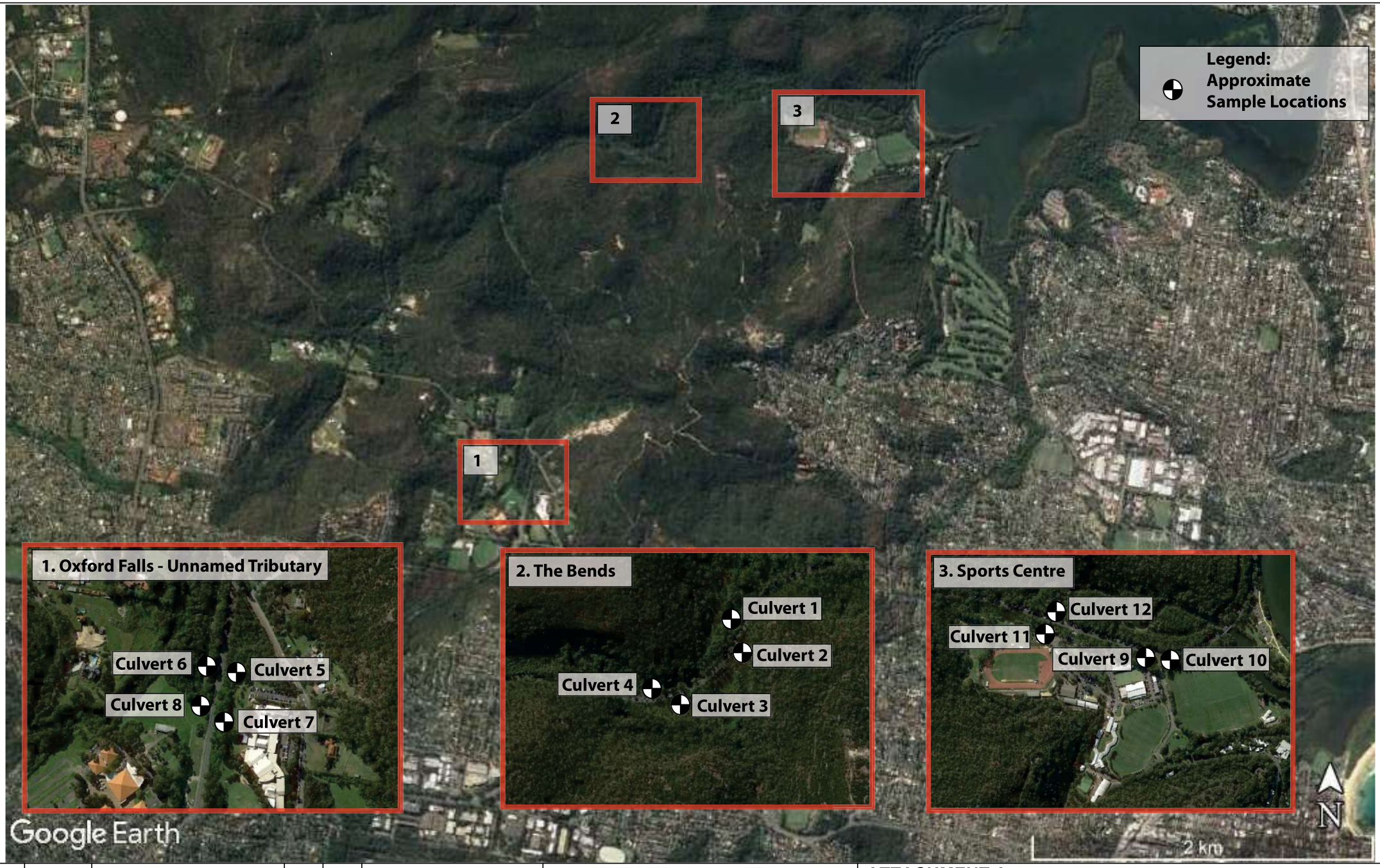
Appendix A



VER	DATE	AMENDMENTS	DRW	CKD
01	1/11/2018	First draft - Sampling map locations	SJ	RJ

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ATTACHMENT A

Map 1: Site location and sampling map

Project Ref:	J001187
Project:	Wakehurst Parkway Flood Mitigation Acid Sulfate and Contamination Assessment
Location:	Wakehurst Parkway, North Narrabeen NSW 2101
Client:	Northern Beaches Council
GPS Coordinates:	33°43'00" S 151°16'00" E

PRINT: A3 (P)



VER	DATE	AMENDMENTS	DRW	CKD
01	4/12/2018	First draft - Sampling map locations	SJ	KL

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ATTACHMENT A

Map 2: The Bends sampling map

Project Ref:	J001187
Project:	Wakehurst Parkway Flood Mitigation Acid Sulfate and Contamination Assessment
Location:	Wakehurst Parkway, North Narrabeen NSW 2101
Client:	Northern Beaches Council
GPS Coordinates:	33˚43'00" S 151˚15'00" E

PRINT: A3 (P)

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Appendix B

Warringah Local Environmental Plan 2011

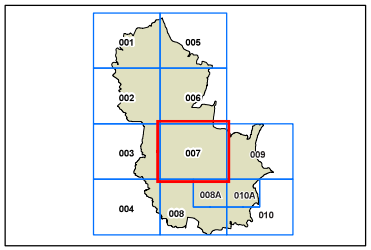
Acid Sulfate Soils Map - Sheet ASS_007

Acid Sulfate Soils

- 1 Class 1
- 2 Class 2
- 3 Class 3
- 4 Class 4
- 5 Class 5

Cadastre

Cadastre 19/09/2011 © Warringah Council



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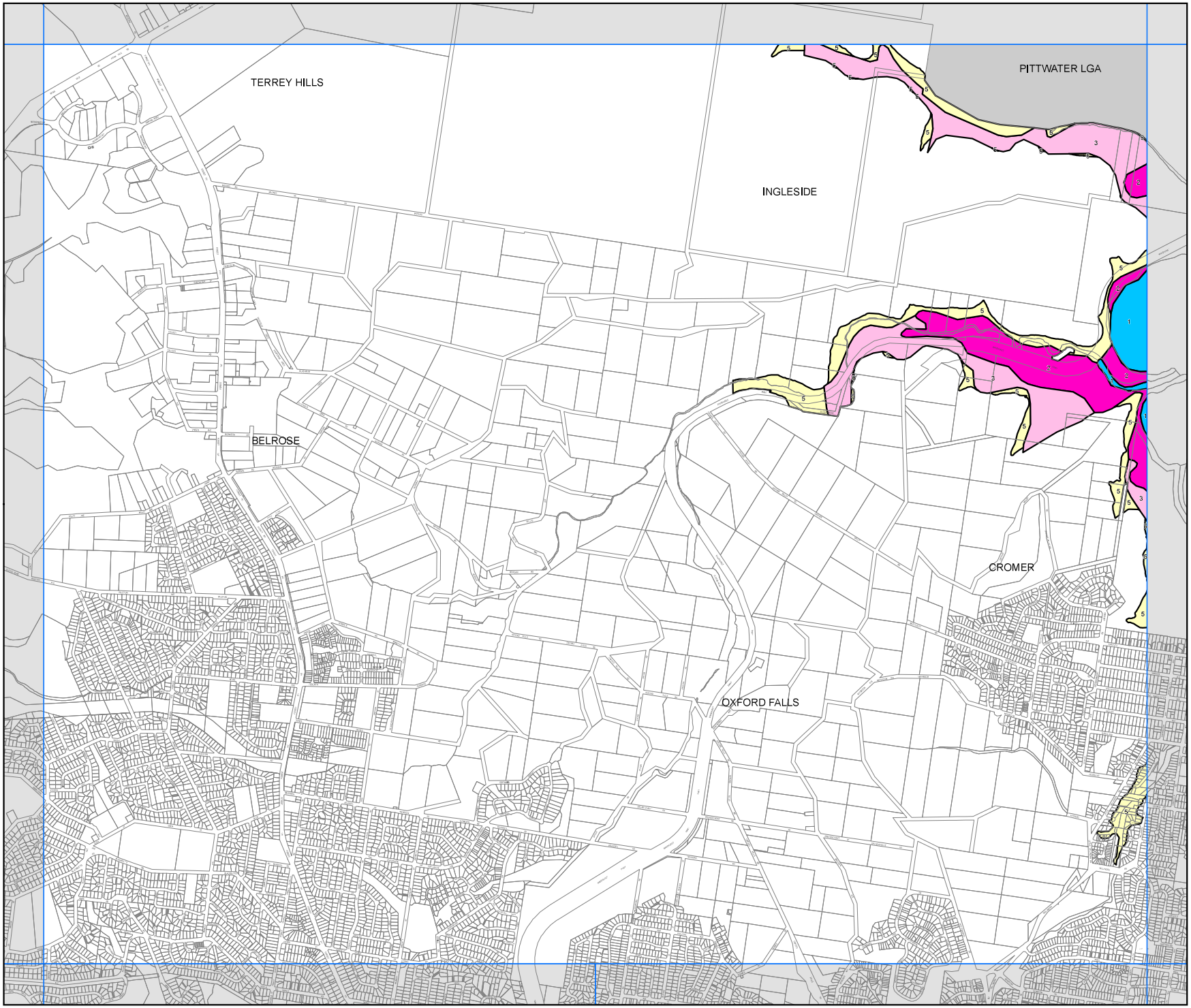
Projection: GDA 1994 Zone 56

Map identification number: 1800_COM_ASS_007_020_20111117



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Appendix C

Multiple Analysis Profile

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Batch N°: 49927 **Sample N°: 1** **Date Instructions Received: 5/10/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **Culvert 1 0-100**
Description: **Soil**
Test Type: **BWC, ASS1**

Analysis	Units	Result
pH H_2O	pH units	6.63
pH H_2O_2	pH units	3.97
Colour	-	10YR 2/2 Very Dark Brown
Colour Change	-	Greenish Yellow
Effervescence Type	-	Frothing
Effervescence Strength	-	Moderate reaction
Shellgrit/Carbonates	-	Nil Present
Odour	-	Nil Detected
Pyrite/Jarosite	-	Nil Visible
Organic Matter	-	Coarse Root Material

See report *J001187 Wakehurst Parkway Flood Mitigation - Acid Sulfate Soil and Contamination Assessment - Culverts* for commentary.

Consultant:

Andrew Jacovides

Authorised Signatory:

Date Report Generated
7/11/2018

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Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **Culvert 3 Surface**
Description: **Soil**
Test Type: **BWC, ASS1**

Analysis	Units	Result
pH H_2O	pH units	5.75
pH H_2O_2	pH units	2.64
Colour	-	10YR 2/2 Very Dark Brown
Colour Change	-	Greenish Yellow
Effervescence Type	-	Frothing
Effervescence Strength	-	Moderate reaction
Shellgrit/Carbonates	-	Nil Present
Odour	-	Nil Detected
Pyrite/Jarosite	-	Nil Visible
Organic Matter	-	Coarse Root Material

See report *J001187 Wakehurst Parkway Flood Mitigation - Acid Sulfate Soil and Contamination Assessment - Culverts* for commentary.

Consultant:

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Authorised Signatory:

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Batch N°: 49927 **Sample N°: 6** **Date Instructions Received: 5/10/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **Culvert 4 Surface**
Description: **Soil**
Test Type: **BWC, ASS1**

Analysis	Units	Result
pH H_2O	pH units	7.04
pH H_2O_2	pH units	4.24
Colour	-	10YR 2/2 Very Dark Brown
Colour Change	-	Greenish
Effervescence Type	-	Frothing
Effervescence Strength	-	Moderate reaction
Shellgrit/Carbonates	-	Nil Present
Odour	-	Nil Detected
Pyrite/Jarosite	-	Nil Visible
Organic Matter	-	Fine Root Material

See report *J001187 Wakehurst Parkway Flood Mitigation - Acid Sulfate Soil and Contamination Assessment - Culverts* for commentary.

Consultant:

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Batch N°: 49927 **Sample N°: 8** **Date Instructions Received: 5/10/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **Culvert 5 Surface**
Description: **Soil**
Test Type: **BWC, ASS1**

Analysis	Units	Result
pH H_2O	pH units	7.57
pH H_2O_2	pH units	5.28
Colour	-	10YR 2/2 Very Dark Brown
Colour Change	-	-
Effervescence Type	-	Frothing
Effervescence Strength	-	Moderate reaction
Shellgrit/Carbonates	-	Nil Present
Odour	-	Nil Detected
Pyrite/Jarosite	-	Nil Visible
Organic Matter	-	Coarse Root Material

See report *J001187 Wakehurst Parkway Flood Mitigation - Acid Sulfate Soil and Contamination Assessment - Culverts* for commentary.

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Batch N°: 49927 **Sample N°: 10** **Date Instructions Received: 5/10/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **Culvert 6 Surface**
Description: **Soil**
Test Type: **BWC, ASS1**

Analysis	Units	Result
pH H_2O	pH units	6.79
pH H_2O_2	pH units	3.58
Colour	-	10YR 3/3 Dark Brown
Colour Change	-	Yellowish
Effervescence Type	-	Frothing
Effervescence Strength	-	Moderate reaction
Shellgrit/Carbonates	-	Nil Present
Odour	-	Nil Detected
Pyrite/Jarosite	-	Nil Visible
Organic Matter	-	Coarse Root Material

See report *J001187 Wakehurst Parkway Flood Mitigation - Acid Sulfate Soil and Contamination Assessment - Culverts* for commentary.

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Batch N°: 49927 **Sample N°: 12** **Date Instructions Received: 5/10/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **Culvert 7 Creek Sediment**
Description: **Soil**
Test Type: **BWC, ASS1**

Analysis	Units	Result
pH H_2O	pH units	6.51
pH H_2O_2	pH units	3.06
Colour	-	2.5Y 3/3 Dark Olive Brown
Colour Change	-	Greenish Yellow
Effervescence Type	-	Frothing
Effervescence Strength	-	Moderate reaction
Shellgrit/Carbonates	-	Nil Present
Odour	-	Nil Detected
Pyrite/Jarosite	-	Nil Visible
Organic Matter	-	Coarse Root Material

See report *J001187 Wakehurst Parkway Flood Mitigation - Acid Sulfate Soil and Contamination Assessment - Culverts* for commentary.

Consultant:

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Batch N°: 49927 **Sample N°: 15** **Date Instructions Received: 5/10/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **Culvert 9 Surface**
Description: **Soil**
Test Type: **BWC, ASS1**

Analysis	Units	Result
pH H_2O	pH units	3.86
pH H_2O_2	pH units	2.12
Colour	-	10YR 2/2 Very Dark Brown
Colour Change	-	Yellowish
Effervescence Type	-	Frothing
Effervescence Strength	-	Moderate reaction
Shellgrit/Carbonates	-	Nil Present
Odour	-	Nil Detected
Pyrite/Jarosite	-	Nil Visible
Organic Matter	-	Coarse Root Material

See report *J001187 Wakehurst Parkway Flood Mitigation - Acid Sulfate Soil and Contamination Assessment - Culverts* for commentary.

Consultant:

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Batch N°: 49927 **Sample N°: 17** **Date Instructions Received: 5/10/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **Culvert 10 Surface**
Description: **Soil**
Test Type: **BWC, ASS1**

Analysis	Units	Result
pH H_2O	pH units	5.8
pH H_2O_2	pH units	2.8
Colour	-	10YR 2/2 Very Dark Brown
Colour Change	-	Greenish Yellow
Effervescence Type	-	Frothing
Effervescence Strength	-	Moderate reaction
Shellgrit/Carbonates	-	Nil Present
Odour	-	Nil Detected
Pyrite/Jarosite	-	Nil Visible
Organic Matter	-	Coarse Root Material

See report *J001187 Wakehurst Parkway Flood Mitigation - Acid Sulfate Soil and Contamination Assessment - Culverts* for commentary.

Consultant:

Andrew Jacovides

Authorised Signatory:

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Batch N°: 50296 **Sample N°: 1** **Date Instructions Received: 1/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH1 Surface**
Description: **Soil**
Test Type: **BWC_EXT, ASS1**

Analysis	Units	Result
pH H_2O	pH units	6.87
pH H_2O_2	pH units	3.32
Colour	-	10YR 5/4 Yellowish Brown
Colour Change	-	Yellowish
Effervescence Type	-	Frothing
Effervescence Strength	-	Slight reaction
Shellgrit/Carbonates	-	Nil Present
Odour	-	Nil Detected
Pyrite/Jarosite	-	Nil Visible
Organic Matter	-	Fine Root Material

Consultant:

Andrew Jacovides

Authorised Signatory:

Date Report Generated
5/12/2018

Multiple Analysis Profile

Sample Drop Off: 16 Chilvers Road
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Mailing Address: PO Box 357
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Tests are performed under a quality system certified as complying with ISO 9001: 2008. Results and conclusions assume that sampling is representative. This document shall not be reproduced except in full.

Batch N°: 50296 **Sample N°: 3** **Date Instructions Received: 1/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH1 800 - 900**
Description: **Soil**
Test Type: **BWC_EXT, ASS1**

Analysis	Units	Result
pH H_2O	pH units	6.29
pH H_2O_2	pH units	2.66
Colour	-	10YR 3/2 Very Dark Grayish Bro
Colour Change	-	Yellowish
Effervescence Type	-	Frothing
Effervescence Strength	-	High reaction
Shellgrit/Carbonates	-	Nil Present
Odour	-	Nil Detected
Pyrite/Jarosite	-	Nil Visible
Organic Matter	-	Fine Root Material

Consultant:

Andrew Jacovides

Authorised Signatory:

Date Report Generated
5/12/2018

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Batch N°: 50296 **Sample N°: 4** **Date Instructions Received: 1/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH2 0 - 200**
Description: **Soil**
Test Type: **BWC_EXT, ASS1**

Analysis	Units	Result
pH H_2O	pH units	6.49
pH H_2O_2	pH units	2.41
Colour	-	10YR 4/3 Brown
Colour Change	-	Yellowish
Effervescence Type	-	Frothing
Effervescence Strength	-	Moderate reaction
Shellgrit/Carbonates	-	Nil Present
Odour	-	Nil Detected
Pyrite/Jarosite	-	Nil Visible
Organic Matter	-	Fine Root Material

Consultant:

Andrew Jacovides

Authorised Signatory:

Date Report Generated
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Sample Drop Off: 16 Chilvers Road
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Batch N°: 50296 **Sample N°: 5** **Date Instructions Received: 1/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH2 500 - 600**
Description: **Soil**
Test Type: **BWC_EXT, ASS1**

Analysis	Units	Result
pH H_2O	pH units	6.51
pH H_2O_2	pH units	2.8
Colour	-	10YR 4/3 Brown
Colour Change	-	Yellowish
Effervescence Type	-	Frothing
Effervescence Strength	-	Moderate reaction
Shellgrit/Carbonates	-	Nil Present
Odour	-	Nil Detected
Pyrite/Jarosite	-	Nil Visible
Organic Matter	-	Fine Root Material

Consultant:

Andrew Jacovides

Authorised Signatory:

Date Report Generated
5/12/2018

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Environment & Soil Sciences

Multiple Analysis Profile

Sample Drop Off: 16 Chilvers Road
Thornleigh NSW 2120
Tel: 1300 30 40 80
Fax: 1300 64 46 89

Mailing Address: PO Box 357
Pennant Hills NSW 1715
Em: info@sesl.com.au
Web: www.sesl.com.au

Tests are performed under a quality system certified as complying with ISO 9001: 2008. Results and conclusions assume that sampling is representative. This document shall not be reproduced except in full.

Batch N°: 50296 **Sample N°: 7** **Date Instructions Received: 1/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH3 0 - 200**
Description: **Soil**
Test Type: **BWC_EXT, ASS1**

Analysis	Units	Result
pH H_2O	pH units	6.36
pH H_2O_2	pH units	2.89
Colour	-	10YR 4/3 Brown
Colour Change	-	Yellowish
Effervescence Type	-	Frothing
Effervescence Strength	-	Moderate reaction
Shellgrit/Carbonates	-	Nil Present
Odour	-	Nil Detected
Pyrite/Jarosite	-	Nil Visible
Organic Matter	-	Coarse Root Material

Consultant:

Andrew Jacovides

Authorised Signatory:

Date Report Generated
5/12/2018

Multiple Analysis Profile

Sample Drop Off: 16 Chilvers Road
Thornleigh NSW 2120
Tel: 1300 30 40 80
Fax: 1300 64 46 89

Mailing Address: PO Box 357
Pennant Hills NSW 1715
Em: info@sesl.com.au
Web: www.sesl.com.au

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Batch N°: 50296 **Sample N°: 8** **Date Instructions Received: 1/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH3 200 - 300**
Description: **Soil**
Test Type: **BWC_EXT, ASS1**

Analysis	Units	Result
pH H_2O	pH units	6.13
pH H_2O_2	pH units	3.3
Colour	-	10YR 3/3 Dark Brown
Colour Change	-	Yellowish
Effervescence Type	-	Frothing
Effervescence Strength	-	High reaction
Shellgrit/Carbonates	-	Nil Present
Odour	-	Nil Detected
Pyrite/Jarosite	-	Nil Visible
Organic Matter	-	Fine Root Material

Consultant:

Andrew Jacovides

Authorised Signatory:

Date Report Generated
5/12/2018

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Multiple Analysis Profile

Sample Drop Off: 16 Chilvers Road
Thornleigh NSW 2120
Tel: 1300 30 40 80
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Mailing Address: PO Box 357
Pennant Hills NSW 1715
Em: info@sesl.com.au
Web: www.sesl.com.au

Tests are performed under a quality system certified as complying with ISO 9001: 2008. Results and conclusions assume that sampling is representative. This document shall not be reproduced except in full.

Batch N°: 50296 **Sample N°: 10** **Date Instructions Received: 1/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH4 0 - 200**
Description: **Soil**
Test Type: **BWC_EXT, ASS1**

Analysis	Units	Result
pH H_2O	pH units	6.12
pH H_2O_2	pH units	2.52
Colour	-	10YR 3/3 Dark Brown
Colour Change	-	Yellowish
Effervescence Type	-	Frothing
Effervescence Strength	-	Moderate reaction
Shellgrit/Carbonates	-	Nil Present
Odour	-	Nil Detected
Pyrite/Jarosite	-	Nil Visible
Organic Matter	-	Fine Root Material

Consultant:

Andrew Jacovides

Authorised Signatory:

Date Report Generated
5/12/2018

Multiple Analysis Profile

Sample Drop Off: 16 Chilvers Road
Thornleigh NSW 2120
Tel: 1300 30 40 80
Fax: 1300 64 46 89

Mailing Address: PO Box 357
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Batch N°: 50296 **Sample N°: 12** **Date Instructions Received: 1/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH4 500 - 700**
Description: **Soil**
Test Type: **BWC_EXT, ASS1**

Analysis	Units	Result
pH H_2O	pH units	6.03
pH H_2O_2	pH units	3.21
Colour	-	10YR 3/2 Very Dark Grayish Bro
Colour Change	-	Yellowish
Effervescence Type	-	Frothing
Effervescence Strength	-	High reaction
Shellgrit/Carbonates	-	Nil Present
Odour	-	Nil Detected
Pyrite/Jarosite	-	Nil Visible
Organic Matter	-	Fine Root Material

Consultant:

Andrew Jacovides

Authorised Signatory:

Date Report Generated
5/12/2018

Multiple Analysis Profile

Sample Drop Off: 16 Chilvers Road
Thornleigh NSW 2120
Tel: 1300 30 40 80
Fax: 1300 64 46 89

Mailing Address: PO Box 357
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Batch N°: 50296 **Sample N°: 13** **Date Instructions Received: 1/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH5 0 - 200**
Description: **Soil**
Test Type: **BWC_EXT, ASS1**

Analysis	Units	Result
pH H_2O	pH units	6.16
pH H_2O_2	pH units	2.7
Colour	-	10YR 3/3 Dark Brown
Colour Change	-	Yellowish
Effervescence Type	-	Frothing
Effervescence Strength	-	Moderate reaction
Shellgrit/Carbonates	-	Nil Present
Odour	-	Nil Detected
Pyrite/Jarosite	-	Nil Visible
Organic Matter	-	Fine Root Material

Consultant:

Andrew Jacovides

Authorised Signatory:

Date Report Generated
5/12/2018

Multiple Analysis Profile

Sample Drop Off: 16 Chilvers Road
Thornleigh NSW 2120
Tel: 1300 30 40 80
Fax: 1300 64 46 89

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Batch N°: 50296 **Sample N°: 15** **Date Instructions Received: 1/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH5 700 - 800**
Description: **Soil**
Test Type: **BWC_EXT, ASS1**

Analysis	Units	Result
pH H_2O	pH units	5.8
pH H_2O_2	pH units	2.82
Colour	-	10YR 3/2 Very Dark Grayish Bro
Colour Change	-	Yellowish
Effervescence Type	-	Frothing
Effervescence Strength	-	High reaction
Shellgrit/Carbonates	-	Nil Present
Odour	-	Nil Detected
Pyrite/Jarosite	-	Nil Visible
Organic Matter	-	Fine Root Material

Consultant:

Andrew Jacovides

Authorised Signatory:

Date Report Generated
5/12/2018

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Multiple Analysis Profile

Sample Drop Off: 16 Chilvers Road
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Batch N°: 50296 **Sample N°: 16** **Date Instructions Received: 1/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH6 0 - 200**
Description: **Soil**
Test Type: **BWC_EXT, ASS1**

Analysis	Units	Result
pH H_2O	pH units	6.1
pH H_2O_2	pH units	2.47
Colour	-	10YR 3/3 Dark Brown
Colour Change	-	Yellowish
Effervescence Type	-	Frothing
Effervescence Strength	-	Moderate reaction
Shellgrit/Carbonates	-	Nil Present
Odour	-	Nil Detected
Pyrite/Jarosite	-	Nil Visible
Organic Matter	-	Fine Root Material

Consultant:

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Authorised Signatory:

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Sample Drop Off: 16 Chilvers Road
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Tests are performed under a quality system certified as complying with ISO 9001: 2008. Results and conclusions assume that sampling is representative. This document shall not be reproduced except in full.

Batch N°: 50296 **Sample N°: 18** **Date Instructions Received: 1/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH6 550 - 700**
Description: **Soil**
Test Type: **BWC_EXT, ASS1**

Analysis	Units	Result
pH H_2O	pH units	5.79
pH H_2O_2	pH units	2.9
Colour	-	10YR 3/2 Very Dark Grayish Bro
Colour Change	-	Yellowish
Effervescence Type	-	Frothing
Effervescence Strength	-	High reaction
Shellgrit/Carbonates	-	Nil Present
Odour	-	Nil Detected
Pyrite/Jarosite	-	Nil Visible
Organic Matter	-	Fine Root Material

Consultant:

Andrew Jacovides

Authorised Signatory:

Date Report Generated
5/12/2018

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Multiple Analysis Profile

Sample Drop Off: 16 Chilvers Road
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Batch N°: 50296 **Sample N°: 19** **Date Instructions Received: 1/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH7 0 - 200**
Description: **Soil**
Test Type: **BWC_EXT, ASS1**

Analysis	Units	Result
pH H_2O	pH units	5.88
pH H_2O_2	pH units	2.34
Colour	-	10YR 3/3 Dark Brown
Colour Change	-	Yellowish
Effervescence Type	-	Frothing
Effervescence Strength	-	Moderate reaction
Shellgrit/Carbonates	-	Nil Present
Odour	-	Nil Detected
Pyrite/Jarosite	-	Nil Visible
Organic Matter	-	Fine Root Material

Consultant:

Andrew Jacovides

Authorised Signatory:

Date Report Generated
5/12/2018

Multiple Analysis Profile

Sample Drop Off: 16 Chilvers Road
Thornleigh NSW 2120
Tel: 1300 30 40 80
Fax: 1300 64 46 89

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Tests are performed under a quality system certified as complying with ISO 9001: 2008. Results and conclusions assume that sampling is representative. This document shall not be reproduced except in full.

Batch N°: 50296 **Sample N°: 21** **Date Instructions Received: 1/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH7 800 - 1000**
Description: **Soil**
Test Type: **BWC_EXT, ASS1**

Analysis	Units	Result
pH H_2O	pH units	5.84
pH H_2O_2	pH units	2.75
Colour	-	10YR 3/3 Dark Brown
Colour Change	-	Yellowish
Effervescence Type	-	Frothing
Effervescence Strength	-	High reaction
Shellgrit/Carbonates	-	Nil Present
Odour	-	Nil Detected
Pyrite/Jarosite	-	Nil Visible
Organic Matter	-	Fine Root Material

Consultant:

Andrew Jacovides

Authorised Signatory:

Date Report Generated
5/12/2018

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SPOCAS

Sample Drop Off: 16 Chilvers Road, Thornleigh NSW 2120
Mailing Address: PO Box 357, Pennant Hills NSW 1715
Tel: 1300 30 40 80
Fax: 1300 64 46 89
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Web: www.sesl.com.au

Tests are performed under a quality system certified as complying with ISO 9001: 2008. Results and conclusions assume that sampling is representative. This document shall not be reproduced except in full.

Batch N°: 49927 **Sample N°: 2** **Date Instructions Received: 5/10/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **Culvert 1 800**
Description: **Soil**
Test Type: **sPOCAS_ALS, Atterberg Limits_RL, PSD - 4.75**

Analysis	Unit	Result	Comment
pH KCl (23A)	pH units	7.0	
pH OX (23B)	pH units	5.6	
Titratable Actual Acidity (23F)	moles H+/T	<2	
Titratable Peroxide Acidity (23G)	moles H+/T	62	
Titratable Sulfidic Acidity (23H)	moles H+/T	62	
sulfidic - Titratable Actual Acidity (s-23F)	% pyrite S	<0.020	
sulfidic - Titratable Peroxide Acidity (s-23G)	% pyrite S	0.100	
sulfidic - Titratable Sulfidic Acidity (s-23H)	% pyrite S	0.100	
KCl Extractable Sulfur (23Ce)	% S	<0.020	
Peroxide Sulfur (23De)	% S	0.029	
Peroxide Oxidisable Sulfur (23E)	% S	0.029	
acidity - Peroxide Oxidisable Sulfur (a-23E)	moles H+/T	18	
KCl Extractable Calcium (23Vh)	% Ca	0.102	
Peroxide Calcium (23Wh)	% Ca	0.110	
Acid Reacted Calcium (23X)	% Ca	<0.020	
acidity - Acid Reacted Calcium (a-23X)	moles H+/T	<10	
sulfidic - Acid Reacted Calcium (s-23X)	% S	<0.020	
KCl Extractable Magnesium (23Sm)	% Mg	<0.020	
Peroxide Magnesium (23Tm)	% Mg	0.026	
Acid Reacted Magnesium (23U)	% Mg	0.026	
Acidity - Acid Reacted Magnesium (a-23U)	moles H+/T	21	
sulfidic - Acid Reacted Magnesium (s-23U)	% S	0.034	
Excess Acid Neutralising Capacity (23Q)	% CaCO3		
acidity-Excess Acid Neutralising Capacity (a-23Q)	moles H+/T		
sulfidic-Excess Acid Neutralising Capacity (s-23Q)	% S		
HCl Extractable Sulfur (20Be)	% S		
Net Acid Soluble Sulfur (20Je)	% S		
acidity - Net Acid Soluble Sulfur (a-20J)	moles H+/T		
sulfidic - Net Acid Soluble Sulfur (s-20J)	% pyrite S		
ANC Fineness Factor	-	1.5	
Net Acidity (sulfur units)	% S	0.08	
Net Acidity (acidity units)	moles H+/T	47	
Liming Rate	kg CaCO3/t	4	
Net Acidity excluding ANC (sulfur units)	% S	0.08	
Net Acidity excluding ANC (acidity units)	mole H+ / t	47	
Liming Rate excluding ANC	kg CaCO3/t	4	

SPOCAS

Sample Drop Off: 16 Chilvers Road
Thornleigh NSW 2120

Mailing Address: PO Box 357
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Tel: 1300 30 40 80
Fax: 1300 64 46 89
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Web: www.sesl.com.au

Tests are performed under a quality system certified as complying with ISO 9001: 2008. Results and conclusions assume that sampling is representative. This document shall not be reproduced except in full.

Batch N°: 49927 **Sample N°: 2** **Date Instructions Received: 5/10/18** **Report Status:** ○ **Preliminary** ○ F

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **Culvert 1 800**
Description: **Soil**
Test Type: **sPOCAS_ALS, Atterberg Limits_RL, PSD - 4.75**

See report *J001187 Wakehurst Parkway Flood Mitigation - Acid Sulfate Soil and Contamination Assessment - Culverts* for commentary.

Date Report Generated
7/11/2018

Consultant
Andrew Jacovides

Authorised Signatory

Method References:
SESL Method PM0011: Analysis of acid sulphate soils - sPOCAS derived from Ahern CR, Blunden B and Stone Y (eds.) (1998). *Acid Sulphate Soils Laboratory Methods* Guidelines Published by the Acid Sulphate Soil Management Advisory committe, Wollongbar, NSW, Australia

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SPOCAS

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Tests are performed under a quality system certified as complying with ISO 9001: 2008. Results and conclusions assume that sampling is representative. This document shall not be reproduced except in full.

Batch N°: 49927 **Sample N°: 3** **Date Instructions Received: 5/10/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **Culvert 2**
Description: **Soil**
Test Type: **sPOCAS_ALS, Atterberg Limits_RL, PSD - 4.75, BWC, CBR_RL**

Analysis	Unit	Result	Comment
pH KCl (23A)	pH units	4.3	
pH OX (23B)	pH units	3.4	
Titratable Actual Acidity (23F)	moles H+/T	147	
Titratable Peroxide Acidity (23G)	moles H+/T	496	
Titratable Sulfidic Acidity (23H)	moles H+/T	349	
sulfidic - Titratable Actual Acidity (s-23F)	% pyrite S	0.236	
sulfidic - Titratable Peroxide Acidity (s-23G)	% pyrite S	0.795	
sulfidic - Titratable Sulfidic Acidity (s-23H)	% pyrite S	0.560	
KCl Extractable Sulfur (23Ce)	% S	<0.020	
Peroxide Sulfur (23De)	% S	0.186	
Peroxide Oxidisable Sulfur (23E)	% S	0.186	
acidity - Peroxide Oxidisable Sulfur (a-23E)	moles H+/T	116	
KCl Extractable Calcium (23Vh)	% Ca	0.109	
Peroxide Calcium (23Wh)	% Ca	0.116	
Acid Reacted Calcium (23X)	% Ca	<0.020	
acidity - Acid Reacted Calcium (a-23X)	moles H+/T	<10	
sulfidic - Acid Reacted Calcium (s-23X)	% S	<0.020	
KCl Extractable Magnesium (23Sm)	% Mg	0.044	
Peroxide Magnesium (23Tm)	% Mg	0.054	
Acid Reacted Magnesium (23U)	% Mg	<0.020	
Acidity - Acid Reacted Magnesium (a-23U)	moles H+/T	<10	
sulfidic - Acid Reacted Magnesium (s-23U)	% S	<0.020	
Excess Acid Neutralising Capacity (23Q)	% CaCO3		
acidity-Excess Acid Neutralising Capacity (a-23Q)	moles H+/T		
sulfidic-Excess Acid Neutralising Capacity (s-23Q)	% S		
HCl Extractable Sulfur (20Be)	% S	0.035	
Net Acid Soluble Sulfur (20Je)	% S	0.035	
acidity - Net Acid Soluble Sulfur (a-20J)	moles H+/T	16	
sulfidic - Net Acid Soluble Sulfur (s-20J)	% pyrite S	0.026	
ANC Fineness Factor	-	1.5	
Net Acidity (sulfur units)	% S	0.45	
Net Acidity (acidity units)	moles H+/T	279	
Liming Rate	kg CaCO3/t	21	
Net Acidity excluding ANC (sulfur units)	% S	0.45	
Net Acidity excluding ANC (acidity units)	mole H+ / t	279	
Liming Rate excluding ANC	kg CaCO3/t	21	

SPOCAS

Sample Drop Off: 16 Chilvers Road
Thornleigh NSW 2120

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Tests are performed under a quality system certified as complying with ISO 9001: 2008. Results and conclusions assume that sampling is representative. This document shall not be reproduced except in full.

Batch N°: 49927 **Sample N°: 3** **Date Instructions Received: 5/10/18** **Report Status: ○ Preliminary ○ F**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **Culvert 2**
Description: **Soil**
Test Type: **sPOCAS_ALS, Atterberg Limits_RL, PSD - 4.75, BWC, CBR_RL**

See report *J001187 Wakehurst Parkway Flood Mitigation - Acid Sulfate Soil and Contamination Assessment - Culverts* for commentary.

Date Report Generated
7/11/2018

Consultant
Andrew Jacovides

Authorised Signatory

Method References:
SESL Method PM0011: Analysis of acid sulphate soils - sPOCAS derived from Ahern CR, Blunden B and Stone Y (eds.) (1998). *Acid Sulphate Soils Laboratory Methods* Guidelines Published by the Acid Sulphate Soil Management Advisory committe, Wollongbar, NSW, Australia

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SPOCAS

Sample Drop Off: 16 Chilvers Road, Thornleigh NSW 2120
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Tests are performed under a quality system certified as complying with ISO 9001: 2008. Results and conclusions assume that sampling is representative. This document shall not be reproduced except in full.

Batch N°: 49927 **Sample N°: 5** **Date Instructions Received: 5/10/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **Culvert 3 500**
Description: **Soil**
Test Type: **sPOCAS_ALS, Atterberg Limits_RL, CBR_RL, PSD - 4.75**

Analysis	Unit	Result	Comment
pH KCl (23A)	pH units	6.0	
pH OX (23B)	pH units	6.0	
Titratable Actual Acidity (23F)	moles H+/T	6	
Titratable Peroxide Acidity (23G)	moles H+/T	55	
Titratable Sulfidic Acidity (23H)	moles H+/T	49	
sulfidic - Titratable Actual Acidity (s-23F)	% pyrite S	<0.020	
sulfidic - Titratable Peroxide Acidity (s-23G)	% pyrite S	0.088	
sulfidic - Titratable Sulfidic Acidity (s-23H)	% pyrite S	0.078	
KCl Extractable Sulfur (23Ce)	% S	<0.020	
Peroxide Sulfur (23De)	% S	<0.020	
Peroxide Oxidisable Sulfur (23E)	% S	<0.020	
acidity - Peroxide Oxidisable Sulfur (a-23E)	moles H+/T	<10	
KCl Extractable Calcium (23Vh)	% Ca	0.116	
Peroxide Calcium (23Wh)	% Ca	0.121	
Acid Reacted Calcium (23X)	% Ca	<0.020	
acidity - Acid Reacted Calcium (a-23X)	moles H+/T	<10	
sulfidic - Acid Reacted Calcium (s-23X)	% S	<0.020	
KCl Extractable Magnesium (23Sm)	% Mg	<0.020	
Peroxide Magnesium (23Tm)	% Mg	<0.020	
Acid Reacted Magnesium (23U)	% Mg	<0.020	
Acidity - Acid Reacted Magnesium (a-23U)	moles H+/T	<10	
sulfidic - Acid Reacted Magnesium (s-23U)	% S	<0.020	
Excess Acid Neutralising Capacity (23Q)	% CaCO3		
acidity-Excess Acid Neutralising Capacity (a-23Q)	moles H+/T		
sulfidic-Excess Acid Neutralising Capacity (s-23Q)	% S		
HCl Extractable Sulfur (20Be)	% S		
Net Acid Soluble Sulfur (20Je)	% S		
acidity - Net Acid Soluble Sulfur (a-20J)	moles H+/T		
sulfidic - Net Acid Soluble Sulfur (s-20J)	% pyrite S		
ANC Fineness Factor	-	1.5	
Net Acidity (sulfur units)	% S	<0.02	
Net Acidity (acidity units)	moles H+/T	<10	
Liming Rate	kg CaCO3/t	<1	
Net Acidity excluding ANC (sulfur units)	% S	<0.02	
Net Acidity excluding ANC (acidity units)	mole H+ / t	<10	
Liming Rate excluding ANC	kg CaCO3/t	<1	

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Batch N°: 49927 **Sample N°: 5** **Date Instructions Received: 5/10/18** **Report Status:** ○ **Preliminary** ○ F

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **Culvert 3 500**
Description: **Soil**
Test Type: **sPOCAS_ALS, Atterberg Limits_RL, CBR_RL, PSD - 4.75**

See report *J001187 Wakehurst Parkway Flood Mitigation - Acid Sulfate Soil and Contamination Assessment - Culverts* for commentary.

Date Report Generated
7/11/2018

Consultant
Andrew Jacovides

Authorised Signatory

Method References:
SESL Method PM0011: Analysis of acid sulphate soils - sPOCAS derived from Ahern CR, Blunden B and Stone Y (eds.) (1998). *Acid Sulphate Soils Laboratory Methods* Guidelines Published by the Acid Sulphate Soil Management Advisory committe, Wollongbar, NSW, Australia

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Batch N°: 49927 **Sample N°: 7** **Date Instructions Received: 5/10/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **Culvert 4 500**
Description: **Soil**
Test Type: **sPOCAS_ALS, Atterberg Limits_RL, CBR_RL, PSD - 4.75**

Analysis	Unit	Result	Comment
pH KCl (23A)	pH units	4.7	
pH OX (23B)	pH units	4.4	
Titratable Actual Acidity (23F)	moles H+/T	38	
Titratable Peroxide Acidity (23G)	moles H+/T	112	
Titratable Sulfidic Acidity (23H)	moles H+/T	74	
sulfidic - Titratable Actual Acidity (s-23F)	% pyrite S	0.061	
sulfidic - Titratable Peroxide Acidity (s-23G)	% pyrite S	0.179	
sulfidic - Titratable Sulfidic Acidity (s-23H)	% pyrite S	0.118	
KCl Extractable Sulfur (23Ce)	% S	<0.020	
Peroxide Sulfur (23De)	% S	<0.020	
Peroxide Oxidisable Sulfur (23E)	% S	<0.020	
acidity - Peroxide Oxidisable Sulfur (a-23E)	moles H+/T	<10	
KCl Extractable Calcium (23Vh)	% Ca	0.042	
Peroxide Calcium (23Wh)	% Ca	0.048	
Acid Reacted Calcium (23X)	% Ca	<0.020	
acidity - Acid Reacted Calcium (a-23X)	moles H+/T	<10	
sulfidic - Acid Reacted Calcium (s-23X)	% S	<0.020	
KCl Extractable Magnesium (23Sm)	% Mg	<0.020	
Peroxide Magnesium (23Tm)	% Mg	<0.020	
Acid Reacted Magnesium (23U)	% Mg	<0.020	
Acidity - Acid Reacted Magnesium (a-23U)	moles H+/T	<10	
sulfidic - Acid Reacted Magnesium (s-23U)	% S	<0.020	
Excess Acid Neutralising Capacity (23Q)	% CaCO3		
acidity-Excess Acid Neutralising Capacity (a-23Q)	moles H+/T		
sulfidic-Excess Acid Neutralising Capacity (s-23Q)	% S		
HCl Extractable Sulfur (20Be)	% S		
Net Acid Soluble Sulfur (20Je)	% S		
acidity - Net Acid Soluble Sulfur (a-20J)	moles H+/T		
sulfidic - Net Acid Soluble Sulfur (s-20J)	% pyrite S		
ANC Fineness Factor	-	1.5	
Net Acidity (sulfur units)	% S	0.06	
Net Acidity (acidity units)	moles H+/T	38	
Liming Rate	kg CaCO3/t	3	
Net Acidity excluding ANC (sulfur units)	% S	0.06	
Net Acidity excluding ANC (acidity units)	mole H+ / t	38	
Liming Rate excluding ANC	kg CaCO3/t	3	

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Batch N°: 49927 **Sample N°: 7** **Date Instructions Received: 5/10/18** **Report Status:** ○ **Preliminary** ○ F

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **Culvert 4 500**
Description: **Soil**
Test Type: **sPOCAS_ALS, Atterberg Limits_RL, CBR_RL, PSD - 4.75**

See report *J001187 Wakehurst Parkway Flood Mitigation - Acid Sulfate Soil and Contamination Assessment - Culverts* for commentary.

Date Report Generated
7/11/2018

Consultant
Andrew Jacovides

Authorised Signatory

Method References:
SESL Method PM0011: Analysis of acid sulphate soils - sPOCAS derived from Ahern CR, Blunden B and Stone Y (eds.) (1998). *Acid Sulphate Soils Laboratory Methods* Guidelines Published by the Acid Sulphate Soil Management Advisory committe, Wollongbar, NSW, Australia

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Batch N°: 49927 **Sample N°: 9** **Date Instructions Received: 5/10/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **Culvert 5 500**
Description: **Soil**
Test Type: **sPOCAS_ALS, Atterberg Limits_RL, CBR_RL, PSD - 4.75**

Analysis	Unit	Result	Comment
pH KCl (23A)	pH units	6.2	
pH OX (23B)	pH units	6.1	
Titratable Actual Acidity (23F)	moles H+/T	6	
Titratable Peroxide Acidity (23G)	moles H+/T	35	
Titratable Sulfidic Acidity (23H)	moles H+/T	29	
sulfidic - Titratable Actual Acidity (s-23F)	% pyrite S	<0.020	
sulfidic - Titratable Peroxide Acidity (s-23G)	% pyrite S	0.056	
sulfidic - Titratable Sulfidic Acidity (s-23H)	% pyrite S	0.047	
KCl Extractable Sulfur (23Ce)	% S	<0.020	
Peroxide Sulfur (23De)	% S	<0.020	
Peroxide Oxidisable Sulfur (23E)	% S	<0.020	
acidity - Peroxide Oxidisable Sulfur (a-23E)	moles H+/T	<10	
KCl Extractable Calcium (23Vh)	% Ca	0.104	
Peroxide Calcium (23Wh)	% Ca	0.126	
Acid Reacted Calcium (23X)	% Ca	0.022	
acidity - Acid Reacted Calcium (a-23X)	moles H+/T	11	
sulfidic - Acid Reacted Calcium (s-23X)	% S	<0.020	
KCl Extractable Magnesium (23Sm)	% Mg	<0.020	
Peroxide Magnesium (23Tm)	% Mg	0.021	
Acid Reacted Magnesium (23U)	% Mg	0.021	
Acidity - Acid Reacted Magnesium (a-23U)	moles H+/T	18	
sulfidic - Acid Reacted Magnesium (s-23U)	% S	0.028	
Excess Acid Neutralising Capacity (23Q)	% CaCO3		
acidity-Excess Acid Neutralising Capacity (a-23Q)	moles H+/T		
sulfidic-Excess Acid Neutralising Capacity (s-23Q)	% S		
HCl Extractable Sulfur (20Be)	% S		
Net Acid Soluble Sulfur (20Je)	% S		
acidity - Net Acid Soluble Sulfur (a-20J)	moles H+/T		
sulfidic - Net Acid Soluble Sulfur (s-20J)	% pyrite S		
ANC Fineness Factor	-	1.5	
Net Acidity (sulfur units)	% S	<0.02	
Net Acidity (acidity units)	moles H+/T	<10	
Liming Rate	kg CaCO3/t	<1	
Net Acidity excluding ANC (sulfur units)	% S	<0.02	
Net Acidity excluding ANC (acidity units)	mole H+ / t	<10	
Liming Rate excluding ANC	kg CaCO3/t	<1	

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Batch N°: 49927 **Sample N°: 9** **Date Instructions Received: 5/10/18** **Report Status:** ○ **Preliminary** ○ F

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **Culvert 5 500**
Description: **Soil**
Test Type: **sPOCAS_ALS, Atterberg Limits_RL, CBR_RL, PSD - 4.75**

See report *J001187 Wakehurst Parkway Flood Mitigation - Acid Sulfate Soil and Contamination Assessment - Culverts* for commentary.

Date Report Generated
7/11/2018

Consultant
Andrew Jacovides

Authorised Signatory

Method References:
SESL Method PM0011: Analysis of acid sulphate soils - sPOCAS derived from Ahern CR, Blunden B and Stone Y (eds.) (1998). *Acid Sulphate Soils Laboratory Methods* Guidelines Published by the Acid Sulphate Soil Management Advisory committe, Wollongbar, NSW, Australia

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Batch N°: 49927 **Sample N°: 11** **Date Instructions Received: 5/10/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **Culvert 6 500**
Description: **Soil**
Test Type: **sPOCAS_ALS, Atterberg Limits_RL, CBR_RL, PSD - 4.75**

Analysis	Unit	Result	Comment
pH KCl (23A)	pH units	5.4	
pH OX (23B)	pH units	4.9	
Titratable Actual Acidity (23F)	moles H+/T	16	
Titratable Peroxide Acidity (23G)	moles H+/T	84	
Titratable Sulfidic Acidity (23H)	moles H+/T	68	
sulfidic - Titratable Actual Acidity (s-23F)	% pyrite S	0.025	
sulfidic - Titratable Peroxide Acidity (s-23G)	% pyrite S	0.135	
sulfidic - Titratable Sulfidic Acidity (s-23H)	% pyrite S	0.109	
KCl Extractable Sulfur (23Ce)	% S	<0.020	
Peroxide Sulfur (23De)	% S	<0.020	
Peroxide Oxidisable Sulfur (23E)	% S	<0.020	
acidity - Peroxide Oxidisable Sulfur (a-23E)	moles H+/T	<10	
KCl Extractable Calcium (23Vh)	% Ca	0.042	
Peroxide Calcium (23Wh)	% Ca	0.052	
Acid Reacted Calcium (23X)	% Ca	<0.020	
acidity - Acid Reacted Calcium (a-23X)	moles H+/T	<10	
sulfidic - Acid Reacted Calcium (s-23X)	% S	<0.020	
KCl Extractable Magnesium (23Sm)	% Mg	<0.020	
Peroxide Magnesium (23Tm)	% Mg	<0.020	
Acid Reacted Magnesium (23U)	% Mg	<0.020	
Acidity - Acid Reacted Magnesium (a-23U)	moles H+/T	<10	
sulfidic - Acid Reacted Magnesium (s-23U)	% S	<0.020	
Excess Acid Neutralising Capacity (23Q)	% CaCO3		
acidity-Excess Acid Neutralising Capacity (a-23Q)	moles H+/T		
sulfidic-Excess Acid Neutralising Capacity (s-23Q)	% S		
HCl Extractable Sulfur (20Be)	% S		
Net Acid Soluble Sulfur (20Je)	% S		
acidity - Net Acid Soluble Sulfur (a-20J)	moles H+/T		
sulfidic - Net Acid Soluble Sulfur (s-20J)	% pyrite S		
ANC Fineness Factor	-	1.5	
Net Acidity (sulfur units)	% S	0.02	
Net Acidity (acidity units)	moles H+/T	16	
Liming Rate	kg CaCO3/t	1	
Net Acidity excluding ANC (sulfur units)	% S	0.02	
Net Acidity excluding ANC (acidity units)	mole H+ / t	16	
Liming Rate excluding ANC	kg CaCO3/t	1	

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Batch N°: 49927 **Sample N°: 11** **Date Instructions Received: 5/10/18** **Report Status:** ○ **Preliminary** ○ F

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **Culvert 6 500**
Description: **Soil**
Test Type: **sPOCAS_ALS, Atterberg Limits_RL, CBR_RL, PSD - 4.75**

See report *J001187 Wakehurst Parkway Flood Mitigation - Acid Sulfate Soil and Contamination Assessment - Culverts* for commentary.

Date Report Generated
7/11/2018

Consultant
Andrew Jacovides

Authorised Signatory

Method References:
SESL Method PM0011: Analysis of acid sulphate soils - sPOCAS derived from Ahern CR, Blunden B and Stone Y (eds.) (1998). *Acid Sulphate Soils Laboratory Methods* Guidelines Published by the Acid Sulphate Soil Management Advisory committe, Wollongbar, NSW, Australia

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Batch N°: 49927 **Sample N°: 13** **Date Instructions Received: 5/10/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **Culvert 7 Above retaining wall**
Description: **Soil**
Test Type: **sPOCAS_ALS, Atterberg Limits_RL, CBR_RL, PSD - 4.75**

Analysis	Unit	Result	Comment
pH KCl (23A)	pH units	6.0	
pH OX (23B)	pH units	6.9	
Titratable Actual Acidity (23F)	moles H+/T	5	
Titratable Peroxide Acidity (23G)	moles H+/T	<2	
Titratable Sulfidic Acidity (23H)	moles H+/T	<2	
sulfidic - Titratable Actual Acidity (s-23F)	% pyrite S	<0.020	
sulfidic - Titratable Peroxide Acidity (s-23G)	% pyrite S	<0.020	
sulfidic - Titratable Sulfidic Acidity (s-23H)	% pyrite S	<0.020	
KCl Extractable Sulfur (23Ce)	% S	<0.020	
Peroxide Sulfur (23De)	% S	<0.020	
Peroxide Oxidisable Sulfur (23E)	% S	<0.020	
acidity - Peroxide Oxidisable Sulfur (a-23E)	moles H+/T	<10	
KCl Extractable Calcium (23Vh)	% Ca	0.106	
Peroxide Calcium (23Wh)	% Ca	0.160	
Acid Reacted Calcium (23X)	% Ca	0.054	
acidity - Acid Reacted Calcium (a-23X)	moles H+/T	27	
sulfidic - Acid Reacted Calcium (s-23X)	% S	0.043	
KCl Extractable Magnesium (23Sm)	% Mg	<0.020	
Peroxide Magnesium (23Tm)	% Mg	0.020	
Acid Reacted Magnesium (23U)	% Mg	0.020	
Acidity - Acid Reacted Magnesium (a-23U)	moles H+/T	16	
sulfidic - Acid Reacted Magnesium (s-23U)	% S	0.026	
Excess Acid Neutralising Capacity (23Q)	% CaCO3	0.207	
acidity-Excess Acid Neutralising Capacity (a-23Q)	moles H+/T	41	
sulfidic-Excess Acid Neutralising Capacity (s-23Q)	% S	0.066	
HCl Extractable Sulfur (20Be)	% S		
Net Acid Soluble Sulfur (20Je)	% S		
acidity - Net Acid Soluble Sulfur (a-20J)	moles H+/T		
sulfidic - Net Acid Soluble Sulfur (s-20J)	% pyrite S		
ANC Fineness Factor	-	1.5	
Net Acidity (sulfur units)	% S	<0.02	
Net Acidity (acidity units)	moles H+/T	<10	
Liming Rate	kg CaCO3/t	<1	
Net Acidity excluding ANC (sulfur units)	% S	<0.02	
Net Acidity excluding ANC (acidity units)	mole H+ / t	<10	
Liming Rate excluding ANC	kg CaCO3/t	<1	

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Batch N°: 49927 **Sample N°: 13** **Date Instructions Received: 5/10/18** **Report Status:** ○ **Preliminary** ○ F

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **Culvert 7 Above retaining wall**
Description: **Soil**
Test Type: **sPOCAS_ALS, Atterberg Limits_RL, CBR_RL, PSD - 4.75**

See report *J001187 Wakehurst Parkway Flood Mitigation - Acid Sulfate Soil and Contamination Assessment - Culverts* for commentary.

Date Report Generated
7/11/2018

Consultant
Andrew Jacovides

Authorised Signatory

Method References:
SESL Method PM0011: Analysis of acid sulphate soils - sPOCAS derived from Ahern CR, Blunden B and Stone Y (eds.) (1998). *Acid Sulphate Soils Laboratory Methods* Guidelines Published by the Acid Sulphate Soil Management Advisory committe, Wollongbar, NSW, Australia

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Batch N°: 49927 **Sample N°: 14** **Date Instructions Received: 5/10/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **Culvert 8 Midbank**
Description: **Soil**
Test Type: **BWC, sPOCAS_ALS, Atterberg Limits_RL, CBR_RL, PSD - 4.75**

Analysis	Unit	Result	Comment
pH KCl (23A)	pH units	5.9	
pH OX (23B)	pH units	4.4	
Titratable Actual Acidity (23F)	moles H+/T	13	
Titratable Peroxide Acidity (23G)	moles H+/T	167	
Titratable Sulfidic Acidity (23H)	moles H+/T	153	
sulfidic - Titratable Actual Acidity (s-23F)	% pyrite S	0.022	
sulfidic - Titratable Peroxide Acidity (s-23G)	% pyrite S	0.268	
sulfidic - Titratable Sulfidic Acidity (s-23H)	% pyrite S	0.246	
KCl Extractable Sulfur (23Ce)	% S	<0.020	
Peroxide Sulfur (23De)	% S	0.093	
Peroxide Oxidisable Sulfur (23E)	% S	0.093	
acidity - Peroxide Oxidisable Sulfur (a-23E)	moles H+/T	58	
KCl Extractable Calcium (23Vh)	% Ca	0.082	
Peroxide Calcium (23Wh)	% Ca	0.100	
Acid Reacted Calcium (23X)	% Ca	<0.020	
acidity - Acid Reacted Calcium (a-23X)	moles H+/T	<10	
sulfidic - Acid Reacted Calcium (s-23X)	% S	<0.020	
KCl Extractable Magnesium (23Sm)	% Mg	0.068	
Peroxide Magnesium (23Tm)	% Mg	0.076	
Acid Reacted Magnesium (23U)	% Mg	<0.020	
Acidity - Acid Reacted Magnesium (a-23U)	moles H+/T	<10	
sulfidic - Acid Reacted Magnesium (s-23U)	% S	<0.020	
Excess Acid Neutralising Capacity (23Q)	% CaCO3		
acidity-Excess Acid Neutralising Capacity (a-23Q)	moles H+/T		
sulfidic-Excess Acid Neutralising Capacity (s-23Q)	% S		
HCl Extractable Sulfur (20Be)	% S		
Net Acid Soluble Sulfur (20Je)	% S		
acidity - Net Acid Soluble Sulfur (a-20J)	moles H+/T		
sulfidic - Net Acid Soluble Sulfur (s-20J)	% pyrite S		
ANC Fineness Factor	-	1.5	
Net Acidity (sulfur units)	% S	0.11	
Net Acidity (acidity units)	moles H+/T	71	
Liming Rate	kg CaCO3/t	5	
Net Acidity excluding ANC (sulfur units)	% S	0.11	
Net Acidity excluding ANC (acidity units)	mole H+ / t	71	
Liming Rate excluding ANC	kg CaCO3/t	5	

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Batch N°: 49927 **Sample N°: 14** **Date Instructions Received: 5/10/18** **Report Status:** ○ **Preliminary** ○ F

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **Culvert 8 Midbank**
Description: **Soil**
Test Type: **BWC, sPOCAS_ALS, Atterberg Limits_RL, CBR_RL, PSD - 4.75**

See report *J001187 Wakehurst Parkway Flood Mitigation - Acid Sulfate Soil and Contamination Assessment - Culverts* for commentary.

Date Report Generated
7/11/2018

Consultant
Andrew Jacovides

Authorised Signatory

Method References:
SESL Method PM0011: Analysis of acid sulphate soils - sPOCAS derived from Ahern CR, Blunden B and Stone Y (eds.) (1998). *Acid Sulphate Soils Laboratory Methods* Guidelines Published by the Acid Sulphate Soil Management Advisory committe, Wollongbar, NSW, Australia

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SPOCAS

Sample Drop Off: 16 Chilvers Road, Thornleigh NSW 2120
Mailing Address: PO Box 357, Pennant Hills NSW 1715
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Fax: 1300 64 46 89
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Batch N°: 49927 **Sample N°: 16** **Date Instructions Received: 5/10/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **Culvert 9 500**
Description: **Soil**
Test Type: **sPOCAS_ALS, Atterberg Limits_RL, CBR_RL, PSD - 4.75**

Analysis	Unit	Result	Comment
pH KCl (23A)	pH units	6.1	
pH OX (23B)	pH units	6.7	
Titratable Actual Acidity (23F)	moles H+/T	7	
Titratable Peroxide Acidity (23G)	moles H+/T	<2	
Titratable Sulfidic Acidity (23H)	moles H+/T	<2	
sulfidic - Titratable Actual Acidity (s-23F)	% pyrite S	<0.020	
sulfidic - Titratable Peroxide Acidity (s-23G)	% pyrite S	<0.020	
sulfidic - Titratable Sulfidic Acidity (s-23H)	% pyrite S	<0.020	
KCl Extractable Sulfur (23Ce)	% S	<0.020	
Peroxide Sulfur (23De)	% S	0.027	
Peroxide Oxidisable Sulfur (23E)	% S	0.027	
acidity - Peroxide Oxidisable Sulfur (a-23E)	moles H+/T	17	
KCl Extractable Calcium (23Vh)	% Ca	0.155	
Peroxide Calcium (23Wh)	% Ca	0.181	
Acid Reacted Calcium (23X)	% Ca	0.025	
acidity - Acid Reacted Calcium (a-23X)	moles H+/T	13	
sulfidic - Acid Reacted Calcium (s-23X)	% S	0.020	
KCl Extractable Magnesium (23Sm)	% Mg	<0.020	
Peroxide Magnesium (23Tm)	% Mg	<0.020	
Acid Reacted Magnesium (23U)	% Mg	<0.020	
Acidity - Acid Reacted Magnesium (a-23U)	moles H+/T	<10	
sulfidic - Acid Reacted Magnesium (s-23U)	% S	<0.020	
Excess Acid Neutralising Capacity (23Q)	% CaCO3	0.117	
acidity-Excess Acid Neutralising Capacity (a-23Q)	moles H+/T	23	
sulfidic-Excess Acid Neutralising Capacity (s-23Q)	% S	0.038	
HCl Extractable Sulfur (20Be)	% S		
Net Acid Soluble Sulfur (20Je)	% S		
acidity - Net Acid Soluble Sulfur (a-20J)	moles H+/T		
sulfidic - Net Acid Soluble Sulfur (s-20J)	% pyrite S		
ANC Fineness Factor	-	1.5	
Net Acidity (sulfur units)	% S	0.04	
Net Acidity (acidity units)	moles H+/T	24	
Liming Rate	kg CaCO3/t	2	
Net Acidity excluding ANC (sulfur units)	% S	0.04	
Net Acidity excluding ANC (acidity units)	mole H+ / t	24	
Liming Rate excluding ANC	kg CaCO3/t	2	

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Sample Drop Off: 16 Chilvers Road
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Batch N°: 49927 **Sample N°: 16** **Date Instructions Received: 5/10/18** **Report Status:** ○ **Preliminary** ○ F

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **Culvert 9 500**
Description: **Soil**
Test Type: **sPOCAS_ALS, Atterberg Limits_RL, CBR_RL, PSD - 4.75**

See report *J001187 Wakehurst Parkway Flood Mitigation - Acid Sulfate Soil and Contamination Assessment - Culverts* for commentary.

Date Report Generated
7/11/2018

Consultant
Andrew Jacovides

Authorised Signatory

Method References:
SESL Method PM0011: Analysis of acid sulphate soils - sPOCAS derived from Ahern CR, Blunden B and Stone Y (eds.) (1998). *Acid Sulphate Soils Laboratory Methods* Guidelines Published by the Acid Sulphate Soil Management Advisory committe, Wollongbar, NSW, Australia

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Batch N°: 49927 **Sample N°: 18** **Date Instructions Received: 5/10/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **Culvert 10 500**
Description: **Soil**
Test Type: **sPOCAS_ALS, Atterberg Limits_RL, CBR_RL, PSD - 4.75**

Analysis	Unit	Result	Comment
pH KCl (23A)	pH units	5.9	
pH OX (23B)	pH units	3.6	
Titratable Actual Acidity (23F)	moles H+/T	3	
Titratable Peroxide Acidity (23G)	moles H+/T	92	
Titratable Sulfidic Acidity (23H)	moles H+/T	89	
sulfidic - Titratable Actual Acidity (s-23F)	% pyrite S	<0.020	
sulfidic - Titratable Peroxide Acidity (s-23G)	% pyrite S	0.148	
sulfidic - Titratable Sulfidic Acidity (s-23H)	% pyrite S	0.142	
KCl Extractable Sulfur (23Ce)	% S	<0.020	
Peroxide Sulfur (23De)	% S	<0.020	
Peroxide Oxidisable Sulfur (23E)	% S	<0.020	
acidity - Peroxide Oxidisable Sulfur (a-23E)	moles H+/T	<10	
KCl Extractable Calcium (23Vh)	% Ca	<0.020	
Peroxide Calcium (23Wh)	% Ca	0.025	
Acid Reacted Calcium (23X)	% Ca	0.025	
acidity - Acid Reacted Calcium (a-23X)	moles H+/T	13	
sulfidic - Acid Reacted Calcium (s-23X)	% S	0.020	
KCl Extractable Magnesium (23Sm)	% Mg	<0.020	
Peroxide Magnesium (23Tm)	% Mg	<0.020	
Acid Reacted Magnesium (23U)	% Mg	<0.020	
Acidity - Acid Reacted Magnesium (a-23U)	moles H+/T	<10	
sulfidic - Acid Reacted Magnesium (s-23U)	% S	<0.020	
Excess Acid Neutralising Capacity (23Q)	% CaCO3		
acidity-Excess Acid Neutralising Capacity (a-23Q)	moles H+/T		
sulfidic-Excess Acid Neutralising Capacity (s-23Q)	% S		
HCl Extractable Sulfur (20Be)	% S		
Net Acid Soluble Sulfur (20Je)	% S		
acidity - Net Acid Soluble Sulfur (a-20J)	moles H+/T		
sulfidic - Net Acid Soluble Sulfur (s-20J)	% pyrite S		
ANC Fineness Factor	-	1.5	
Net Acidity (sulfur units)	% S	<0.02	
Net Acidity (acidity units)	moles H+/T	<10	
Liming Rate	kg CaCO3/t	<1	
Net Acidity excluding ANC (sulfur units)	% S	<0.02	
Net Acidity excluding ANC (acidity units)	mole H+ / t	<10	
Liming Rate excluding ANC	kg CaCO3/t	<1	

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Batch N°: 49927 **Sample N°: 18** **Date Instructions Received: 5/10/18** **Report Status:** ○ **Preliminary** ○ F

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **Culvert 10 500**
Description: **Soil**
Test Type: **sPOCAS_ALS, Atterberg Limits_RL, CBR_RL, PSD - 4.75**

See report *J001187 Wakehurst Parkway Flood Mitigation - Acid Sulfate Soil and Contamination Assessment - Culverts* for commentary.

Date Report Generated
7/11/2018

Consultant
Andrew Jacovides

Authorised Signatory

Method References:
SESL Method PM0011: Analysis of acid sulphate soils - sPOCAS derived from Ahern CR, Blunden B and Stone Y (eds.) (1998). *Acid Sulphate Soils Laboratory Methods* Guidelines Published by the Acid Sulphate Soil Management Advisory committe, Wollongbar, NSW, Australia

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Batch N°: 50239 **Sample N°: 1** **Date Instructions Received: 29/10/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°: **WFM**
Sample Name: **Culvert 11 - 300-700**
Description: **Soil**
Test Type: **BWC, Spec, PSD - 4.75, Atterberg Limits_RL, CBR_RL, sPOCAS_ALS**

Analysis	Unit	Result	Comment
pH KCl (23A)	pH units	5.0	
pH OX (23B)	pH units	3.5	
Titratable Actual Acidity (23F)	moles H+/T	24	
Titratable Peroxide Acidity (23G)	moles H+/T	28	
Titratable Sulfidic Acidity (23H)	moles H+/T	4	
sulfidic - Titratable Actual Acidity (s-23F)	% pyrite S	0.038	
sulfidic - Titratable Peroxide Acidity (s-23G)	% pyrite S	0.045	
sulfidic - Titratable Sulfidic Acidity (s-23H)	% pyrite S	<0.020	
KCl Extractable Sulfur (23Ce)	% S	<0.020	
Peroxide Sulfur (23De)	% S	0.043	
Peroxide Oxidisable Sulfur (23E)	% S	0.043	
acidity - Peroxide Oxidisable Sulfur (a-23E)	moles H+/T	27	
KCl Extractable Calcium (23Vh)	% Ca	0.069	
Peroxide Calcium (23Wh)	% Ca	0.078	
Acid Reacted Calcium (23X)	% Ca	<0.020	
acidity - Acid Reacted Calcium (a-23X)	moles H+/T	<10	
sulfidic - Acid Reacted Calcium (s-23X)	% S	<0.020	
KCl Extractable Magnesium (23Sm)	% Mg	<0.020	
Peroxide Magnesium (23Tm)	% Mg	<0.020	
Acid Reacted Magnesium (23U)	% Mg	<0.020	
Acidity - Acid Reacted Magnesium (a-23U)	moles H+/T	<10	
sulfidic - Acid Reacted Magnesium (s-23U)	% S	<0.020	
Excess Acid Neutralising Capacity (23Q)	% CaCO3		
acidity-Excess Acid Neutralising Capacity (a-23Q)	moles H+/T		
sulfidic-Excess Acid Neutralising Capacity (s-23Q)	% S		
HCl Extractable Sulfur (20Be)	% S		
Net Acid Soluble Sulfur (20Je)	% S		
acidity - Net Acid Soluble Sulfur (a-20J)	moles H+/T		
sulfidic - Net Acid Soluble Sulfur (s-20J)	% pyrite S		
ANC Fineness Factor	-	1.5	
Net Acidity (sulfur units)	% S	0.08	
Net Acidity (acidity units)	moles H+/T	51	
Liming Rate	kg CaCO3/t	4	
Net Acidity excluding ANC (sulfur units)	% S	0.08	
Net Acidity excluding ANC (acidity units)	mole H+ / t	51	
Liming Rate excluding ANC	kg CaCO3/t	4	

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Tests are performed under a quality system certified as complying with ISO 9001: 2008. Results and conclusions assume that sampling is representative. This document shall not be reproduced except in full.

Batch N°: 50239 **Sample N°: 1** **Date Instructions Received: 29/10/18** **Report Status: ○ Preliminary ○ F**

Client Name: **Northern Beaches Council**

Client Contact: **Fiona Coe**

Client Order N°:

Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**

SESL Quote N°: **WFM**

Sample Name: **Culvert 11 - 300-700**

Description: **Soil**

Test Type: **BWC, Spec, PSD - 4.75, Atterberg Limits_RL, CBR_RL, sPOCAS_ALS**

Date Report Generated
5/12/2018

Consultant
Andrew Jacovides

Authorised Signatory

Method References:
SESL Method PM0011: Analysis of acid sulphate soils - sPOCAS derived from Ahern CR, Blunden B and Stone Y (eds.) (1998). *Acid Sulphate Soils Laboratory Methods* Guidelines Published by the Acid Sulphate Soil Management Advisory committe, Wollongbar, NSW, Australia

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Batch N°: 50239 **Sample N°: 2** **Date Instructions Received: 29/10/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°: **WFM**
Sample Name: **Culvert 12 - 300 - 700**
Description: **Soil**
Test Type: **BWC, Spec, PSD - 4.75, Atterberg Limits_RL, CBR_RL, sPOCAS_ALS**

Analysis	Unit	Result	Comment
pH KCl (23A)	pH units	4.8	
pH OX (23B)	pH units	3.9	
Titratable Actual Acidity (23F)	moles H+/T	25	
Titratable Peroxide Acidity (23G)	moles H+/T	40	
Titratable Sulfidic Acidity (23H)	moles H+/T	15	
sulfidic - Titratable Actual Acidity (s-23F)	% pyrite S	0.040	
sulfidic - Titratable Peroxide Acidity (s-23G)	% pyrite S	0.063	
sulfidic - Titratable Sulfidic Acidity (s-23H)	% pyrite S	0.024	
KCl Extractable Sulfur (23Ce)	% S	<0.020	
Peroxide Sulfur (23De)	% S	<0.020	
Peroxide Oxidisable Sulfur (23E)	% S	<0.020	
acidity - Peroxide Oxidisable Sulfur (a-23E)	moles H+/T	<10	
KCl Extractable Calcium (23Vh)	% Ca	0.028	
Peroxide Calcium (23Wh)	% Ca	0.030	
Acid Reacted Calcium (23X)	% Ca	<0.020	
acidity - Acid Reacted Calcium (a-23X)	moles H+/T	<10	
sulfidic - Acid Reacted Calcium (s-23X)	% S	<0.020	
KCl Extractable Magnesium (23Sm)	% Mg	<0.020	
Peroxide Magnesium (23Tm)	% Mg	<0.020	
Acid Reacted Magnesium (23U)	% Mg	<0.020	
Acidity - Acid Reacted Magnesium (a-23U)	moles H+/T	<10	
sulfidic - Acid Reacted Magnesium (s-23U)	% S	<0.020	
Excess Acid Neutralising Capacity (23Q)	% CaCO3		
acidity-Excess Acid Neutralising Capacity (a-23Q)	moles H+/T		
sulfidic-Excess Acid Neutralising Capacity (s-23Q)	% S		
HCl Extractable Sulfur (20Be)	% S		
Net Acid Soluble Sulfur (20Je)	% S		
acidity - Net Acid Soluble Sulfur (a-20J)	moles H+/T		
sulfidic - Net Acid Soluble Sulfur (s-20J)	% pyrite S		
ANC Fineness Factor	-	1.5	
Net Acidity (sulfur units)	% S	0.04	
Net Acidity (acidity units)	moles H+/T	25	
Liming Rate	kg CaCO3/t	2	
Net Acidity excluding ANC (sulfur units)	% S	0.04	
Net Acidity excluding ANC (acidity units)	mole H+ / t	25	
Liming Rate excluding ANC	kg CaCO3/t	2	

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Sample Drop Off: 16 Chilvers Road
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Tests are performed under a quality system certified as complying with ISO 9001: 2008. Results and conclusions assume that sampling is representative. This document shall not be reproduced except in full.

Batch N°: 50239 **Sample N°: 2** **Date Instructions Received: 29/10/18** **Report Status: ○ Preliminary ○ F**

Client Name: **Northern Beaches Council**

Client Contact: **Fiona Coe**

Client Order N°:

Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**

SESL Quote N°: **WFM**

Sample Name: **Culvert 12 - 300 - 700**

Description: **Soil**

Test Type: **BWC, Spec, PSD - 4.75, Atterberg Limits_RL, CBR_RL, sPOCAS_ALS**

Date Report Generated
5/12/2018

Consultant

Andrew Jacovides

Authorised Signatory

Method References:
SESL Method PM0011: Analysis of acid sulphate soils - sPOCAS derived from Ahern CR, Blunden B and Stone Y (eds.) (1998). *Acid Sulphate Soils Laboratory Methods* Guidelines Published by the Acid Sulphate Soil Management Advisory committe, Wollongbar, NSW, Australia

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Batch N°: 49927B **Sample N°: 15** **Date Instructions Received: 15/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **Culvert 9 Surface**
Description: **Soil**
Test Type: **sPOCAS_ALS**

Analysis	Unit	Result	Comment
pH KCl (23A)	pH units	5.6	
pH OX (23B)	pH units	3.6	
Titratable Actual Acidity (23F)	moles H+/T	<2	
Titratable Peroxide Acidity (23G)	moles H+/T	28	
Titratable Sulfidic Acidity (23H)	moles H+/T	27	
sulfidic - Titratable Actual Acidity (s-23F)	% pyrite S	<0.020	
sulfidic - Titratable Peroxide Acidity (s-23G)	% pyrite S	0.045	
sulfidic - Titratable Sulfidic Acidity (s-23H)	% pyrite S	0.043	
KCl Extractable Sulfur (23Ce)	% S	<0.020	
Peroxide Sulfur (23De)	% S	0.039	
Peroxide Oxidisable Sulfur (23E)	% S	0.039	
acidity - Peroxide Oxidisable Sulfur (a-23E)	moles H+/T	24	
KCl Extractable Calcium (23Vh)	% Ca	<0.020	
Peroxide Calcium (23Wh)	% Ca	0.030	
Acid Reacted Calcium (23X)	% Ca	0.030	
acidity - Acid Reacted Calcium (a-23X)	moles H+/T	15	
sulfidic - Acid Reacted Calcium (s-23X)	% S	0.024	
KCl Extractable Magnesium (23Sm)	% Mg	<0.020	
Peroxide Magnesium (23Tm)	% Mg	<0.020	
Acid Reacted Magnesium (23U)	% Mg	<0.020	
Acidity - Acid Reacted Magnesium (a-23U)	moles H+/T	<10	
sulfidic - Acid Reacted Magnesium (s-23U)	% S	<0.020	
Excess Acid Neutralising Capacity (23Q)	% CaCO3		
acidity-Excess Acid Neutralising Capacity (a-23Q)	moles H+/T		
sulfidic-Excess Acid Neutralising Capacity (s-23Q)	% S		
HCl Extractable Sulfur (20Be)	% S		
Net Acid Soluble Sulfur (20Je)	% S		
acidity - Net Acid Soluble Sulfur (a-20J)	moles H+/T		
sulfidic - Net Acid Soluble Sulfur (s-20J)	% pyrite S		
ANC Fineness Factor	-	1.5	
Net Acidity (sulfur units)	% S	0.04	
Net Acidity (acidity units)	moles H+/T	25	
Liming Rate	kg CaCO3/t	2	
Net Acidity excluding ANC (sulfur units)	% S	0.04	
Net Acidity excluding ANC (acidity units)	mole H+ / t	25	
Liming Rate excluding ANC	kg CaCO3/t	2	

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Batch N°: 49927B **Sample N°: 15** **Date Instructions Received: 15/11/18** **Report Status: ○ Preliminary ○ F**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **Culvert 9 Surface**
Description: **Soil**
Test Type: **sPOCAS_ALS**

Date Report Generated
5/12/2018

Consultant
Andrew Jacovides

Authorised Signatory

Method References:
SESL Method PM0011: Analysis of acid sulphate soils - sPOCAS derived from Ahern CR, Blunden B and Stone Y (eds.) (1998). *Acid Sulphate Soils Laboratory Methods* Guidelines Published by the Acid Sulphate Soil Management Advisory committe, Wollongbar, NSW, Australia

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Tests are performed under a quality system certified as complying with ISO 9001: 2008. Results and conclusions assume that sampling is representative. This document shall not be reproduced except in full.

Batch N°: 49927B **Sample N°: 15** **Date Instructions Received: 15/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **Culvert 9 Surface**
Description: **Soil**
Test Type: **sPOCAS_ALS**

Analysis	Unit	Result	Comment
pH KCl (23A)	pH units	5.6	
pH OX (23B)	pH units	3.6	
Titratable Actual Acidity (23F)	moles H+/T	<2	
Titratable Peroxide Acidity (23G)	moles H+/T	28	
Titratable Sulfidic Acidity (23H)	moles H+/T	27	
sulfidic - Titratable Actual Acidity (s-23F)	% pyrite S	<0.020	
sulfidic - Titratable Peroxide Acidity (s-23G)	% pyrite S	0.045	
sulfidic - Titratable Sulfidic Acidity (s-23H)	% pyrite S	0.043	
KCl Extractable Sulfur (23Ce)	% S	<0.020	
Peroxide Sulfur (23De)	% S	0.039	
Peroxide Oxidisable Sulfur (23E)	% S	0.039	
acidity - Peroxide Oxidisable Sulfur (a-23E)	moles H+/T	24	
KCl Extractable Calcium (23Vh)	% Ca	<0.020	
Peroxide Calcium (23Wh)	% Ca	0.030	
Acid Reacted Calcium (23X)	% Ca	0.030	
acidity - Acid Reacted Calcium (a-23X)	moles H+/T	15	
sulfidic - Acid Reacted Calcium (s-23X)	% S	0.024	
KCl Extractable Magnesium (23Sm)	% Mg	<0.020	
Peroxide Magnesium (23Tm)	% Mg	<0.020	
Acid Reacted Magnesium (23U)	% Mg	<0.020	
Acidity - Acid Reacted Magnesium (a-23U)	moles H+/T	<10	
sulfidic - Acid Reacted Magnesium (s-23U)	% S	<0.020	
Excess Acid Neutralising Capacity (23Q)	% CaCO3		
acidity-Excess Acid Neutralising Capacity (a-23Q)	moles H+/T		
sulfidic-Excess Acid Neutralising Capacity (s-23Q)	% S		
HCl Extractable Sulfur (20Be)	% S		
Net Acid Soluble Sulfur (20Je)	% S		
acidity - Net Acid Soluble Sulfur (a-20J)	moles H+/T		
sulfidic - Net Acid Soluble Sulfur (s-20J)	% pyrite S		
ANC Fineness Factor	-	1.5	
Net Acidity (sulfur units)	% S	0.04	
Net Acidity (acidity units)	moles H+/T	25	
Liming Rate	kg CaCO3/t	2	
Net Acidity excluding ANC (sulfur units)	% S	0.04	
Net Acidity excluding ANC (acidity units)	mole H+ / t	25	
Liming Rate excluding ANC	kg CaCO3/t	2	

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Batch N°: 49927B **Sample N°: 15** **Date Instructions Received: 15/11/18** **Report Status: ○ Preliminary ○ F**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **Culvert 9 Surface**
Description: **Soil**
Test Type: **sPOCAS_ALS**

Date Report Generated
5/12/2018

Consultant
Andrew Jacovides

Authorised Signatory

Method References:
SESL Method PM0011: Analysis of acid sulphate soils - sPOCAS derived from Ahern CR, Blunden B and Stone Y (eds.) (1998). *Acid Sulphate Soils Laboratory Methods* Guidelines Published by the Acid Sulphate Soil Management Advisory committe, Wollongbar, NSW, Australia

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Batch N°: 50296A **Sample N°: 2** **Date Instructions Received: 15/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH1 500 - 600**
Description: **Soil**
Test Type:

Analysis	Unit	Result	Comment
pH KCl (23A)	pH units	6.6	
pH OX (23B)	pH units	6.1	
Titratable Actual Acidity (23F)	moles H+/T	<2	
Titratable Peroxide Acidity (23G)	moles H+/T	<2	
Titratable Sulfidic Acidity (23H)	moles H+/T	<2	
sulfidic - Titratable Actual Acidity (s-23F)	% pyrite S	<0.020	
sulfidic - Titratable Peroxide Acidity (s-23G)	% pyrite S	<0.020	
sulfidic - Titratable Sulfidic Acidity (s-23H)	% pyrite S	<0.020	
KCl Extractable Sulfur (23Ce)	% S	<0.020	
Peroxide Sulfur (23De)	% S	<0.020	
Peroxide Oxidisable Sulfur (23E)	% S	<0.020	
acidity - Peroxide Oxidisable Sulfur (a-23E)	moles H+/T	<10	
KCl Extractable Calcium (23Vh)	% Ca	0.071	
Peroxide Calcium (23Wh)	% Ca	0.072	
Acid Reacted Calcium (23X)	% Ca	<0.020	
acidity - Acid Reacted Calcium (a-23X)	moles H+/T	<10	
sulfidic - Acid Reacted Calcium (s-23X)	% S	<0.020	
KCl Extractable Magnesium (23Sm)	% Mg	<0.020	
Peroxide Magnesium (23Tm)	% Mg	<0.020	
Acid Reacted Magnesium (23U)	% Mg	<0.020	
Acidity - Acid Reacted Magnesium (a-23U)	moles H+/T	<10	
sulfidic - Acid Reacted Magnesium (s-23U)	% S	<0.020	
Excess Acid Neutralising Capacity (23Q)	% CaCO3		
acidity-Excess Acid Neutralising Capacity (a-23Q)	moles H+/T		
sulfidic-Excess Acid Neutralising Capacity (s-23Q)	% S		
HCl Extractable Sulfur (20Be)	% S		
Net Acid Soluble Sulfur (20Je)	% S		
acidity - Net Acid Soluble Sulfur (a-20J)	moles H+/T		
sulfidic - Net Acid Soluble Sulfur (s-20J)	% pyrite S		
ANC Fineness Factor	-	1.5	
Net Acidity (sulfur units)	% S	<0.02	
Net Acidity (acidity units)	moles H+/T	<10	
Liming Rate	kg CaCO3/t	<1	
Net Acidity excluding ANC (sulfur units)	% S	<0.02	
Net Acidity excluding ANC (acidity units)	mole H+ / t	<10	
Liming Rate excluding ANC	kg CaCO3/t	<1	

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Batch N°: 50296A **Sample N°: 2** **Date Instructions Received: 15/11/18** **Report Status: ○ Preliminary ○ F**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH1 500 - 600**
Description: **Soil**
Test Type:

Date Report Generated
5/12/2018

Consultant
Andrew Jacovides

Authorised Signatory

Method References:
SESL Method PM0011: Analysis of acid sulphate soils - sPOCAS derived from Ahern CR, Blunden B and Stone Y (eds.) (1998). *Acid Sulphate Soils Laboratory Methods* Guidelines Published by the Acid Sulphate Soil Management Advisory committe, Wollongbar, NSW, Australia

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Batch N°: 50296A **Sample N°: 3** **Date Instructions Received: 15/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH1 800 - 900**
Description: **Soil**
Test Type: **sPOCAS_ALS**

Analysis	Unit	Result	Comment
pH KCl (23A)	pH units	4.9	
pH OX (23B)	pH units	4.1	
Titratable Actual Acidity (23F)	moles H+/T	17	
Titratable Peroxide Acidity (23G)	moles H+/T	18	
Titratable Sulfidic Acidity (23H)	moles H+/T	<2	
sulfidic - Titratable Actual Acidity (s-23F)	% pyrite S	0.027	
sulfidic - Titratable Peroxide Acidity (s-23G)	% pyrite S	0.029	
sulfidic - Titratable Sulfidic Acidity (s-23H)	% pyrite S	<0.020	
KCl Extractable Sulfur (23Ce)	% S	<0.020	
Peroxide Sulfur (23De)	% S	0.024	
Peroxide Oxidisable Sulfur (23E)	% S	0.024	
acidity - Peroxide Oxidisable Sulfur (a-23E)	moles H+/T	15	
KCl Extractable Calcium (23Vh)	% Ca	0.098	
Peroxide Calcium (23Wh)	% Ca	0.097	
Acid Reacted Calcium (23X)	% Ca	<0.020	
acidity - Acid Reacted Calcium (a-23X)	moles H+/T	<10	
sulfidic - Acid Reacted Calcium (s-23X)	% S	<0.020	
KCl Extractable Magnesium (23Sm)	% Mg	<0.020	
Peroxide Magnesium (23Tm)	% Mg	<0.020	
Acid Reacted Magnesium (23U)	% Mg	<0.020	
Acidity - Acid Reacted Magnesium (a-23U)	moles H+/T	<10	
sulfidic - Acid Reacted Magnesium (s-23U)	% S	<0.020	
Excess Acid Neutralising Capacity (23Q)	% CaCO3		
acidity-Excess Acid Neutralising Capacity (a-23Q)	moles H+/T		
sulfidic-Excess Acid Neutralising Capacity (s-23Q)	% S		
HCl Extractable Sulfur (20Be)	% S		
Net Acid Soluble Sulfur (20Je)	% S		
acidity - Net Acid Soluble Sulfur (a-20J)	moles H+/T		
sulfidic - Net Acid Soluble Sulfur (s-20J)	% pyrite S		
ANC Fineness Factor	-	1.5	
Net Acidity (sulfur units)	% S	0.05	
Net Acidity (acidity units)	moles H+/T	31	
Liming Rate	kg CaCO3/t	2	
Net Acidity excluding ANC (sulfur units)	% S	0.05	
Net Acidity excluding ANC (acidity units)	mole H+ / t	31	
Liming Rate excluding ANC	kg CaCO3/t	2	

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Batch N°: 50296A **Sample N°: 3** **Date Instructions Received: 15/11/18** **Report Status: ○ Preliminary ○ F**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH1 800 - 900**
Description: **Soil**
Test Type: **sPOCAS_ALS**

Date Report Generated
5/12/2018

Consultant
Andrew Jacovides

Authorised Signatory

Method References:
SESL Method PM0011: Analysis of acid sulphate soils - sPOCAS derived from Ahern CR, Blunden B and Stone Y (eds.) (1998). *Acid Sulphate Soils Laboratory Methods* Guidelines Published by the Acid Sulphate Soil Management Advisory committe, Wollongbar, NSW, Australia

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Batch N°: 50296A **Sample N°: 4** **Date Instructions Received: 15/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH2 0 - 200**
Description: **Soil**
Test Type: **sPOCAS_ALS**

Analysis	Unit	Result	Comment
pH KCl (23A)	pH units	4.8	
pH OX (23B)	pH units	3.3	
Titratable Actual Acidity (23F)	moles H+/T	15	
Titratable Peroxide Acidity (23G)	moles H+/T	18	
Titratable Sulfidic Acidity (23H)	moles H+/T	3	
sulfidic - Titratable Actual Acidity (s-23F)	% pyrite S	0.024	
sulfidic - Titratable Peroxide Acidity (s-23G)	% pyrite S	0.029	
sulfidic - Titratable Sulfidic Acidity (s-23H)	% pyrite S	<0.020	
KCl Extractable Sulfur (23Ce)	% S	<0.020	
Peroxide Sulfur (23De)	% S	<0.020	
Peroxide Oxidisable Sulfur (23E)	% S	<0.020	
acidity - Peroxide Oxidisable Sulfur (a-23E)	moles H+/T	<10	
KCl Extractable Calcium (23Vh)	% Ca	0.029	
Peroxide Calcium (23Wh)	% Ca	0.028	
Acid Reacted Calcium (23X)	% Ca	<0.020	
acidity - Acid Reacted Calcium (a-23X)	moles H+/T	<10	
sulfidic - Acid Reacted Calcium (s-23X)	% S	<0.020	
KCl Extractable Magnesium (23Sm)	% Mg	<0.020	
Peroxide Magnesium (23Tm)	% Mg	<0.020	
Acid Reacted Magnesium (23U)	% Mg	<0.020	
Acidity - Acid Reacted Magnesium (a-23U)	moles H+/T	<10	
sulfidic - Acid Reacted Magnesium (s-23U)	% S	<0.020	
Excess Acid Neutralising Capacity (23Q)	% CaCO3		
acidity-Excess Acid Neutralising Capacity (a-23Q)	moles H+/T		
sulfidic-Excess Acid Neutralising Capacity (s-23Q)	% S		
HCl Extractable Sulfur (20Be)	% S		
Net Acid Soluble Sulfur (20Je)	% S		
acidity - Net Acid Soluble Sulfur (a-20J)	moles H+/T		
sulfidic - Net Acid Soluble Sulfur (s-20J)	% pyrite S		
ANC Fineness Factor	-	1.5	
Net Acidity (sulfur units)	% S	0.02	
Net Acidity (acidity units)	moles H+/T	15	
Liming Rate	kg CaCO3/t	1	
Net Acidity excluding ANC (sulfur units)	% S	0.02	
Net Acidity excluding ANC (acidity units)	mole H+ / t	15	
Liming Rate excluding ANC	kg CaCO3/t	1	

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Batch N°: 50296A **Sample N°: 4** **Date Instructions Received: 15/11/18** **Report Status: ○ Preliminary ○ F**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH2 0 - 200**
Description: **Soil**
Test Type: **sPOCAS_ALS**

Date Report Generated
5/12/2018

Consultant
Andrew Jacovides

Authorised Signatory

Method References:
SESL Method PM0011: Analysis of acid sulphate soils - sPOCAS derived from Ahern CR, Blunden B and Stone Y (eds.) (1998). *Acid Sulphate Soils Laboratory Methods* Guidelines Published by the Acid Sulphate Soil Management Advisory committe, Wollongbar, NSW, Australia

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Batch N°: 50296A **Sample N°: 6** **Date Instructions Received: 15/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH2 1100 - 1200**
Description: **Soil**
Test Type:

Analysis	Unit	Result	Comment
pH KCl (23A)	pH units	5.5	
pH OX (23B)	pH units	4.4	
Titratable Actual Acidity (23F)	moles H+/T	11	
Titratable Peroxide Acidity (23G)	moles H+/T	<2	
Titratable Sulfidic Acidity (23H)	moles H+/T	<2	
sulfidic - Titratable Actual Acidity (s-23F)	% pyrite S	<0.020	
sulfidic - Titratable Peroxide Acidity (s-23G)	% pyrite S	<0.020	
sulfidic - Titratable Sulfidic Acidity (s-23H)	% pyrite S	<0.020	
KCl Extractable Sulfur (23Ce)	% S	<0.020	
Peroxide Sulfur (23De)	% S	<0.020	
Peroxide Oxidisable Sulfur (23E)	% S	<0.020	
acidity - Peroxide Oxidisable Sulfur (a-23E)	moles H+/T	<10	
KCl Extractable Calcium (23Vh)	% Ca	0.073	
Peroxide Calcium (23Wh)	% Ca	0.076	
Acid Reacted Calcium (23X)	% Ca	<0.020	
acidity - Acid Reacted Calcium (a-23X)	moles H+/T	<10	
sulfidic - Acid Reacted Calcium (s-23X)	% S	<0.020	
KCl Extractable Magnesium (23Sm)	% Mg	<0.020	
Peroxide Magnesium (23Tm)	% Mg	<0.020	
Acid Reacted Magnesium (23U)	% Mg	<0.020	
Acidity - Acid Reacted Magnesium (a-23U)	moles H+/T	<10	
sulfidic - Acid Reacted Magnesium (s-23U)	% S	<0.020	
Excess Acid Neutralising Capacity (23Q)	% CaCO3		
acidity-Excess Acid Neutralising Capacity (a-23Q)	moles H+/T		
sulfidic-Excess Acid Neutralising Capacity (s-23Q)	% S		
HCl Extractable Sulfur (20Be)	% S		
Net Acid Soluble Sulfur (20Je)	% S		
acidity - Net Acid Soluble Sulfur (a-20J)	moles H+/T		
sulfidic - Net Acid Soluble Sulfur (s-20J)	% pyrite S		
ANC Fineness Factor	-	1.5	
Net Acidity (sulfur units)	% S	<0.02	
Net Acidity (acidity units)	moles H+/T	11	
Liming Rate	kg CaCO3/t	<1	
Net Acidity excluding ANC (sulfur units)	% S	<0.02	
Net Acidity excluding ANC (acidity units)	mole H+ / t	11	
Liming Rate excluding ANC	kg CaCO3/t	<1	

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Batch N°: 50296A **Sample N°: 6** **Date Instructions Received: 15/11/18** **Report Status: ○ Preliminary ○ F**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH2 1100 - 1200**
Description: **Soil**
Test Type:

Date Report Generated
5/12/2018

Consultant
Andrew Jacovides

Authorised Signatory

Method References:
SESL Method PM0011: Analysis of acid sulphate soils - sPOCAS derived from Ahern CR, Blunden B and Stone Y (eds.) (1998). *Acid Sulphate Soils Laboratory Methods* Guidelines Published by the Acid Sulphate Soil Management Advisory committe, Wollongbar, NSW, Australia

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Batch N°: 50296A **Sample N°: 9** **Date Instructions Received: 15/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH3 800 - 900**
Description: **Soil**
Test Type:

Analysis	Unit	Result	Comment
pH KCl (23A)	pH units	5.7	
pH OX (23B)	pH units	4.5	
Titratable Actual Acidity (23F)	moles H+/T	2	
Titratable Peroxide Acidity (23G)	moles H+/T	5	
Titratable Sulfidic Acidity (23H)	moles H+/T	3	
sulfidic - Titratable Actual Acidity (s-23F)	% pyrite S	<0.020	
sulfidic - Titratable Peroxide Acidity (s-23G)	% pyrite S	<0.020	
sulfidic - Titratable Sulfidic Acidity (s-23H)	% pyrite S	<0.020	
KCl Extractable Sulfur (23Ce)	% S	<0.020	
Peroxide Sulfur (23De)	% S	<0.020	
Peroxide Oxidisable Sulfur (23E)	% S	<0.020	
acidity - Peroxide Oxidisable Sulfur (a-23E)	moles H+/T	<10	
KCl Extractable Calcium (23Vh)	% Ca	0.021	
Peroxide Calcium (23Wh)	% Ca	0.021	
Acid Reacted Calcium (23X)	% Ca	<0.020	
acidity - Acid Reacted Calcium (a-23X)	moles H+/T	<10	
sulfidic - Acid Reacted Calcium (s-23X)	% S	<0.020	
KCl Extractable Magnesium (23Sm)	% Mg	<0.020	
Peroxide Magnesium (23Tm)	% Mg	<0.020	
Acid Reacted Magnesium (23U)	% Mg	<0.020	
Acidity - Acid Reacted Magnesium (a-23U)	moles H+/T	<10	
sulfidic - Acid Reacted Magnesium (s-23U)	% S	<0.020	
Excess Acid Neutralising Capacity (23Q)	% CaCO3		
acidity-Excess Acid Neutralising Capacity (a-23Q)	moles H+/T		
sulfidic-Excess Acid Neutralising Capacity (s-23Q)	% S		
HCl Extractable Sulfur (20Be)	% S		
Net Acid Soluble Sulfur (20Je)	% S		
acidity - Net Acid Soluble Sulfur (a-20J)	moles H+/T		
sulfidic - Net Acid Soluble Sulfur (s-20J)	% pyrite S		
ANC Fineness Factor	-	1.5	
Net Acidity (sulfur units)	% S	<0.02	
Net Acidity (acidity units)	moles H+/T	<10	
Liming Rate	kg CaCO3/t	<1	
Net Acidity excluding ANC (sulfur units)	% S	<0.02	
Net Acidity excluding ANC (acidity units)	mole H+ / t	<10	
Liming Rate excluding ANC	kg CaCO3/t	<1	

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Batch N°: 50296A **Sample N°: 9** **Date Instructions Received: 15/11/18** **Report Status: ○ Preliminary ○ F**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH3 800 - 900**
Description: **Soil**
Test Type:

Date Report Generated
5/12/2018

Consultant
Andrew Jacovides

Authorised Signatory

Method References:
SESL Method PM0011: Analysis of acid sulphate soils - sPOCAS derived from Ahern CR, Blunden B and Stone Y (eds.) (1998). *Acid Sulphate Soils Laboratory Methods* Guidelines Published by the Acid Sulphate Soil Management Advisory committe, Wollongbar, NSW, Australia

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Batch N°: 50296A **Sample N°: 10** **Date Instructions Received: 15/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH4 0 - 200**
Description: **Soil**
Test Type: **sPOCAS_ALS**

Analysis	Unit	Result	Comment
pH KCl (23A)	pH units	5.1	
pH OX (23B)	pH units	4.4	
Titratable Actual Acidity (23F)	moles H+/T	13	
Titratable Peroxide Acidity (23G)	moles H+/T	<2	
Titratable Sulfidic Acidity (23H)	moles H+/T	<2	
sulfidic - Titratable Actual Acidity (s-23F)	% pyrite S	0.022	
sulfidic - Titratable Peroxide Acidity (s-23G)	% pyrite S	<0.020	
sulfidic - Titratable Sulfidic Acidity (s-23H)	% pyrite S	<0.020	
KCl Extractable Sulfur (23Ce)	% S	<0.020	
Peroxide Sulfur (23De)	% S	0.021	
Peroxide Oxidisable Sulfur (23E)	% S	0.021	
acidity - Peroxide Oxidisable Sulfur (a-23E)	moles H+/T	13	
KCl Extractable Calcium (23Vh)	% Ca	0.108	
Peroxide Calcium (23Wh)	% Ca	0.108	
Acid Reacted Calcium (23X)	% Ca	<0.020	
acidity - Acid Reacted Calcium (a-23X)	moles H+/T	<10	
sulfidic - Acid Reacted Calcium (s-23X)	% S	<0.020	
KCl Extractable Magnesium (23Sm)	% Mg	<0.020	
Peroxide Magnesium (23Tm)	% Mg	<0.020	
Acid Reacted Magnesium (23U)	% Mg	<0.020	
Acidity - Acid Reacted Magnesium (a-23U)	moles H+/T	<10	
sulfidic - Acid Reacted Magnesium (s-23U)	% S	<0.020	
Excess Acid Neutralising Capacity (23Q)	% CaCO3		
acidity-Excess Acid Neutralising Capacity (a-23Q)	moles H+/T		
sulfidic-Excess Acid Neutralising Capacity (s-23Q)	% S		
HCl Extractable Sulfur (20Be)	% S		
Net Acid Soluble Sulfur (20Je)	% S		
acidity - Net Acid Soluble Sulfur (a-20J)	moles H+/T		
sulfidic - Net Acid Soluble Sulfur (s-20J)	% pyrite S		
ANC Fineness Factor	-	1.5	
Net Acidity (sulfur units)	% S	0.04	
Net Acidity (acidity units)	moles H+/T	27	
Liming Rate	kg CaCO3/t	2	
Net Acidity excluding ANC (sulfur units)	% S	0.04	
Net Acidity excluding ANC (acidity units)	mole H+ / t	27	
Liming Rate excluding ANC	kg CaCO3/t	2	

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Sample Drop Off: 16 Chilvers Road
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Tests are performed under a quality system certified as complying with ISO 9001: 2008. Results and conclusions assume that sampling is representative. This document shall not be reproduced except in full.

Batch N°: 50296A **Sample N°: 10** **Date Instructions Received: 15/11/18** **Report Status: ○ Preliminary ○ F**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH4 0 - 200**
Description: **Soil**
Test Type: **sPOCAS_ALS**

Date Report Generated
5/12/2018

Consultant
Andrew Jacovides

Authorised Signatory

Method References:
SESL Method PM0011: Analysis of acid sulphate soils - sPOCAS derived from Ahern CR, Blunden B and Stone Y (eds.) (1998). *Acid Sulphate Soils Laboratory Methods* Guidelines Published by the Acid Sulphate Soil Management Advisory committe, Wollongbar, NSW, Australia

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Batch N°: 50296A **Sample N°: 11** **Date Instructions Received: 15/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH4 300 - 400**
Description: **Soil**
Test Type:

Analysis	Unit	Result	Comment
pH KCl (23A)	pH units	5.3	
pH OX (23B)	pH units	4.4	
Titratable Actual Acidity (23F)	moles H+/T	18	
Titratable Peroxide Acidity (23G)	moles H+/T	<2	
Titratable Sulfidic Acidity (23H)	moles H+/T	<2	
sulfidic - Titratable Actual Acidity (s-23F)	% pyrite S	0.028	
sulfidic - Titratable Peroxide Acidity (s-23G)	% pyrite S	<0.020	
sulfidic - Titratable Sulfidic Acidity (s-23H)	% pyrite S	<0.020	
KCl Extractable Sulfur (23Ce)	% S	<0.020	
Peroxide Sulfur (23De)	% S	<0.020	
Peroxide Oxidisable Sulfur (23E)	% S	<0.020	
acidity - Peroxide Oxidisable Sulfur (a-23E)	moles H+/T	<10	
KCl Extractable Calcium (23Vh)	% Ca	0.127	
Peroxide Calcium (23Wh)	% Ca	0.132	
Acid Reacted Calcium (23X)	% Ca	<0.020	
acidity - Acid Reacted Calcium (a-23X)	moles H+/T	<10	
sulfidic - Acid Reacted Calcium (s-23X)	% S	<0.020	
KCl Extractable Magnesium (23Sm)	% Mg	<0.020	
Peroxide Magnesium (23Tm)	% Mg	<0.020	
Acid Reacted Magnesium (23U)	% Mg	<0.020	
Acidity - Acid Reacted Magnesium (a-23U)	moles H+/T	<10	
sulfidic - Acid Reacted Magnesium (s-23U)	% S	<0.020	
Excess Acid Neutralising Capacity (23Q)	% CaCO3		
acidity-Excess Acid Neutralising Capacity (a-23Q)	moles H+/T		
sulfidic-Excess Acid Neutralising Capacity (s-23Q)	% S		
HCl Extractable Sulfur (20Be)	% S		
Net Acid Soluble Sulfur (20Je)	% S		
acidity - Net Acid Soluble Sulfur (a-20J)	moles H+/T		
sulfidic - Net Acid Soluble Sulfur (s-20J)	% pyrite S		
ANC Fineness Factor	-	1.5	
Net Acidity (sulfur units)	% S	0.03	
Net Acidity (acidity units)	moles H+/T	18	
Liming Rate	kg CaCO3/t	1	
Net Acidity excluding ANC (sulfur units)	% S	0.03	
Net Acidity excluding ANC (acidity units)	mole H+ / t	18	
Liming Rate excluding ANC	kg CaCO3/t	1	

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Batch N°: 50296A **Sample N°: 11** **Date Instructions Received: 15/11/18** **Report Status:** ○ **Preliminary** ○ F

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH4 300 - 400**
Description: **Soil**
Test Type:

Date Report Generated
5/12/2018

Consultant
Andrew Jacovides

Authorised Signatory

Method References:
SESL Method PM0011: Analysis of acid sulphate soils - sPOCAS derived from Ahern CR, Blunden B and Stone Y (eds.) (1998). *Acid Sulphate Soils Laboratory Methods* Guidelines Published by the Acid Sulphate Soil Management Advisory committe, Wollongbar, NSW, Australia

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Batch N°: 50296A **Sample N°: 13** **Date Instructions Received: 15/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH5 0 - 200**
Description: **Soil**
Test Type: **sPOCAS_ALS**

Analysis	Unit	Result	Comment
pH KCl (23A)	pH units	5.3	
pH OX (23B)	pH units	4.3	
Titratable Actual Acidity (23F)	moles H+/T	8	
Titratable Peroxide Acidity (23G)	moles H+/T	<2	
Titratable Sulfidic Acidity (23H)	moles H+/T	<2	
sulfidic - Titratable Actual Acidity (s-23F)	% pyrite S	<0.020	
sulfidic - Titratable Peroxide Acidity (s-23G)	% pyrite S	<0.020	
sulfidic - Titratable Sulfidic Acidity (s-23H)	% pyrite S	<0.020	
KCl Extractable Sulfur (23Ce)	% S	<0.020	
Peroxide Sulfur (23De)	% S	0.021	
Peroxide Oxidisable Sulfur (23E)	% S	0.021	
acidity - Peroxide Oxidisable Sulfur (a-23E)	moles H+/T	13	
KCl Extractable Calcium (23Vh)	% Ca	0.111	
Peroxide Calcium (23Wh)	% Ca	0.111	
Acid Reacted Calcium (23X)	% Ca	<0.020	
acidity - Acid Reacted Calcium (a-23X)	moles H+/T	<10	
sulfidic - Acid Reacted Calcium (s-23X)	% S	<0.020	
KCl Extractable Magnesium (23Sm)	% Mg	<0.020	
Peroxide Magnesium (23Tm)	% Mg	<0.020	
Acid Reacted Magnesium (23U)	% Mg	<0.020	
Acidity - Acid Reacted Magnesium (a-23U)	moles H+/T	<10	
sulfidic - Acid Reacted Magnesium (s-23U)	% S	<0.020	
Excess Acid Neutralising Capacity (23Q)	% CaCO3		
acidity-Excess Acid Neutralising Capacity (a-23Q)	moles H+/T		
sulfidic-Excess Acid Neutralising Capacity (s-23Q)	% S		
HCl Extractable Sulfur (20Be)	% S		
Net Acid Soluble Sulfur (20Je)	% S		
acidity - Net Acid Soluble Sulfur (a-20J)	moles H+/T		
sulfidic - Net Acid Soluble Sulfur (s-20J)	% pyrite S		
ANC Fineness Factor	-	1.5	
Net Acidity (sulfur units)	% S	0.03	
Net Acidity (acidity units)	moles H+/T	21	
Liming Rate	kg CaCO3/t	2	
Net Acidity excluding ANC (sulfur units)	% S	0.03	
Net Acidity excluding ANC (acidity units)	mole H+ / t	21	
Liming Rate excluding ANC	kg CaCO3/t	2	

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Batch N°: 50296A **Sample N°: 13** **Date Instructions Received: 15/11/18** **Report Status: ○ Preliminary ○ F**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH5 0 - 200**
Description: **Soil**
Test Type: **sPOCAS_ALS**

Date Report Generated
5/12/2018

Consultant
Andrew Jacovides

Authorised Signatory

Method References:
SESL Method PM0011: Analysis of acid sulphate soils - sPOCAS derived from Ahern CR, Blunden B and Stone Y (eds.) (1998). *Acid Sulphate Soils Laboratory Methods* Guidelines Published by the Acid Sulphate Soil Management Advisory committe, Wollongbar, NSW, Australia

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Batch N°: 50296A **Sample N°: 14** **Date Instructions Received: 15/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH5 500 - 600**
Description: **Soil**
Test Type:

Analysis	Unit	Result	Comment
pH KCl (23A)	pH units	5.3	
pH OX (23B)	pH units	4.2	
Titratable Actual Acidity (23F)	moles H+/T	9	
Titratable Peroxide Acidity (23G)	moles H+/T	<2	
Titratable Sulfidic Acidity (23H)	moles H+/T	<2	
sulfidic - Titratable Actual Acidity (s-23F)	% pyrite S	<0.020	
sulfidic - Titratable Peroxide Acidity (s-23G)	% pyrite S	<0.020	
sulfidic - Titratable Sulfidic Acidity (s-23H)	% pyrite S	<0.020	
KCl Extractable Sulfur (23Ce)	% S	<0.020	
Peroxide Sulfur (23De)	% S	<0.020	
Peroxide Oxidisable Sulfur (23E)	% S	<0.020	
acidity - Peroxide Oxidisable Sulfur (a-23E)	moles H+/T	<10	
KCl Extractable Calcium (23Vh)	% Ca	0.053	
Peroxide Calcium (23Wh)	% Ca	0.053	
Acid Reacted Calcium (23X)	% Ca	<0.020	
acidity - Acid Reacted Calcium (a-23X)	moles H+/T	<10	
sulfidic - Acid Reacted Calcium (s-23X)	% S	<0.020	
KCl Extractable Magnesium (23Sm)	% Mg	<0.020	
Peroxide Magnesium (23Tm)	% Mg	<0.020	
Acid Reacted Magnesium (23U)	% Mg	<0.020	
Acidity - Acid Reacted Magnesium (a-23U)	moles H+/T	<10	
sulfidic - Acid Reacted Magnesium (s-23U)	% S	<0.020	
Excess Acid Neutralising Capacity (23Q)	% CaCO3		
acidity-Excess Acid Neutralising Capacity (a-23Q)	moles H+/T		
sulfidic-Excess Acid Neutralising Capacity (s-23Q)	% S		
HCl Extractable Sulfur (20Be)	% S		
Net Acid Soluble Sulfur (20Je)	% S		
acidity - Net Acid Soluble Sulfur (a-20J)	moles H+/T		
sulfidic - Net Acid Soluble Sulfur (s-20J)	% pyrite S		
ANC Fineness Factor	-	1.5	
Net Acidity (sulfur units)	% S	<0.02	
Net Acidity (acidity units)	moles H+/T	<10	
Liming Rate	kg CaCO3/t	<1	
Net Acidity excluding ANC (sulfur units)	% S	<0.02	
Net Acidity excluding ANC (acidity units)	mole H+ / t	<10	
Liming Rate excluding ANC	kg CaCO3/t	<1	

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Tests are performed under a quality system certified as complying with ISO 9001: 2008. Results and conclusions assume that sampling is representative. This document shall not be reproduced except in full.

Batch N°: 50296A **Sample N°: 14** **Date Instructions Received: 15/11/18** **Report Status: ○ Preliminary ○ F**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH5 500 - 600**
Description: **Soil**
Test Type:

Date Report Generated
5/12/2018

Consultant
Andrew Jacovides

Authorised Signatory

Method References:
SESL Method PM0011: Analysis of acid sulphate soils - sPOCAS derived from Ahern CR, Blunden B and Stone Y (eds.) (1998). *Acid Sulphate Soils Laboratory Methods* Guidelines Published by the Acid Sulphate Soil Management Advisory committe, Wollongbar, NSW, Australia

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Batch N°: 50296A **Sample N°: 16** **Date Instructions Received: 15/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH6 0 - 200**
Description: **Soil**
Test Type: **sPOCAS_ALS**

Analysis	Unit	Result	Comment
pH KCl (23A)	pH units	5.5	
pH OX (23B)	pH units	4.3	
Titratable Actual Acidity (23F)	moles H+/T	3	
Titratable Peroxide Acidity (23G)	moles H+/T	<2	
Titratable Sulfidic Acidity (23H)	moles H+/T	<2	
sulfidic - Titratable Actual Acidity (s-23F)	% pyrite S	<0.020	
sulfidic - Titratable Peroxide Acidity (s-23G)	% pyrite S	<0.020	
sulfidic - Titratable Sulfidic Acidity (s-23H)	% pyrite S	<0.020	
KCl Extractable Sulfur (23Ce)	% S	<0.020	
Peroxide Sulfur (23De)	% S	<0.020	
Peroxide Oxidisable Sulfur (23E)	% S	<0.020	
acidity - Peroxide Oxidisable Sulfur (a-23E)	moles H+/T	<10	
KCl Extractable Calcium (23Vh)	% Ca	0.078	
Peroxide Calcium (23Wh)	% Ca	0.078	
Acid Reacted Calcium (23X)	% Ca	<0.020	
acidity - Acid Reacted Calcium (a-23X)	moles H+/T	<10	
sulfidic - Acid Reacted Calcium (s-23X)	% S	<0.020	
KCl Extractable Magnesium (23Sm)	% Mg	<0.020	
Peroxide Magnesium (23Tm)	% Mg	<0.020	
Acid Reacted Magnesium (23U)	% Mg	<0.020	
Acidity - Acid Reacted Magnesium (a-23U)	moles H+/T	<10	
sulfidic - Acid Reacted Magnesium (s-23U)	% S	<0.020	
Excess Acid Neutralising Capacity (23Q)	% CaCO3		
acidity-Excess Acid Neutralising Capacity (a-23Q)	moles H+/T		
sulfidic-Excess Acid Neutralising Capacity (s-23Q)	% S		
HCl Extractable Sulfur (20Be)	% S		
Net Acid Soluble Sulfur (20Je)	% S		
acidity - Net Acid Soluble Sulfur (a-20J)	moles H+/T		
sulfidic - Net Acid Soluble Sulfur (s-20J)	% pyrite S		
ANC Fineness Factor	-	1.5	
Net Acidity (sulfur units)	% S	<0.02	
Net Acidity (acidity units)	moles H+/T	<10	
Liming Rate	kg CaCO3/t	<1	
Net Acidity excluding ANC (sulfur units)	% S	<0.02	
Net Acidity excluding ANC (acidity units)	mole H+ / t	<10	
Liming Rate excluding ANC	kg CaCO3/t	<1	

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Batch N°: 50296A **Sample N°: 16** **Date Instructions Received: 15/11/18** **Report Status:** ○ **Preliminary** ○ F

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH6 0 - 200**
Description: **Soil**
Test Type: **sPOCAS_ALS**

Date Report Generated
5/12/2018

Consultant
Andrew Jacovides

Authorised Signatory

Method References:
SESL Method PM0011: Analysis of acid sulphate soils - sPOCAS derived from Ahern CR, Blunden B and Stone Y (eds.) (1998). *Acid Sulphate Soils Laboratory Methods* Guidelines Published by the Acid Sulphate Soil Management Advisory committe, Wollongbar, NSW, Australia

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Batch N°: 50296A **Sample N°: 17** **Date Instructions Received: 15/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH6 300 - 400**
Description: **Soil**
Test Type:

Analysis	Unit	Result	Comment
pH KCl (23A)	pH units	5.3	
pH OX (23B)	pH units	4.2	
Titratable Actual Acidity (23F)	moles H+/T	11	
Titratable Peroxide Acidity (23G)	moles H+/T	<2	
Titratable Sulfidic Acidity (23H)	moles H+/T	<2	
sulfidic - Titratable Actual Acidity (s-23F)	% pyrite S	<0.020	
sulfidic - Titratable Peroxide Acidity (s-23G)	% pyrite S	<0.020	
sulfidic - Titratable Sulfidic Acidity (s-23H)	% pyrite S	<0.020	
KCl Extractable Sulfur (23Ce)	% S	<0.020	
Peroxide Sulfur (23De)	% S	<0.020	
Peroxide Oxidisable Sulfur (23E)	% S	<0.020	
acidity - Peroxide Oxidisable Sulfur (a-23E)	moles H+/T	<10	
KCl Extractable Calcium (23Vh)	% Ca	0.106	
Peroxide Calcium (23Wh)	% Ca	0.111	
Acid Reacted Calcium (23X)	% Ca	<0.020	
acidity - Acid Reacted Calcium (a-23X)	moles H+/T	<10	
sulfidic - Acid Reacted Calcium (s-23X)	% S	<0.020	
KCl Extractable Magnesium (23Sm)	% Mg	<0.020	
Peroxide Magnesium (23Tm)	% Mg	<0.020	
Acid Reacted Magnesium (23U)	% Mg	<0.020	
Acidity - Acid Reacted Magnesium (a-23U)	moles H+/T	<10	
sulfidic - Acid Reacted Magnesium (s-23U)	% S	<0.020	
Excess Acid Neutralising Capacity (23Q)	% CaCO3		
acidity-Excess Acid Neutralising Capacity (a-23Q)	moles H+/T		
sulfidic-Excess Acid Neutralising Capacity (s-23Q)	% S		
HCl Extractable Sulfur (20Be)	% S		
Net Acid Soluble Sulfur (20Je)	% S		
acidity - Net Acid Soluble Sulfur (a-20J)	moles H+/T		
sulfidic - Net Acid Soluble Sulfur (s-20J)	% pyrite S		
ANC Fineness Factor	-	1.5	
Net Acidity (sulfur units)	% S	<0.02	
Net Acidity (acidity units)	moles H+/T	11	
Liming Rate	kg CaCO3/t	<1	
Net Acidity excluding ANC (sulfur units)	% S	<0.02	
Net Acidity excluding ANC (acidity units)	mole H+ / t	11	
Liming Rate excluding ANC	kg CaCO3/t	<1	

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Em: info@sesl.com.au
Web: www.sesl.com.au

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Batch N°: 50296A **Sample N°: 17** **Date Instructions Received: 15/11/18** **Report Status: ○ Preliminary ○ F**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH6 300 - 400**
Description: **Soil**
Test Type:

Date Report Generated
5/12/2018

Consultant
Andrew Jacovides

Authorised Signatory

Method References:
SESL Method PM0011: Analysis of acid sulphate soils - sPOCAS derived from Ahern CR, Blunden B and Stone Y (eds.) (1998). *Acid Sulphate Soils Laboratory Methods* Guidelines Published by the Acid Sulphate Soil Management Advisory committe, Wollongbar, NSW, Australia

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Web: www.sesl.com.au

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Batch N°: 50296A **Sample N°: 19** **Date Instructions Received: 15/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH7 0 - 200**
Description: **Soil**
Test Type: **sPOCAS_ALS**

Analysis	Unit	Result	Comment
pH KCl (23A)	pH units	5.2	
pH OX (23B)	pH units	3.4	
Titratable Actual Acidity (23F)	moles H+/T	8	
Titratable Peroxide Acidity (23G)	moles H+/T	<2	
Titratable Sulfidic Acidity (23H)	moles H+/T	<2	
sulfidic - Titratable Actual Acidity (s-23F)	% pyrite S	<0.020	
sulfidic - Titratable Peroxide Acidity (s-23G)	% pyrite S	<0.020	
sulfidic - Titratable Sulfidic Acidity (s-23H)	% pyrite S	<0.020	
KCl Extractable Sulfur (23Ce)	% S	<0.020	
Peroxide Sulfur (23De)	% S	<0.020	
Peroxide Oxidisable Sulfur (23E)	% S	<0.020	
acidity - Peroxide Oxidisable Sulfur (a-23E)	moles H+/T	<10	
KCl Extractable Calcium (23Vh)	% Ca	0.092	
Peroxide Calcium (23Wh)	% Ca	0.092	
Acid Reacted Calcium (23X)	% Ca	<0.020	
acidity - Acid Reacted Calcium (a-23X)	moles H+/T	<10	
sulfidic - Acid Reacted Calcium (s-23X)	% S	<0.020	
KCl Extractable Magnesium (23Sm)	% Mg	<0.020	
Peroxide Magnesium (23Tm)	% Mg	<0.020	
Acid Reacted Magnesium (23U)	% Mg	<0.020	
Acidity - Acid Reacted Magnesium (a-23U)	moles H+/T	<10	
sulfidic - Acid Reacted Magnesium (s-23U)	% S	<0.020	
Excess Acid Neutralising Capacity (23Q)	% CaCO3		
acidity-Excess Acid Neutralising Capacity (a-23Q)	moles H+/T		
sulfidic-Excess Acid Neutralising Capacity (s-23Q)	% S		
HCl Extractable Sulfur (20Be)	% S		
Net Acid Soluble Sulfur (20Je)	% S		
acidity - Net Acid Soluble Sulfur (a-20J)	moles H+/T		
sulfidic - Net Acid Soluble Sulfur (s-20J)	% pyrite S		
ANC Fineness Factor	-	1.5	
Net Acidity (sulfur units)	% S	<0.02	
Net Acidity (acidity units)	moles H+/T	<10	
Liming Rate	kg CaCO3/t	<1	
Net Acidity excluding ANC (sulfur units)	% S	<0.02	
Net Acidity excluding ANC (acidity units)	mole H+ / t	<10	
Liming Rate excluding ANC	kg CaCO3/t	<1	

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Batch N°: 50296A **Sample N°: 19** **Date Instructions Received: 15/11/18** **Report Status:** ○ **Preliminary** ○ F

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH7 0 - 200**
Description: **Soil**
Test Type: **sPOCAS_ALS**

Date Report Generated
5/12/2018

Consultant
Andrew Jacovides

Authorised Signatory

Method References:
SESL Method PM0011: Analysis of acid sulphate soils - sPOCAS derived from Ahern CR, Blunden B and Stone Y (eds.) (1998). *Acid Sulphate Soils Laboratory Methods* Guidelines Published by the Acid Sulphate Soil Management Advisory committe, Wollongbar, NSW, Australia

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Batch N°: 50296A **Sample N°: 20** **Date Instructions Received: 15/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH7 400 - 600**
Description: **Soil**
Test Type:

Analysis	Unit	Result	Comment
pH KCl (23A)	pH units	5.1	
pH OX (23B)	pH units	4.3	
Titratable Actual Acidity (23F)	moles H+/T	18	
Titratable Peroxide Acidity (23G)	moles H+/T	<2	
Titratable Sulfidic Acidity (23H)	moles H+/T	<2	
sulfidic - Titratable Actual Acidity (s-23F)	% pyrite S	0.028	
sulfidic - Titratable Peroxide Acidity (s-23G)	% pyrite S	<0.020	
sulfidic - Titratable Sulfidic Acidity (s-23H)	% pyrite S	<0.020	
KCl Extractable Sulfur (23Ce)	% S	<0.020	
Peroxide Sulfur (23De)	% S	<0.020	
Peroxide Oxidisable Sulfur (23E)	% S	<0.020	
acidity - Peroxide Oxidisable Sulfur (a-23E)	moles H+/T	<10	
KCl Extractable Calcium (23Vh)	% Ca	0.096	
Peroxide Calcium (23Wh)	% Ca	0.101	
Acid Reacted Calcium (23X)	% Ca	<0.020	
acidity - Acid Reacted Calcium (a-23X)	moles H+/T	<10	
sulfidic - Acid Reacted Calcium (s-23X)	% S	<0.020	
KCl Extractable Magnesium (23Sm)	% Mg	<0.020	
Peroxide Magnesium (23Tm)	% Mg	<0.020	
Acid Reacted Magnesium (23U)	% Mg	<0.020	
Acidity - Acid Reacted Magnesium (a-23U)	moles H+/T	<10	
sulfidic - Acid Reacted Magnesium (s-23U)	% S	<0.020	
Excess Acid Neutralising Capacity (23Q)	% CaCO3		
acidity-Excess Acid Neutralising Capacity (a-23Q)	moles H+/T		
sulfidic-Excess Acid Neutralising Capacity (s-23Q)	% S		
HCl Extractable Sulfur (20Be)	% S		
Net Acid Soluble Sulfur (20Je)	% S		
acidity - Net Acid Soluble Sulfur (a-20J)	moles H+/T		
sulfidic - Net Acid Soluble Sulfur (s-20J)	% pyrite S		
ANC Fineness Factor	-	1.5	
Net Acidity (sulfur units)	% S	0.03	
Net Acidity (acidity units)	moles H+/T	18	
Liming Rate	kg CaCO3/t	1	
Net Acidity excluding ANC (sulfur units)	% S	0.03	
Net Acidity excluding ANC (acidity units)	mole H+ / t	18	
Liming Rate excluding ANC	kg CaCO3/t	1	

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Batch N°: 50296A **Sample N°: 20** **Date Instructions Received: 15/11/18** **Report Status: ○ Preliminary ○ F**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH7 400 - 600**
Description: **Soil**
Test Type:

Date Report Generated
5/12/2018

Consultant
Andrew Jacovides

Authorised Signatory

Method References:
SESL Method PM0011: Analysis of acid sulphate soils - sPOCAS derived from Ahern CR, Blunden B and Stone Y (eds.) (1998). *Acid Sulphate Soils Laboratory Methods* Guidelines Published by the Acid Sulphate Soil Management Advisory committe, Wollongbar, NSW, Australia

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Batch N°: 50296A **Sample N°: 1** **Date Instructions Received: 15/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH1 Surface**
Description: **Soil**
Test Type:

Analysis	Unit	Result	Comment
pH KCl (23A)	pH units		
pH OX (23B)	pH units		
Titratable Actual Acidity (23F)	moles H+/T		
Titratable Peroxide Acidity (23G)	moles H+/T		
Titratable Sulfidic Acidity (23H)	moles H+/T		
sulfidic - Titratable Actual Acidity (s-23F)	% pyrite S		
sulfidic - Titratable Peroxide Acidity (s-23G)	% pyrite S		
sulfidic - Titratable Sulfidic Acidity (s-23H)	% pyrite S		
KCl Extractable Sulfur (23Ce)	% S		
Peroxide Sulfur (23De)	% S		
Peroxide Oxidisable Sulfur (23E)	% S		
acidity - Peroxide Oxidisable Sulfur (a-23E)	moles H+/T		
KCl Extractable Calcium (23Vh)	% Ca		
Peroxide Calcium (23Wh)	% Ca		
Acid Reacted Calcium (23X)	% Ca		
acidity - Acid Reacted Calcium (a-23X)	moles H+/T		
sulfidic - Acid Reacted Calcium (s-23X)	% S		
KCl Extractable Magnesium (23Sm)	% Mg		
Peroxide Magnesium (23Tm)	% Mg		
Acid Reacted Magnesium (23U)	% Mg		
Acidity - Acid Reacted Magnesium (a-23U)	moles H+/T		
sulfidic - Acid Reacted Magnesium (s-23U)	% S		
Excess Acid Neutralising Capacity (23Q)	% CaCO3		
acidity-Excess Acid Neutralising Capacity (a-23Q)	moles H+/T		
sulfidic-Excess Acid Neutralising Capacity (s-23Q)	% S		
HCl Extractable Sulfur (20Be)	% S		
Net Acid Soluble Sulfur (20Je)	% S		
acidity - Net Acid Soluble Sulfur (a-20J)	moles H+/T		
sulfidic - Net Acid Soluble Sulfur (s-20J)	% pyrite S		
ANC Fineness Factor	-		
Net Acidity (sulfur units)	% S		
Net Acidity (acidity units)	moles H+/T		
Liming Rate	kg CaCO3/t		
Net Acidity excluding ANC (sulfur units)	% S		
Net Acidity excluding ANC (acidity units)	mole H+ / t		
Liming Rate excluding ANC	kg CaCO3/t		

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Batch N°: 50296A **Sample N°: 1** **Date Instructions Received: 15/11/18** **Report Status: ○ Preliminary ○ F**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH1 Surface**
Description: **Soil**
Test Type:

Date Report Generated
5/12/2018

Consultant
Andrew Jacovides

Authorised Signatory

Method References:
SESL Method PM0011: Analysis of acid sulphate soils - sPOCAS derived from Ahern CR, Blunden B and Stone Y (eds.) (1998). *Acid Sulphate Soils Laboratory Methods* Guidelines Published by the Acid Sulphate Soil Management Advisory committe, Wollongbar, NSW, Australia

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Batch N°: 50296A **Sample N°: 2** **Date Instructions Received: 15/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH1 500 - 600**
Description: **Soil**
Test Type:

Analysis	Unit	Result	Comment
pH KCl (23A)	pH units	6.6	
pH OX (23B)	pH units	6.1	
Titratable Actual Acidity (23F)	moles H+/T	<2	
Titratable Peroxide Acidity (23G)	moles H+/T	<2	
Titratable Sulfidic Acidity (23H)	moles H+/T	<2	
sulfidic - Titratable Actual Acidity (s-23F)	% pyrite S	<0.020	
sulfidic - Titratable Peroxide Acidity (s-23G)	% pyrite S	<0.020	
sulfidic - Titratable Sulfidic Acidity (s-23H)	% pyrite S	<0.020	
KCl Extractable Sulfur (23Ce)	% S	<0.020	
Peroxide Sulfur (23De)	% S	<0.020	
Peroxide Oxidisable Sulfur (23E)	% S	<0.020	
acidity - Peroxide Oxidisable Sulfur (a-23E)	moles H+/T	<10	
KCl Extractable Calcium (23Vh)	% Ca	0.071	
Peroxide Calcium (23Wh)	% Ca	0.072	
Acid Reacted Calcium (23X)	% Ca	<0.020	
acidity - Acid Reacted Calcium (a-23X)	moles H+/T	<10	
sulfidic - Acid Reacted Calcium (s-23X)	% S	<0.020	
KCl Extractable Magnesium (23Sm)	% Mg	<0.020	
Peroxide Magnesium (23Tm)	% Mg	<0.020	
Acid Reacted Magnesium (23U)	% Mg	<0.020	
Acidity - Acid Reacted Magnesium (a-23U)	moles H+/T	<10	
sulfidic - Acid Reacted Magnesium (s-23U)	% S	<0.020	
Excess Acid Neutralising Capacity (23Q)	% CaCO3		
acidity-Excess Acid Neutralising Capacity (a-23Q)	moles H+/T		
sulfidic-Excess Acid Neutralising Capacity (s-23Q)	% S		
HCl Extractable Sulfur (20Be)	% S		
Net Acid Soluble Sulfur (20Je)	% S		
acidity - Net Acid Soluble Sulfur (a-20J)	moles H+/T		
sulfidic - Net Acid Soluble Sulfur (s-20J)	% pyrite S		
ANC Fineness Factor	-	1.5	
Net Acidity (sulfur units)	% S	<0.02	
Net Acidity (acidity units)	moles H+/T	<10	
Liming Rate	kg CaCO3/t	<1	
Net Acidity excluding ANC (sulfur units)	% S	<0.02	
Net Acidity excluding ANC (acidity units)	mole H+ / t	<10	
Liming Rate excluding ANC	kg CaCO3/t	<1	

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Batch N°: 50296A **Sample N°: 2** **Date Instructions Received: 15/11/18** **Report Status: ○ Preliminary ○ F**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH1 500 - 600**
Description: **Soil**
Test Type:

Date Report Generated
5/12/2018

Consultant
Andrew Jacovides

Authorised Signatory

Method References:
SESL Method PM0011: Analysis of acid sulphate soils - sPOCAS derived from Ahern CR, Blunden B and Stone Y (eds.) (1998). *Acid Sulphate Soils Laboratory Methods* Guidelines Published by the Acid Sulphate Soil Management Advisory committe, Wollongbar, NSW, Australia

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Tests are performed under a quality system certified as complying with ISO 9001: 2008. Results and conclusions assume that sampling is representative. This document shall not be reproduced except in full.

Batch N°: 50296A **Sample N°: 3** **Date Instructions Received: 15/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH1 800 - 900**
Description: **Soil**
Test Type: **sPOCAS_ALS**

Analysis	Unit	Result	Comment
pH KCl (23A)	pH units	4.9	
pH OX (23B)	pH units	4.1	
Titratable Actual Acidity (23F)	moles H+/T	17	
Titratable Peroxide Acidity (23G)	moles H+/T	18	
Titratable Sulfidic Acidity (23H)	moles H+/T	<2	
sulfidic - Titratable Actual Acidity (s-23F)	% pyrite S	0.027	
sulfidic - Titratable Peroxide Acidity (s-23G)	% pyrite S	0.029	
sulfidic - Titratable Sulfidic Acidity (s-23H)	% pyrite S	<0.020	
KCl Extractable Sulfur (23Ce)	% S	<0.020	
Peroxide Sulfur (23De)	% S	0.024	
Peroxide Oxidisable Sulfur (23E)	% S	0.024	
acidity - Peroxide Oxidisable Sulfur (a-23E)	moles H+/T	15	
KCl Extractable Calcium (23Vh)	% Ca	0.098	
Peroxide Calcium (23Wh)	% Ca	0.097	
Acid Reacted Calcium (23X)	% Ca	<0.020	
acidity - Acid Reacted Calcium (a-23X)	moles H+/T	<10	
sulfidic - Acid Reacted Calcium (s-23X)	% S	<0.020	
KCl Extractable Magnesium (23Sm)	% Mg	<0.020	
Peroxide Magnesium (23Tm)	% Mg	<0.020	
Acid Reacted Magnesium (23U)	% Mg	<0.020	
Acidity - Acid Reacted Magnesium (a-23U)	moles H+/T	<10	
sulfidic - Acid Reacted Magnesium (s-23U)	% S	<0.020	
Excess Acid Neutralising Capacity (23Q)	% CaCO3		
acidity-Excess Acid Neutralising Capacity (a-23Q)	moles H+/T		
sulfidic-Excess Acid Neutralising Capacity (s-23Q)	% S		
HCl Extractable Sulfur (20Be)	% S		
Net Acid Soluble Sulfur (20Je)	% S		
acidity - Net Acid Soluble Sulfur (a-20J)	moles H+/T		
sulfidic - Net Acid Soluble Sulfur (s-20J)	% pyrite S		
ANC Fineness Factor	-	1.5	
Net Acidity (sulfur units)	% S	0.05	
Net Acidity (acidity units)	moles H+/T	31	
Liming Rate	kg CaCO3/t	2	
Net Acidity excluding ANC (sulfur units)	% S	0.05	
Net Acidity excluding ANC (acidity units)	mole H+ / t	31	
Liming Rate excluding ANC	kg CaCO3/t	2	

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Tests are performed under a quality system certified as complying with ISO 9001: 2008. Results and conclusions assume that sampling is representative. This document shall not be reproduced except in full.

Batch N°: 50296A **Sample N°: 3** **Date Instructions Received: 15/11/18** **Report Status: ○ Preliminary ○ F**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH1 800 - 900**
Description: **Soil**
Test Type: **sPOCAS_ALS**

Date Report Generated
5/12/2018

Consultant
Andrew Jacovides

Authorised Signatory

Method References:
SESL Method PM0011: Analysis of acid sulphate soils - sPOCAS derived from Ahern CR, Blunden B and Stone Y (eds.) (1998). *Acid Sulphate Soils Laboratory Methods* Guidelines Published by the Acid Sulphate Soil Management Advisory committe, Wollongbar, NSW, Australia

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Sample Drop Off: 16 Chilvers Road, Thornleigh NSW 2120
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Tests are performed under a quality system certified as complying with ISO 9001: 2008. Results and conclusions assume that sampling is representative. This document shall not be reproduced except in full.

Batch N°: 50296A **Sample N°: 4** **Date Instructions Received: 15/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH2 0 - 200**
Description: **Soil**
Test Type: **sPOCAS_ALS**

Analysis	Unit	Result	Comment
pH KCl (23A)	pH units	4.8	
pH OX (23B)	pH units	3.3	
Titratable Actual Acidity (23F)	moles H+/T	15	
Titratable Peroxide Acidity (23G)	moles H+/T	18	
Titratable Sulfidic Acidity (23H)	moles H+/T	3	
sulfidic - Titratable Actual Acidity (s-23F)	% pyrite S	0.024	
sulfidic - Titratable Peroxide Acidity (s-23G)	% pyrite S	0.029	
sulfidic - Titratable Sulfidic Acidity (s-23H)	% pyrite S	<0.020	
KCl Extractable Sulfur (23Ce)	% S	<0.020	
Peroxide Sulfur (23De)	% S	<0.020	
Peroxide Oxidisable Sulfur (23E)	% S	<0.020	
acidity - Peroxide Oxidisable Sulfur (a-23E)	moles H+/T	<10	
KCl Extractable Calcium (23Vh)	% Ca	0.029	
Peroxide Calcium (23Wh)	% Ca	0.028	
Acid Reacted Calcium (23X)	% Ca	<0.020	
acidity - Acid Reacted Calcium (a-23X)	moles H+/T	<10	
sulfidic - Acid Reacted Calcium (s-23X)	% S	<0.020	
KCl Extractable Magnesium (23Sm)	% Mg	<0.020	
Peroxide Magnesium (23Tm)	% Mg	<0.020	
Acid Reacted Magnesium (23U)	% Mg	<0.020	
Acidity - Acid Reacted Magnesium (a-23U)	moles H+/T	<10	
sulfidic - Acid Reacted Magnesium (s-23U)	% S	<0.020	
Excess Acid Neutralising Capacity (23Q)	% CaCO3		
acidity-Excess Acid Neutralising Capacity (a-23Q)	moles H+/T		
sulfidic-Excess Acid Neutralising Capacity (s-23Q)	% S		
HCl Extractable Sulfur (20Be)	% S		
Net Acid Soluble Sulfur (20Je)	% S		
acidity - Net Acid Soluble Sulfur (a-20J)	moles H+/T		
sulfidic - Net Acid Soluble Sulfur (s-20J)	% pyrite S		
ANC Fineness Factor	-	1.5	
Net Acidity (sulfur units)	% S	0.02	
Net Acidity (acidity units)	moles H+/T	15	
Liming Rate	kg CaCO3/t	1	
Net Acidity excluding ANC (sulfur units)	% S	0.02	
Net Acidity excluding ANC (acidity units)	mole H+ / t	15	
Liming Rate excluding ANC	kg CaCO3/t	1	

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Batch N°: 50296A **Sample N°: 4** **Date Instructions Received: 15/11/18** **Report Status: ○ Preliminary ○ F**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH2 0 - 200**
Description: **Soil**
Test Type: **sPOCAS_ALS**

Date Report Generated
5/12/2018

Consultant
Andrew Jacovides

Authorised Signatory

Method References:
SESL Method PM0011: Analysis of acid sulphate soils - sPOCAS derived from Ahern CR, Blunden B and Stone Y (eds.) (1998). *Acid Sulphate Soils Laboratory Methods* Guidelines Published by the Acid Sulphate Soil Management Advisory committe, Wollongbar, NSW, Australia

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Batch N°: 50296A **Sample N°: 5** **Date Instructions Received: 15/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH2 500 - 600**
Description: **Soil**
Test Type:

Analysis	Unit	Result	Comment
pH KCl (23A)	pH units		
pH OX (23B)	pH units		
Titratable Actual Acidity (23F)	moles H+/T		
Titratable Peroxide Acidity (23G)	moles H+/T		
Titratable Sulfidic Acidity (23H)	moles H+/T		
sulfidic - Titratable Actual Acidity (s-23F)	% pyrite S		
sulfidic - Titratable Peroxide Acidity (s-23G)	% pyrite S		
sulfidic - Titratable Sulfidic Acidity (s-23H)	% pyrite S		
KCl Extractable Sulfur (23Ce)	% S		
Peroxide Sulfur (23De)	% S		
Peroxide Oxidisable Sulfur (23E)	% S		
acidity - Peroxide Oxidisable Sulfur (a-23E)	moles H+/T		
KCl Extractable Calcium (23Vh)	% Ca		
Peroxide Calcium (23Wh)	% Ca		
Acid Reacted Calcium (23X)	% Ca		
acidity - Acid Reacted Calcium (a-23X)	moles H+/T		
sulfidic - Acid Reacted Calcium (s-23X)	% S		
KCl Extractable Magnesium (23Sm)	% Mg		
Peroxide Magnesium (23Tm)	% Mg		
Acid Reacted Magnesium (23U)	% Mg		
Acidity - Acid Reacted Magnesium (a-23U)	moles H+/T		
sulfidic - Acid Reacted Magnesium (s-23U)	% S		
Excess Acid Neutralising Capacity (23Q)	% CaCO3		
acidity-Excess Acid Neutralising Capacity (a-23Q)	moles H+/T		
sulfidic-Excess Acid Neutralising Capacity (s-23Q)	% S		
HCl Extractable Sulfur (20Be)	% S		
Net Acid Soluble Sulfur (20Je)	% S		
acidity - Net Acid Soluble Sulfur (a-20J)	moles H+/T		
sulfidic - Net Acid Soluble Sulfur (s-20J)	% pyrite S		
ANC Fineness Factor	-		
Net Acidity (sulfur units)	% S		
Net Acidity (acidity units)	moles H+/T		
Liming Rate	kg CaCO3/t		
Net Acidity excluding ANC (sulfur units)	% S		
Net Acidity excluding ANC (acidity units)	mole H+ / t		
Liming Rate excluding ANC	kg CaCO3/t		

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Batch N°: 50296A **Sample N°: 5** **Date Instructions Received: 15/11/18** **Report Status:** ○ **Preliminary** ○ F

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH2 500 - 600**
Description: **Soil**
Test Type:

Date Report Generated
5/12/2018

Consultant
Andrew Jacovides

Authorised Signatory

Method References:
SESL Method PM0011: Analysis of acid sulphate soils - sPOCAS derived from Ahern CR, Blunden B and Stone Y (eds.) (1998). *Acid Sulphate Soils Laboratory Methods* Guidelines Published by the Acid Sulphate Soil Management Advisory committe, Wollongbar, NSW, Australia

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Batch N°: 50296A **Sample N°: 6** **Date Instructions Received: 15/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH2 1100 - 1200**
Description: **Soil**
Test Type:

Analysis	Unit	Result	Comment
pH KCl (23A)	pH units	5.5	
pH OX (23B)	pH units	4.4	
Titratable Actual Acidity (23F)	moles H+/T	11	
Titratable Peroxide Acidity (23G)	moles H+/T	<2	
Titratable Sulfidic Acidity (23H)	moles H+/T	<2	
sulfidic - Titratable Actual Acidity (s-23F)	% pyrite S	<0.020	
sulfidic - Titratable Peroxide Acidity (s-23G)	% pyrite S	<0.020	
sulfidic - Titratable Sulfidic Acidity (s-23H)	% pyrite S	<0.020	
KCl Extractable Sulfur (23Ce)	% S	<0.020	
Peroxide Sulfur (23De)	% S	<0.020	
Peroxide Oxidisable Sulfur (23E)	% S	<0.020	
acidity - Peroxide Oxidisable Sulfur (a-23E)	moles H+/T	<10	
KCl Extractable Calcium (23Vh)	% Ca	0.073	
Peroxide Calcium (23Wh)	% Ca	0.076	
Acid Reacted Calcium (23X)	% Ca	<0.020	
acidity - Acid Reacted Calcium (a-23X)	moles H+/T	<10	
sulfidic - Acid Reacted Calcium (s-23X)	% S	<0.020	
KCl Extractable Magnesium (23Sm)	% Mg	<0.020	
Peroxide Magnesium (23Tm)	% Mg	<0.020	
Acid Reacted Magnesium (23U)	% Mg	<0.020	
Acidity - Acid Reacted Magnesium (a-23U)	moles H+/T	<10	
sulfidic - Acid Reacted Magnesium (s-23U)	% S	<0.020	
Excess Acid Neutralising Capacity (23Q)	% CaCO3		
acidity-Excess Acid Neutralising Capacity (a-23Q)	moles H+/T		
sulfidic-Excess Acid Neutralising Capacity (s-23Q)	% S		
HCl Extractable Sulfur (20Be)	% S		
Net Acid Soluble Sulfur (20Je)	% S		
acidity - Net Acid Soluble Sulfur (a-20J)	moles H+/T		
sulfidic - Net Acid Soluble Sulfur (s-20J)	% pyrite S		
ANC Fineness Factor	-	1.5	
Net Acidity (sulfur units)	% S	<0.02	
Net Acidity (acidity units)	moles H+/T	11	
Liming Rate	kg CaCO3/t	<1	
Net Acidity excluding ANC (sulfur units)	% S	<0.02	
Net Acidity excluding ANC (acidity units)	mole H+ / t	11	
Liming Rate excluding ANC	kg CaCO3/t	<1	

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Batch N°: 50296A **Sample N°: 6** **Date Instructions Received: 15/11/18** **Report Status: ○ Preliminary ○ F**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH2 1100 - 1200**
Description: **Soil**
Test Type:

Date Report Generated
5/12/2018

Consultant
Andrew Jacovides

Authorised Signatory

Method References:
SESL Method PM0011: Analysis of acid sulphate soils - sPOCAS derived from Ahern CR, Blunden B and Stone Y (eds.) (1998). *Acid Sulphate Soils Laboratory Methods* Guidelines Published by the Acid Sulphate Soil Management Advisory committe, Wollongbar, NSW, Australia

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Batch N°: 50296A **Sample N°: 7** **Date Instructions Received: 15/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH3 0 - 200**
Description: **Soil**
Test Type:

Analysis	Unit	Result	Comment
pH KCl (23A)	pH units		
pH OX (23B)	pH units		
Titratable Actual Acidity (23F)	moles H+/T		
Titratable Peroxide Acidity (23G)	moles H+/T		
Titratable Sulfidic Acidity (23H)	moles H+/T		
sulfidic - Titratable Actual Acidity (s-23F)	% pyrite S		
sulfidic - Titratable Peroxide Acidity (s-23G)	% pyrite S		
sulfidic - Titratable Sulfidic Acidity (s-23H)	% pyrite S		
KCl Extractable Sulfur (23Ce)	% S		
Peroxide Sulfur (23De)	% S		
Peroxide Oxidisable Sulfur (23E)	% S		
acidity - Peroxide Oxidisable Sulfur (a-23E)	moles H+/T		
KCl Extractable Calcium (23Vh)	% Ca		
Peroxide Calcium (23Wh)	% Ca		
Acid Reacted Calcium (23X)	% Ca		
acidity - Acid Reacted Calcium (a-23X)	moles H+/T		
sulfidic - Acid Reacted Calcium (s-23X)	% S		
KCl Extractable Magnesium (23Sm)	% Mg		
Peroxide Magnesium (23Tm)	% Mg		
Acid Reacted Magnesium (23U)	% Mg		
Acidity - Acid Reacted Magnesium (a-23U)	moles H+/T		
sulfidic - Acid Reacted Magnesium (s-23U)	% S		
Excess Acid Neutralising Capacity (23Q)	% CaCO3		
acidity-Excess Acid Neutralising Capacity (a-23Q)	moles H+/T		
sulfidic-Excess Acid Neutralising Capacity (s-23Q)	% S		
HCl Extractable Sulfur (20Be)	% S		
Net Acid Soluble Sulfur (20Je)	% S		
acidity - Net Acid Soluble Sulfur (a-20J)	moles H+/T		
sulfidic - Net Acid Soluble Sulfur (s-20J)	% pyrite S		
ANC Fineness Factor	-		
Net Acidity (sulfur units)	% S		
Net Acidity (acidity units)	moles H+/T		
Liming Rate	kg CaCO3/t		
Net Acidity excluding ANC (sulfur units)	% S		
Net Acidity excluding ANC (acidity units)	mole H+ / t		
Liming Rate excluding ANC	kg CaCO3/t		

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Batch N°: 50296A **Sample N°: 7** **Date Instructions Received: 15/11/18** **Report Status: ○ Preliminary ○ F**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH3 0 - 200**
Description: **Soil**
Test Type:

Date Report Generated
5/12/2018

Consultant
Andrew Jacovides

Authorised Signatory

Method References:
SESL Method PM0011: Analysis of acid sulphate soils - sPOCAS derived from Ahern CR, Blunden B and Stone Y (eds.) (1998). *Acid Sulphate Soils Laboratory Methods* Guidelines Published by the Acid Sulphate Soil Management Advisory committe, Wollongbar, NSW, Australia

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Batch N°: 50296A **Sample N°: 8** **Date Instructions Received: 15/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH3 200 - 300**
Description: **Soil**
Test Type:

Analysis	Unit	Result	Comment
pH KCl (23A)	pH units		
pH OX (23B)	pH units		
Titratable Actual Acidity (23F)	moles H+/T		
Titratable Peroxide Acidity (23G)	moles H+/T		
Titratable Sulfidic Acidity (23H)	moles H+/T		
sulfidic - Titratable Actual Acidity (s-23F)	% pyrite S		
sulfidic - Titratable Peroxide Acidity (s-23G)	% pyrite S		
sulfidic - Titratable Sulfidic Acidity (s-23H)	% pyrite S		
KCl Extractable Sulfur (23Ce)	% S		
Peroxide Sulfur (23De)	% S		
Peroxide Oxidisable Sulfur (23E)	% S		
acidity - Peroxide Oxidisable Sulfur (a-23E)	moles H+/T		
KCl Extractable Calcium (23Vh)	% Ca		
Peroxide Calcium (23Wh)	% Ca		
Acid Reacted Calcium (23X)	% Ca		
acidity - Acid Reacted Calcium (a-23X)	moles H+/T		
sulfidic - Acid Reacted Calcium (s-23X)	% S		
KCl Extractable Magnesium (23Sm)	% Mg		
Peroxide Magnesium (23Tm)	% Mg		
Acid Reacted Magnesium (23U)	% Mg		
Acidity - Acid Reacted Magnesium (a-23U)	moles H+/T		
sulfidic - Acid Reacted Magnesium (s-23U)	% S		
Excess Acid Neutralising Capacity (23Q)	% CaCO3		
acidity-Excess Acid Neutralising Capacity (a-23Q)	moles H+/T		
sulfidic-Excess Acid Neutralising Capacity (s-23Q)	% S		
HCl Extractable Sulfur (20Be)	% S		
Net Acid Soluble Sulfur (20Je)	% S		
acidity - Net Acid Soluble Sulfur (a-20J)	moles H+/T		
sulfidic - Net Acid Soluble Sulfur (s-20J)	% pyrite S		
ANC Fineness Factor	-		
Net Acidity (sulfur units)	% S		
Net Acidity (acidity units)	moles H+/T		
Liming Rate	kg CaCO3/t		
Net Acidity excluding ANC (sulfur units)	% S		
Net Acidity excluding ANC (acidity units)	mole H+ / t		
Liming Rate excluding ANC	kg CaCO3/t		

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Batch N°: 50296A **Sample N°: 8** **Date Instructions Received: 15/11/18** **Report Status:** ○ **Preliminary** ○ F

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH3 200 - 300**
Description: **Soil**
Test Type:

Date Report Generated
5/12/2018

Consultant
Andrew Jacovides

Authorised Signatory

Method References:
SESL Method PM0011: Analysis of acid sulphate soils - sPOCAS derived from Ahern CR, Blunden B and Stone Y (eds.) (1998). *Acid Sulphate Soils Laboratory Methods* Guidelines Published by the Acid Sulphate Soil Management Advisory committe, Wollongbar, NSW, Australia

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Web: www.sesl.com.au

Tests are performed under a quality system certified as complying with ISO 9001: 2008. Results and conclusions assume that sampling is representative. This document shall not be reproduced except in full.

Batch N°: 50296A **Sample N°: 9** **Date Instructions Received: 15/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH3 800 - 900**
Description: **Soil**
Test Type:

Analysis	Unit	Result	Comment
pH KCl (23A)	pH units	5.7	
pH OX (23B)	pH units	4.5	
Titratable Actual Acidity (23F)	moles H+/T	2	
Titratable Peroxide Acidity (23G)	moles H+/T	5	
Titratable Sulfidic Acidity (23H)	moles H+/T	3	
sulfidic - Titratable Actual Acidity (s-23F)	% pyrite S	<0.020	
sulfidic - Titratable Peroxide Acidity (s-23G)	% pyrite S	<0.020	
sulfidic - Titratable Sulfidic Acidity (s-23H)	% pyrite S	<0.020	
KCl Extractable Sulfur (23Ce)	% S	<0.020	
Peroxide Sulfur (23De)	% S	<0.020	
Peroxide Oxidisable Sulfur (23E)	% S	<0.020	
acidity - Peroxide Oxidisable Sulfur (a-23E)	moles H+/T	<10	
KCl Extractable Calcium (23Vh)	% Ca	0.021	
Peroxide Calcium (23Wh)	% Ca	0.021	
Acid Reacted Calcium (23X)	% Ca	<0.020	
acidity - Acid Reacted Calcium (a-23X)	moles H+/T	<10	
sulfidic - Acid Reacted Calcium (s-23X)	% S	<0.020	
KCl Extractable Magnesium (23Sm)	% Mg	<0.020	
Peroxide Magnesium (23Tm)	% Mg	<0.020	
Acid Reacted Magnesium (23U)	% Mg	<0.020	
Acidity - Acid Reacted Magnesium (a-23U)	moles H+/T	<10	
sulfidic - Acid Reacted Magnesium (s-23U)	% S	<0.020	
Excess Acid Neutralising Capacity (23Q)	% CaCO3		
acidity-Excess Acid Neutralising Capacity (a-23Q)	moles H+/T		
sulfidic-Excess Acid Neutralising Capacity (s-23Q)	% S		
HCl Extractable Sulfur (20Be)	% S		
Net Acid Soluble Sulfur (20Je)	% S		
acidity - Net Acid Soluble Sulfur (a-20J)	moles H+/T		
sulfidic - Net Acid Soluble Sulfur (s-20J)	% pyrite S		
ANC Fineness Factor	-	1.5	
Net Acidity (sulfur units)	% S	<0.02	
Net Acidity (acidity units)	moles H+/T	<10	
Liming Rate	kg CaCO3/t	<1	
Net Acidity excluding ANC (sulfur units)	% S	<0.02	
Net Acidity excluding ANC (acidity units)	mole H+ / t	<10	
Liming Rate excluding ANC	kg CaCO3/t	<1	

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Batch N°: 50296A **Sample N°: 9** **Date Instructions Received: 15/11/18** **Report Status: ○ Preliminary ○ F**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH3 800 - 900**
Description: **Soil**
Test Type:

Date Report Generated
5/12/2018

Consultant
Andrew Jacovides

Authorised Signatory

Method References:
SESL Method PM0011: Analysis of acid sulphate soils - sPOCAS derived from Ahern CR, Blunden B and Stone Y (eds.) (1998). *Acid Sulphate Soils Laboratory Methods* Guidelines Published by the Acid Sulphate Soil Management Advisory committe, Wollongbar, NSW, Australia

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Tests are performed under a quality system certified as complying with ISO 9001: 2008. Results and conclusions assume that sampling is representative. This document shall not be reproduced except in full.

Batch N°: 50296A **Sample N°: 10** **Date Instructions Received: 15/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH4 0 - 200**
Description: **Soil**
Test Type: **sPOCAS_ALS**

Analysis	Unit	Result	Comment
pH KCl (23A)	pH units	5.1	
pH OX (23B)	pH units	4.4	
Titratable Actual Acidity (23F)	moles H+/T	13	
Titratable Peroxide Acidity (23G)	moles H+/T	<2	
Titratable Sulfidic Acidity (23H)	moles H+/T	<2	
sulfidic - Titratable Actual Acidity (s-23F)	% pyrite S	0.022	
sulfidic - Titratable Peroxide Acidity (s-23G)	% pyrite S	<0.020	
sulfidic - Titratable Sulfidic Acidity (s-23H)	% pyrite S	<0.020	
KCl Extractable Sulfur (23Ce)	% S	<0.020	
Peroxide Sulfur (23De)	% S	0.021	
Peroxide Oxidisable Sulfur (23E)	% S	0.021	
acidity - Peroxide Oxidisable Sulfur (a-23E)	moles H+/T	13	
KCl Extractable Calcium (23Vh)	% Ca	0.108	
Peroxide Calcium (23Wh)	% Ca	0.108	
Acid Reacted Calcium (23X)	% Ca	<0.020	
acidity - Acid Reacted Calcium (a-23X)	moles H+/T	<10	
sulfidic - Acid Reacted Calcium (s-23X)	% S	<0.020	
KCl Extractable Magnesium (23Sm)	% Mg	<0.020	
Peroxide Magnesium (23Tm)	% Mg	<0.020	
Acid Reacted Magnesium (23U)	% Mg	<0.020	
Acidity - Acid Reacted Magnesium (a-23U)	moles H+/T	<10	
sulfidic - Acid Reacted Magnesium (s-23U)	% S	<0.020	
Excess Acid Neutralising Capacity (23Q)	% CaCO3		
acidity-Excess Acid Neutralising Capacity (a-23Q)	moles H+/T		
sulfidic-Excess Acid Neutralising Capacity (s-23Q)	% S		
HCl Extractable Sulfur (20Be)	% S		
Net Acid Soluble Sulfur (20Je)	% S		
acidity - Net Acid Soluble Sulfur (a-20J)	moles H+/T		
sulfidic - Net Acid Soluble Sulfur (s-20J)	% pyrite S		
ANC Fineness Factor	-	1.5	
Net Acidity (sulfur units)	% S	0.04	
Net Acidity (acidity units)	moles H+/T	27	
Liming Rate	kg CaCO3/t	2	
Net Acidity excluding ANC (sulfur units)	% S	0.04	
Net Acidity excluding ANC (acidity units)	mole H+ / t	27	
Liming Rate excluding ANC	kg CaCO3/t	2	

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Batch N°: 50296A **Sample N°: 10** **Date Instructions Received: 15/11/18** **Report Status: ○ Preliminary ○ F**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH4 0 - 200**
Description: **Soil**
Test Type: **sPOCAS_ALS**

Date Report Generated
5/12/2018

Consultant
Andrew Jacovides

Authorised Signatory

Method References:
SESL Method PM0011: Analysis of acid sulphate soils - sPOCAS derived from Ahern CR, Blunden B and Stone Y (eds.) (1998). *Acid Sulphate Soils Laboratory Methods* Guidelines Published by the Acid Sulphate Soil Management Advisory committe, Wollongbar, NSW, Australia

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Web: www.sesl.com.au

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Batch N°: 50296A **Sample N°: 11** **Date Instructions Received: 15/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH4 300 - 400**
Description: **Soil**
Test Type:

Analysis	Unit	Result	Comment
pH KCl (23A)	pH units	5.3	
pH OX (23B)	pH units	4.4	
Titratable Actual Acidity (23F)	moles H+/T	18	
Titratable Peroxide Acidity (23G)	moles H+/T	<2	
Titratable Sulfidic Acidity (23H)	moles H+/T	<2	
sulfidic - Titratable Actual Acidity (s-23F)	% pyrite S	0.028	
sulfidic - Titratable Peroxide Acidity (s-23G)	% pyrite S	<0.020	
sulfidic - Titratable Sulfidic Acidity (s-23H)	% pyrite S	<0.020	
KCl Extractable Sulfur (23Ce)	% S	<0.020	
Peroxide Sulfur (23De)	% S	<0.020	
Peroxide Oxidisable Sulfur (23E)	% S	<0.020	
acidity - Peroxide Oxidisable Sulfur (a-23E)	moles H+/T	<10	
KCl Extractable Calcium (23Vh)	% Ca	0.127	
Peroxide Calcium (23Wh)	% Ca	0.132	
Acid Reacted Calcium (23X)	% Ca	<0.020	
acidity - Acid Reacted Calcium (a-23X)	moles H+/T	<10	
sulfidic - Acid Reacted Calcium (s-23X)	% S	<0.020	
KCl Extractable Magnesium (23Sm)	% Mg	<0.020	
Peroxide Magnesium (23Tm)	% Mg	<0.020	
Acid Reacted Magnesium (23U)	% Mg	<0.020	
Acidity - Acid Reacted Magnesium (a-23U)	moles H+/T	<10	
sulfidic - Acid Reacted Magnesium (s-23U)	% S	<0.020	
Excess Acid Neutralising Capacity (23Q)	% CaCO3		
acidity-Excess Acid Neutralising Capacity (a-23Q)	moles H+/T		
sulfidic-Excess Acid Neutralising Capacity (s-23Q)	% S		
HCl Extractable Sulfur (20Be)	% S		
Net Acid Soluble Sulfur (20Je)	% S		
acidity - Net Acid Soluble Sulfur (a-20J)	moles H+/T		
sulfidic - Net Acid Soluble Sulfur (s-20J)	% pyrite S		
ANC Fineness Factor	-	1.5	
Net Acidity (sulfur units)	% S	0.03	
Net Acidity (acidity units)	moles H+/T	18	
Liming Rate	kg CaCO3/t	1	
Net Acidity excluding ANC (sulfur units)	% S	0.03	
Net Acidity excluding ANC (acidity units)	mole H+ / t	18	
Liming Rate excluding ANC	kg CaCO3/t	1	

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Batch N°: 50296A **Sample N°: 11** **Date Instructions Received: 15/11/18** **Report Status:** ○ **Preliminary** ○ F

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH4 300 - 400**
Description: **Soil**
Test Type:

Date Report Generated
5/12/2018

Consultant
Andrew Jacovides

Authorised Signatory

Method References:
SESL Method PM0011: Analysis of acid sulphate soils - sPOCAS derived from Ahern CR, Blunden B and Stone Y (eds.) (1998). *Acid Sulphate Soils Laboratory Methods* Guidelines Published by the Acid Sulphate Soil Management Advisory committe, Wollongbar, NSW, Australia

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Batch N°: 50296A **Sample N°: 12** **Date Instructions Received: 15/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH4 500 - 700**
Description: **Soil**
Test Type:

Analysis	Unit	Result	Comment
pH KCl (23A)	pH units		
pH OX (23B)	pH units		
Titratable Actual Acidity (23F)	moles H+/T		
Titratable Peroxide Acidity (23G)	moles H+/T		
Titratable Sulfidic Acidity (23H)	moles H+/T		
sulfidic - Titratable Actual Acidity (s-23F)	% pyrite S		
sulfidic - Titratable Peroxide Acidity (s-23G)	% pyrite S		
sulfidic - Titratable Sulfidic Acidity (s-23H)	% pyrite S		
KCl Extractable Sulfur (23Ce)	% S		
Peroxide Sulfur (23De)	% S		
Peroxide Oxidisable Sulfur (23E)	% S		
acidity - Peroxide Oxidisable Sulfur (a-23E)	moles H+/T		
KCl Extractable Calcium (23Vh)	% Ca		
Peroxide Calcium (23Wh)	% Ca		
Acid Reacted Calcium (23X)	% Ca		
acidity - Acid Reacted Calcium (a-23X)	moles H+/T		
sulfidic - Acid Reacted Calcium (s-23X)	% S		
KCl Extractable Magnesium (23Sm)	% Mg		
Peroxide Magnesium (23Tm)	% Mg		
Acid Reacted Magnesium (23U)	% Mg		
Acidity - Acid Reacted Magnesium (a-23U)	moles H+/T		
sulfidic - Acid Reacted Magnesium (s-23U)	% S		
Excess Acid Neutralising Capacity (23Q)	% CaCO3		
acidity-Excess Acid Neutralising Capacity (a-23Q)	moles H+/T		
sulfidic-Excess Acid Neutralising Capacity (s-23Q)	% S		
HCl Extractable Sulfur (20Be)	% S		
Net Acid Soluble Sulfur (20Je)	% S		
acidity - Net Acid Soluble Sulfur (a-20J)	moles H+/T		
sulfidic - Net Acid Soluble Sulfur (s-20J)	% pyrite S		
ANC Fineness Factor	-		
Net Acidity (sulfur units)	% S		
Net Acidity (acidity units)	moles H+/T		
Liming Rate	kg CaCO3/t		
Net Acidity excluding ANC (sulfur units)	% S		
Net Acidity excluding ANC (acidity units)	mole H+ / t		
Liming Rate excluding ANC	kg CaCO3/t		

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Batch N°: 50296A **Sample N°: 12** **Date Instructions Received: 15/11/18** **Report Status: ○ Preliminary ○ F**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH4 500 - 700**
Description: **Soil**
Test Type:

Date Report Generated
5/12/2018

Consultant
Andrew Jacovides

Authorised Signatory

Method References:
SESL Method PM0011: Analysis of acid sulphate soils - sPOCAS derived from Ahern CR, Blunden B and Stone Y (eds.) (1998). *Acid Sulphate Soils Laboratory Methods* Guidelines Published by the Acid Sulphate Soil Management Advisory committe, Wollongbar, NSW, Australia

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Batch N°: 50296A **Sample N°: 13** **Date Instructions Received: 15/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH5 0 - 200**
Description: **Soil**
Test Type: **sPOCAS_ALS**

Analysis	Unit	Result	Comment
pH KCl (23A)	pH units	5.3	
pH OX (23B)	pH units	4.3	
Titratable Actual Acidity (23F)	moles H+/T	8	
Titratable Peroxide Acidity (23G)	moles H+/T	<2	
Titratable Sulfidic Acidity (23H)	moles H+/T	<2	
sulfidic - Titratable Actual Acidity (s-23F)	% pyrite S	<0.020	
sulfidic - Titratable Peroxide Acidity (s-23G)	% pyrite S	<0.020	
sulfidic - Titratable Sulfidic Acidity (s-23H)	% pyrite S	<0.020	
KCl Extractable Sulfur (23Ce)	% S	<0.020	
Peroxide Sulfur (23De)	% S	0.021	
Peroxide Oxidisable Sulfur (23E)	% S	0.021	
acidity - Peroxide Oxidisable Sulfur (a-23E)	moles H+/T	13	
KCl Extractable Calcium (23Vh)	% Ca	0.111	
Peroxide Calcium (23Wh)	% Ca	0.111	
Acid Reacted Calcium (23X)	% Ca	<0.020	
acidity - Acid Reacted Calcium (a-23X)	moles H+/T	<10	
sulfidic - Acid Reacted Calcium (s-23X)	% S	<0.020	
KCl Extractable Magnesium (23Sm)	% Mg	<0.020	
Peroxide Magnesium (23Tm)	% Mg	<0.020	
Acid Reacted Magnesium (23U)	% Mg	<0.020	
Acidity - Acid Reacted Magnesium (a-23U)	moles H+/T	<10	
sulfidic - Acid Reacted Magnesium (s-23U)	% S	<0.020	
Excess Acid Neutralising Capacity (23Q)	% CaCO3		
acidity-Excess Acid Neutralising Capacity (a-23Q)	moles H+/T		
sulfidic-Excess Acid Neutralising Capacity (s-23Q)	% S		
HCl Extractable Sulfur (20Be)	% S		
Net Acid Soluble Sulfur (20Je)	% S		
acidity - Net Acid Soluble Sulfur (a-20J)	moles H+/T		
sulfidic - Net Acid Soluble Sulfur (s-20J)	% pyrite S		
ANC Fineness Factor	-	1.5	
Net Acidity (sulfur units)	% S	0.03	
Net Acidity (acidity units)	moles H+/T	21	
Liming Rate	kg CaCO3/t	2	
Net Acidity excluding ANC (sulfur units)	% S	0.03	
Net Acidity excluding ANC (acidity units)	mole H+ / t	21	
Liming Rate excluding ANC	kg CaCO3/t	2	

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Batch N°: 50296A **Sample N°: 13** **Date Instructions Received: 15/11/18** **Report Status: ○ Preliminary ○ F**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH5 0 - 200**
Description: **Soil**
Test Type: **sPOCAS_ALS**

Date Report Generated
5/12/2018

Consultant
Andrew Jacovides

Authorised Signatory

Method References:
SESL Method PM0011: Analysis of acid sulphate soils - sPOCAS derived from Ahern CR, Blunden B and Stone Y (eds.) (1998). *Acid Sulphate Soils Laboratory Methods* Guidelines Published by the Acid Sulphate Soil Management Advisory committe, Wollongbar, NSW, Australia

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Batch N°: 50296A **Sample N°: 14** **Date Instructions Received: 15/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH5 500 - 600**
Description: **Soil**
Test Type:

Analysis	Unit	Result	Comment
pH KCl (23A)	pH units	5.3	
pH OX (23B)	pH units	4.2	
Titratable Actual Acidity (23F)	moles H+/T	9	
Titratable Peroxide Acidity (23G)	moles H+/T	<2	
Titratable Sulfidic Acidity (23H)	moles H+/T	<2	
sulfidic - Titratable Actual Acidity (s-23F)	% pyrite S	<0.020	
sulfidic - Titratable Peroxide Acidity (s-23G)	% pyrite S	<0.020	
sulfidic - Titratable Sulfidic Acidity (s-23H)	% pyrite S	<0.020	
KCl Extractable Sulfur (23Ce)	% S	<0.020	
Peroxide Sulfur (23De)	% S	<0.020	
Peroxide Oxidisable Sulfur (23E)	% S	<0.020	
acidity - Peroxide Oxidisable Sulfur (a-23E)	moles H+/T	<10	
KCl Extractable Calcium (23Vh)	% Ca	0.053	
Peroxide Calcium (23Wh)	% Ca	0.053	
Acid Reacted Calcium (23X)	% Ca	<0.020	
acidity - Acid Reacted Calcium (a-23X)	moles H+/T	<10	
sulfidic - Acid Reacted Calcium (s-23X)	% S	<0.020	
KCl Extractable Magnesium (23Sm)	% Mg	<0.020	
Peroxide Magnesium (23Tm)	% Mg	<0.020	
Acid Reacted Magnesium (23U)	% Mg	<0.020	
Acidity - Acid Reacted Magnesium (a-23U)	moles H+/T	<10	
sulfidic - Acid Reacted Magnesium (s-23U)	% S	<0.020	
Excess Acid Neutralising Capacity (23Q)	% CaCO3		
acidity-Excess Acid Neutralising Capacity (a-23Q)	moles H+/T		
sulfidic-Excess Acid Neutralising Capacity (s-23Q)	% S		
HCl Extractable Sulfur (20Be)	% S		
Net Acid Soluble Sulfur (20Je)	% S		
acidity - Net Acid Soluble Sulfur (a-20J)	moles H+/T		
sulfidic - Net Acid Soluble Sulfur (s-20J)	% pyrite S		
ANC Fineness Factor	-	1.5	
Net Acidity (sulfur units)	% S	<0.02	
Net Acidity (acidity units)	moles H+/T	<10	
Liming Rate	kg CaCO3/t	<1	
Net Acidity excluding ANC (sulfur units)	% S	<0.02	
Net Acidity excluding ANC (acidity units)	mole H+ / t	<10	
Liming Rate excluding ANC	kg CaCO3/t	<1	

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Tests are performed under a quality system certified as complying with ISO 9001: 2008. Results and conclusions assume that sampling is representative. This document shall not be reproduced except in full.

Batch N°: 50296A **Sample N°: 14** **Date Instructions Received: 15/11/18** **Report Status: ○ Preliminary ○ F**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH5 500 - 600**
Description: **Soil**
Test Type:

Date Report Generated
5/12/2018

Consultant
Andrew Jacovides

Authorised Signatory

Method References:
SESL Method PM0011: Analysis of acid sulphate soils - sPOCAS derived from Ahern CR, Blunden B and Stone Y (eds.) (1998). *Acid Sulphate Soils Laboratory Methods* Guidelines Published by the Acid Sulphate Soil Management Advisory committe, Wollongbar, NSW, Australia

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Batch N°: 50296A **Sample N°: 15** **Date Instructions Received: 15/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH5 700 - 800**
Description: **Soil**
Test Type:

Analysis	Unit	Result	Comment
pH KCl (23A)	pH units		
pH OX (23B)	pH units		
Titratable Actual Acidity (23F)	moles H+/T		
Titratable Peroxide Acidity (23G)	moles H+/T		
Titratable Sulfidic Acidity (23H)	moles H+/T		
sulfidic - Titratable Actual Acidity (s-23F)	% pyrite S		
sulfidic - Titratable Peroxide Acidity (s-23G)	% pyrite S		
sulfidic - Titratable Sulfidic Acidity (s-23H)	% pyrite S		
KCl Extractable Sulfur (23Ce)	% S		
Peroxide Sulfur (23De)	% S		
Peroxide Oxidisable Sulfur (23E)	% S		
acidity - Peroxide Oxidisable Sulfur (a-23E)	moles H+/T		
KCl Extractable Calcium (23Vh)	% Ca		
Peroxide Calcium (23Wh)	% Ca		
Acid Reacted Calcium (23X)	% Ca		
acidity - Acid Reacted Calcium (a-23X)	moles H+/T		
sulfidic - Acid Reacted Calcium (s-23X)	% S		
KCl Extractable Magnesium (23Sm)	% Mg		
Peroxide Magnesium (23Tm)	% Mg		
Acid Reacted Magnesium (23U)	% Mg		
Acidity - Acid Reacted Magnesium (a-23U)	moles H+/T		
sulfidic - Acid Reacted Magnesium (s-23U)	% S		
Excess Acid Neutralising Capacity (23Q)	% CaCO3		
acidity-Excess Acid Neutralising Capacity (a-23Q)	moles H+/T		
sulfidic-Excess Acid Neutralising Capacity (s-23Q)	% S		
HCl Extractable Sulfur (20Be)	% S		
Net Acid Soluble Sulfur (20Je)	% S		
acidity - Net Acid Soluble Sulfur (a-20J)	moles H+/T		
sulfidic - Net Acid Soluble Sulfur (s-20J)	% pyrite S		
ANC Fineness Factor	-		
Net Acidity (sulfur units)	% S		
Net Acidity (acidity units)	moles H+/T		
Liming Rate	kg CaCO3/t		
Net Acidity excluding ANC (sulfur units)	% S		
Net Acidity excluding ANC (acidity units)	mole H+ / t		
Liming Rate excluding ANC	kg CaCO3/t		

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Batch N°: 50296A **Sample N°: 15** **Date Instructions Received: 15/11/18** **Report Status:** ○ **Preliminary** ○ F

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH5 700 - 800**
Description: **Soil**
Test Type:

Date Report Generated
5/12/2018

Consultant
Andrew Jacovides

Authorised Signatory

Method References:
SESL Method PM0011: Analysis of acid sulphate soils - sPOCAS derived from Ahern CR, Blunden B and Stone Y (eds.) (1998). *Acid Sulphate Soils Laboratory Methods* Guidelines Published by the Acid Sulphate Soil Management Advisory committe, Wollongbar, NSW, Australia

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Sample Drop Off: 16 Chilvers Road, Thornleigh NSW 2120
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Tests are performed under a quality system certified as complying with ISO 9001: 2008. Results and conclusions assume that sampling is representative. This document shall not be reproduced except in full.

Batch N°: 50296A **Sample N°: 16** **Date Instructions Received: 15/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH6 0 - 200**
Description: **Soil**
Test Type: **sPOCAS_ALS**

Analysis	Unit	Result	Comment
pH KCl (23A)	pH units	5.5	
pH OX (23B)	pH units	4.3	
Titratable Actual Acidity (23F)	moles H+/T	3	
Titratable Peroxide Acidity (23G)	moles H+/T	<2	
Titratable Sulfidic Acidity (23H)	moles H+/T	<2	
sulfidic - Titratable Actual Acidity (s-23F)	% pyrite S	<0.020	
sulfidic - Titratable Peroxide Acidity (s-23G)	% pyrite S	<0.020	
sulfidic - Titratable Sulfidic Acidity (s-23H)	% pyrite S	<0.020	
KCl Extractable Sulfur (23Ce)	% S	<0.020	
Peroxide Sulfur (23De)	% S	<0.020	
Peroxide Oxidisable Sulfur (23E)	% S	<0.020	
acidity - Peroxide Oxidisable Sulfur (a-23E)	moles H+/T	<10	
KCl Extractable Calcium (23Vh)	% Ca	0.078	
Peroxide Calcium (23Wh)	% Ca	0.078	
Acid Reacted Calcium (23X)	% Ca	<0.020	
acidity - Acid Reacted Calcium (a-23X)	moles H+/T	<10	
sulfidic - Acid Reacted Calcium (s-23X)	% S	<0.020	
KCl Extractable Magnesium (23Sm)	% Mg	<0.020	
Peroxide Magnesium (23Tm)	% Mg	<0.020	
Acid Reacted Magnesium (23U)	% Mg	<0.020	
Acidity - Acid Reacted Magnesium (a-23U)	moles H+/T	<10	
sulfidic - Acid Reacted Magnesium (s-23U)	% S	<0.020	
Excess Acid Neutralising Capacity (23Q)	% CaCO3		
acidity-Excess Acid Neutralising Capacity (a-23Q)	moles H+/T		
sulfidic-Excess Acid Neutralising Capacity (s-23Q)	% S		
HCl Extractable Sulfur (20Be)	% S		
Net Acid Soluble Sulfur (20Je)	% S		
acidity - Net Acid Soluble Sulfur (a-20J)	moles H+/T		
sulfidic - Net Acid Soluble Sulfur (s-20J)	% pyrite S		
ANC Fineness Factor	-	1.5	
Net Acidity (sulfur units)	% S	<0.02	
Net Acidity (acidity units)	moles H+/T	<10	
Liming Rate	kg CaCO3/t	<1	
Net Acidity excluding ANC (sulfur units)	% S	<0.02	
Net Acidity excluding ANC (acidity units)	mole H+ / t	<10	
Liming Rate excluding ANC	kg CaCO3/t	<1	

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Batch N°: 50296A **Sample N°: 16** **Date Instructions Received: 15/11/18** **Report Status:** ○ **Preliminary** ○ F

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH6 0 - 200**
Description: **Soil**
Test Type: **sPOCAS_ALS**

Date Report Generated
5/12/2018

Consultant
Andrew Jacovides

Authorised Signatory

Method References:
SESL Method PM0011: Analysis of acid sulphate soils - sPOCAS derived from Ahern CR, Blunden B and Stone Y (eds.) (1998). *Acid Sulphate Soils Laboratory Methods* Guidelines Published by the Acid Sulphate Soil Management Advisory committe, Wollongbar, NSW, Australia

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Batch N°: 50296A **Sample N°: 17** **Date Instructions Received: 15/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH6 300 - 400**
Description: **Soil**
Test Type:

Analysis	Unit	Result	Comment
pH KCl (23A)	pH units	5.3	
pH OX (23B)	pH units	4.2	
Titratable Actual Acidity (23F)	moles H+/T	11	
Titratable Peroxide Acidity (23G)	moles H+/T	<2	
Titratable Sulfidic Acidity (23H)	moles H+/T	<2	
sulfidic - Titratable Actual Acidity (s-23F)	% pyrite S	<0.020	
sulfidic - Titratable Peroxide Acidity (s-23G)	% pyrite S	<0.020	
sulfidic - Titratable Sulfidic Acidity (s-23H)	% pyrite S	<0.020	
KCl Extractable Sulfur (23Ce)	% S	<0.020	
Peroxide Sulfur (23De)	% S	<0.020	
Peroxide Oxidisable Sulfur (23E)	% S	<0.020	
acidity - Peroxide Oxidisable Sulfur (a-23E)	moles H+/T	<10	
KCl Extractable Calcium (23Vh)	% Ca	0.106	
Peroxide Calcium (23Wh)	% Ca	0.111	
Acid Reacted Calcium (23X)	% Ca	<0.020	
acidity - Acid Reacted Calcium (a-23X)	moles H+/T	<10	
sulfidic - Acid Reacted Calcium (s-23X)	% S	<0.020	
KCl Extractable Magnesium (23Sm)	% Mg	<0.020	
Peroxide Magnesium (23Tm)	% Mg	<0.020	
Acid Reacted Magnesium (23U)	% Mg	<0.020	
Acidity - Acid Reacted Magnesium (a-23U)	moles H+/T	<10	
sulfidic - Acid Reacted Magnesium (s-23U)	% S	<0.020	
Excess Acid Neutralising Capacity (23Q)	% CaCO3		
acidity-Excess Acid Neutralising Capacity (a-23Q)	moles H+/T		
sulfidic-Excess Acid Neutralising Capacity (s-23Q)	% S		
HCl Extractable Sulfur (20Be)	% S		
Net Acid Soluble Sulfur (20Je)	% S		
acidity - Net Acid Soluble Sulfur (a-20J)	moles H+/T		
sulfidic - Net Acid Soluble Sulfur (s-20J)	% pyrite S		
ANC Fineness Factor	-	1.5	
Net Acidity (sulfur units)	% S	<0.02	
Net Acidity (acidity units)	moles H+/T	11	
Liming Rate	kg CaCO3/t	<1	
Net Acidity excluding ANC (sulfur units)	% S	<0.02	
Net Acidity excluding ANC (acidity units)	mole H+ / t	11	
Liming Rate excluding ANC	kg CaCO3/t	<1	

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Batch N°: 50296A **Sample N°: 17** **Date Instructions Received: 15/11/18** **Report Status: ○ Preliminary ○ F**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH6 300 - 400**
Description: **Soil**
Test Type:

Date Report Generated
5/12/2018

Consultant
Andrew Jacovides

Authorised Signatory

Method References:
SESL Method PM0011: Analysis of acid sulphate soils - sPOCAS derived from Ahern CR, Blunden B and Stone Y (eds.) (1998). *Acid Sulphate Soils Laboratory Methods* Guidelines Published by the Acid Sulphate Soil Management Advisory committe, Wollongbar, NSW, Australia

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Batch N°: 50296A **Sample N°: 18** **Date Instructions Received: 15/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH6 550 - 700**
Description: **Soil**
Test Type:

Analysis	Unit	Result	Comment
pH KCl (23A)	pH units		
pH OX (23B)	pH units		
Titratable Actual Acidity (23F)	moles H+/T		
Titratable Peroxide Acidity (23G)	moles H+/T		
Titratable Sulfidic Acidity (23H)	moles H+/T		
sulfidic - Titratable Actual Acidity (s-23F)	% pyrite S		
sulfidic - Titratable Peroxide Acidity (s-23G)	% pyrite S		
sulfidic - Titratable Sulfidic Acidity (s-23H)	% pyrite S		
KCl Extractable Sulfur (23Ce)	% S		
Peroxide Sulfur (23De)	% S		
Peroxide Oxidisable Sulfur (23E)	% S		
acidity - Peroxide Oxidisable Sulfur (a-23E)	moles H+/T		
KCl Extractable Calcium (23Vh)	% Ca		
Peroxide Calcium (23Wh)	% Ca		
Acid Reacted Calcium (23X)	% Ca		
acidity - Acid Reacted Calcium (a-23X)	moles H+/T		
sulfidic - Acid Reacted Calcium (s-23X)	% S		
KCl Extractable Magnesium (23Sm)	% Mg		
Peroxide Magnesium (23Tm)	% Mg		
Acid Reacted Magnesium (23U)	% Mg		
Acidity - Acid Reacted Magnesium (a-23U)	moles H+/T		
sulfidic - Acid Reacted Magnesium (s-23U)	% S		
Excess Acid Neutralising Capacity (23Q)	% CaCO3		
acidity-Excess Acid Neutralising Capacity (a-23Q)	moles H+/T		
sulfidic-Excess Acid Neutralising Capacity (s-23Q)	% S		
HCl Extractable Sulfur (20Be)	% S		
Net Acid Soluble Sulfur (20Je)	% S		
acidity - Net Acid Soluble Sulfur (a-20J)	moles H+/T		
sulfidic - Net Acid Soluble Sulfur (s-20J)	% pyrite S		
ANC Fineness Factor	-		
Net Acidity (sulfur units)	% S		
Net Acidity (acidity units)	moles H+/T		
Liming Rate	kg CaCO3/t		
Net Acidity excluding ANC (sulfur units)	% S		
Net Acidity excluding ANC (acidity units)	mole H+ / t		
Liming Rate excluding ANC	kg CaCO3/t		

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Batch N°: 50296A **Sample N°: 18** **Date Instructions Received: 15/11/18** **Report Status: ○ Preliminary ○ F**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH6 550 - 700**
Description: **Soil**
Test Type:

Date Report Generated
5/12/2018

Consultant
Andrew Jacovides

Authorised Signatory

Method References:
SESL Method PM0011: Analysis of acid sulphate soils - sPOCAS derived from Ahern CR, Blunden B and Stone Y (eds.) (1998). *Acid Sulphate Soils Laboratory Methods* Guidelines Published by the Acid Sulphate Soil Management Advisory committe, Wollongbar, NSW, Australia

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Batch N°: 50296A **Sample N°: 19** **Date Instructions Received: 15/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH7 0 - 200**
Description: **Soil**
Test Type: **sPOCAS_ALS**

Analysis	Unit	Result	Comment
pH KCl (23A)	pH units	5.2	
pH OX (23B)	pH units	3.4	
Titratable Actual Acidity (23F)	moles H+/T	8	
Titratable Peroxide Acidity (23G)	moles H+/T	<2	
Titratable Sulfidic Acidity (23H)	moles H+/T	<2	
sulfidic - Titratable Actual Acidity (s-23F)	% pyrite S	<0.020	
sulfidic - Titratable Peroxide Acidity (s-23G)	% pyrite S	<0.020	
sulfidic - Titratable Sulfidic Acidity (s-23H)	% pyrite S	<0.020	
KCl Extractable Sulfur (23Ce)	% S	<0.020	
Peroxide Sulfur (23De)	% S	<0.020	
Peroxide Oxidisable Sulfur (23E)	% S	<0.020	
acidity - Peroxide Oxidisable Sulfur (a-23E)	moles H+/T	<10	
KCl Extractable Calcium (23Vh)	% Ca	0.092	
Peroxide Calcium (23Wh)	% Ca	0.092	
Acid Reacted Calcium (23X)	% Ca	<0.020	
acidity - Acid Reacted Calcium (a-23X)	moles H+/T	<10	
sulfidic - Acid Reacted Calcium (s-23X)	% S	<0.020	
KCl Extractable Magnesium (23Sm)	% Mg	<0.020	
Peroxide Magnesium (23Tm)	% Mg	<0.020	
Acid Reacted Magnesium (23U)	% Mg	<0.020	
Acidity - Acid Reacted Magnesium (a-23U)	moles H+/T	<10	
sulfidic - Acid Reacted Magnesium (s-23U)	% S	<0.020	
Excess Acid Neutralising Capacity (23Q)	% CaCO3		
acidity-Excess Acid Neutralising Capacity (a-23Q)	moles H+/T		
sulfidic-Excess Acid Neutralising Capacity (s-23Q)	% S		
HCl Extractable Sulfur (20Be)	% S		
Net Acid Soluble Sulfur (20Je)	% S		
acidity - Net Acid Soluble Sulfur (a-20J)	moles H+/T		
sulfidic - Net Acid Soluble Sulfur (s-20J)	% pyrite S		
ANC Fineness Factor	-	1.5	
Net Acidity (sulfur units)	% S	<0.02	
Net Acidity (acidity units)	moles H+/T	<10	
Liming Rate	kg CaCO3/t	<1	
Net Acidity excluding ANC (sulfur units)	% S	<0.02	
Net Acidity excluding ANC (acidity units)	mole H+ / t	<10	
Liming Rate excluding ANC	kg CaCO3/t	<1	

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Batch N°: 50296A **Sample N°: 19** **Date Instructions Received: 15/11/18** **Report Status:** ○ **Preliminary** ○ F

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH7 0 - 200**
Description: **Soil**
Test Type: **sPOCAS_ALS**

Date Report Generated
5/12/2018

Consultant
Andrew Jacovides

Authorised Signatory

Method References:
SESL Method PM0011: Analysis of acid sulphate soils - sPOCAS derived from Ahern CR, Blunden B and Stone Y (eds.) (1998). *Acid Sulphate Soils Laboratory Methods* Guidelines Published by the Acid Sulphate Soil Management Advisory committe, Wollongbar, NSW, Australia

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Batch N°: 50296A **Sample N°: 20** **Date Instructions Received: 15/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH7 400 - 600**
Description: **Soil**
Test Type:

Analysis	Unit	Result	Comment
pH KCl (23A)	pH units	5.1	
pH OX (23B)	pH units	4.3	
Titratable Actual Acidity (23F)	moles H+/T	18	
Titratable Peroxide Acidity (23G)	moles H+/T	<2	
Titratable Sulfidic Acidity (23H)	moles H+/T	<2	
sulfidic - Titratable Actual Acidity (s-23F)	% pyrite S	0.028	
sulfidic - Titratable Peroxide Acidity (s-23G)	% pyrite S	<0.020	
sulfidic - Titratable Sulfidic Acidity (s-23H)	% pyrite S	<0.020	
KCl Extractable Sulfur (23Ce)	% S	<0.020	
Peroxide Sulfur (23De)	% S	<0.020	
Peroxide Oxidisable Sulfur (23E)	% S	<0.020	
acidity - Peroxide Oxidisable Sulfur (a-23E)	moles H+/T	<10	
KCl Extractable Calcium (23Vh)	% Ca	0.096	
Peroxide Calcium (23Wh)	% Ca	0.101	
Acid Reacted Calcium (23X)	% Ca	<0.020	
acidity - Acid Reacted Calcium (a-23X)	moles H+/T	<10	
sulfidic - Acid Reacted Calcium (s-23X)	% S	<0.020	
KCl Extractable Magnesium (23Sm)	% Mg	<0.020	
Peroxide Magnesium (23Tm)	% Mg	<0.020	
Acid Reacted Magnesium (23U)	% Mg	<0.020	
Acidity - Acid Reacted Magnesium (a-23U)	moles H+/T	<10	
sulfidic - Acid Reacted Magnesium (s-23U)	% S	<0.020	
Excess Acid Neutralising Capacity (23Q)	% CaCO3		
acidity-Excess Acid Neutralising Capacity (a-23Q)	moles H+/T		
sulfidic-Excess Acid Neutralising Capacity (s-23Q)	% S		
HCl Extractable Sulfur (20Be)	% S		
Net Acid Soluble Sulfur (20Je)	% S		
acidity - Net Acid Soluble Sulfur (a-20J)	moles H+/T		
sulfidic - Net Acid Soluble Sulfur (s-20J)	% pyrite S		
ANC Fineness Factor	-	1.5	
Net Acidity (sulfur units)	% S	0.03	
Net Acidity (acidity units)	moles H+/T	18	
Liming Rate	kg CaCO3/t	1	
Net Acidity excluding ANC (sulfur units)	% S	0.03	
Net Acidity excluding ANC (acidity units)	mole H+ / t	18	
Liming Rate excluding ANC	kg CaCO3/t	1	

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Batch N°: 50296A **Sample N°: 20** **Date Instructions Received: 15/11/18** **Report Status: ○ Preliminary ○ F**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH7 400 - 600**
Description: **Soil**
Test Type:

Date Report Generated
5/12/2018

Consultant
Andrew Jacovides

Authorised Signatory

Method References:
SESL Method PM0011: Analysis of acid sulphate soils - sPOCAS derived from Ahern CR, Blunden B and Stone Y (eds.) (1998). *Acid Sulphate Soils Laboratory Methods* Guidelines Published by the Acid Sulphate Soil Management Advisory committe, Wollongbar, NSW, Australia

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Batch N°: 50296A **Sample N°: 21** **Date Instructions Received: 15/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH7 800 - 1000**
Description: **Soil**
Test Type:

Analysis	Unit	Result	Comment
pH KCl (23A)	pH units		
pH OX (23B)	pH units		
Titratable Actual Acidity (23F)	moles H+/T		
Titratable Peroxide Acidity (23G)	moles H+/T		
Titratable Sulfidic Acidity (23H)	moles H+/T		
sulfidic - Titratable Actual Acidity (s-23F)	% pyrite S		
sulfidic - Titratable Peroxide Acidity (s-23G)	% pyrite S		
sulfidic - Titratable Sulfidic Acidity (s-23H)	% pyrite S		
KCl Extractable Sulfur (23Ce)	% S		
Peroxide Sulfur (23De)	% S		
Peroxide Oxidisable Sulfur (23E)	% S		
acidity - Peroxide Oxidisable Sulfur (a-23E)	moles H+/T		
KCl Extractable Calcium (23Vh)	% Ca		
Peroxide Calcium (23Wh)	% Ca		
Acid Reacted Calcium (23X)	% Ca		
acidity - Acid Reacted Calcium (a-23X)	moles H+/T		
sulfidic - Acid Reacted Calcium (s-23X)	% S		
KCl Extractable Magnesium (23Sm)	% Mg		
Peroxide Magnesium (23Tm)	% Mg		
Acid Reacted Magnesium (23U)	% Mg		
Acidity - Acid Reacted Magnesium (a-23U)	moles H+/T		
sulfidic - Acid Reacted Magnesium (s-23U)	% S		
Excess Acid Neutralising Capacity (23Q)	% CaCO3		
acidity-Excess Acid Neutralising Capacity (a-23Q)	moles H+/T		
sulfidic-Excess Acid Neutralising Capacity (s-23Q)	% S		
HCl Extractable Sulfur (20Be)	% S		
Net Acid Soluble Sulfur (20Je)	% S		
acidity - Net Acid Soluble Sulfur (a-20J)	moles H+/T		
sulfidic - Net Acid Soluble Sulfur (s-20J)	% pyrite S		
ANC Fineness Factor	-		
Net Acidity (sulfur units)	% S		
Net Acidity (acidity units)	moles H+/T		
Liming Rate	kg CaCO3/t		
Net Acidity excluding ANC (sulfur units)	% S		
Net Acidity excluding ANC (acidity units)	mole H+ / t		
Liming Rate excluding ANC	kg CaCO3/t		

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Batch N°: 50296A **Sample N°: 21** **Date Instructions Received: 15/11/18** **Report Status: ○ Preliminary ○ F**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and**
SESL Quote N°:
Sample Name: **BH7 800 - 1000**
Description: **Soil**
Test Type:

Date Report Generated
5/12/2018

Consultant
Andrew Jacovides

Authorised Signatory

Method References:
SESL Method PM0011: Analysis of acid sulphate soils - sPOCAS derived from Ahern CR, Blunden B and Stone Y (eds.) (1998). *Acid Sulphate Soils Laboratory Methods* Guidelines Published by the Acid Sulphate Soil Management Advisory committe, Wollongbar, NSW, Australia

Solid Waste Assessment & Classification

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Batch N°: 49927A **Sample N°: 1** **Date Received: 5/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Job N°:
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and Contamination**
SESL Quote N°:
Sample Name: **Culvert 1 0-100**
Sample Type: **Soil**
Test Type: **PAH_TCLP**

REPORT SUMMARY

Material Type: ◉ Soil ○ Other

The results of laboratory testing conducted on this material indicate the presence of a range of contaminants commonly encountered in the natural and urban areas. This assessment was conducted to provide a waste classification for off-site disposal, based on the *Waste Classification Guidelines Part 1: Classifying Waste* (NSW EPA November 2014). Comparison of the laboratory analysis results with the criteria, indicates the material is considered to be within the General Solid Waste (not suitable for recycling) classification and as a result of this process, it can be disposed of as per Schedule 1 Part 3 of the Protection of the Environment Operations Act 1997.

EC (dS/m): pH (in H_2O): -

CONTAMINANT		SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
METALS AND METALLOIDS				
Arsenic	(As)	<1	-	CT1 - General Solid Waste (suitable for recycling)
Beryllium	(Be)	-		Not determined
Cadmium	(Cd)	<0.1		CT1 - General Solid Waste (suitable for recycling)
Chromium VI	(CrVI)	-		Not determined
Total Chromium	(Cr)	18		
Copper	(Cu)	32.4	N/A	Suitable for recycling
Fluoride	(F)	-		Not determined
Lead	(Pb)	75.6		CT1 - General Solid Waste (suitable for recycling)
Mercury	(Hg)	<0.1		CT1 - General Solid Waste (suitable for recycling)
Molybdenum	(Mo)	-		Not determined
Nickel	(Ni)	19.5		CT1 - General Solid Waste (suitable for recycling)
Selenium	(Se)	-		Not determined
Silver	(Ag)	-		Not determined
Zinc	(Zn)	109	N/A	Suitable for recycling
BTEX (MONO AROMATIC HYDROCARBONS)				
Benzene		<0.2		CT1 - General Solid Waste (suitable for recycling)
Toluene		<0.2		CT1 - General Solid Waste (suitable for recycling)
Ethylbenzene		<0.2		CT1 - General Solid Waste (suitable for recycling)
meta & para-Xylene		<0.2		
ortho-Xylene		<0.2		
Xylenes (total)		<0.2		CT1 - General Solid Waste (suitable for recycling)
TOTAL PETROLEUM HYDROCARBONS (TPH)				
C6 - C9		<25	N/A	SCC1 - General Solid Waste (suitable for recycling)
C10 - C14		<50		
C15 - C28		<100		
C29 - C36		533		
C10-C36 Total TPH		533	N/A	SCC1 - General Solid Waste (suitable for recycling)
CYANIDES				
Cyanide (amenable)				Not determined
Cyanide (Total)				Not determined
PHENOXY ACID HERBICIDES				
2,4-D	(2,4-Dichlorophenoxy-acetic acid)			Not determined
Fluroxypyr				Not determined
Picloram				Not determined
Triclopyr				Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
SCHEDULED CHEMICALS - ORGANOCHLORINE PESTICIDES (OCP)			
Aldrin	<0.1		
"Benzene, hexachloro"	<0.1		
"Benzene, pentachloronitro"	-		
alpha - BHC	<0.1		
beta - BHC	<0.1		
gamma - BHC (Lindane)	<0.1		
delta - BHC	<0.1		
a - Chlordane	<0.1		
g - Chlordane	<0.1		
DDT, DDD & DDE	<0.1		
Dieldrin	<0.1		
Endrin	<0.1		
Endrin aldehyde	<0.1		
Endosulfan I	<0.1	-	CT1 - General Solid Waste (suitable for recycling)
Endosulfan II	<0.1	-	CT1 - General Solid Waste (suitable for recycling)
Heptachlor	<0.1		
Heptachlor epoxide	<0.1		
Hexachlorophene	-		
Isodrin	-		
Pentachlorobenzene	-		
Pentachlorophenol	-		
"1,2,4,5-tetrachlorobenzene"	-		
"2,3,4,6-tetrachlorophenol"	-		
"1,2,4-trichlorobenzene"	-		
"2,4,5-Trichlorophenoxy acetic acid, salts and esters"	-		
Total Positive Scheduled Chemicals	<0.1	N/A	SCC1 - General Solid Waste (suitable for recycling)
Total Moderately Harmful Pesticides		N/A	Not determined
POLYCYCLIC AROMATIC HYDROCARBONS (PAH)			
Acenaphthene	<0.1		
Acenaphthylene	0.43		
Anthracene	0.68		
Benzo(a)anthracene	1.44		
Benzo(a)pyrene	2.36	<0.0005	SCC1 / TCLP1 - General Solid Waste (not suitable for recycling)
Benzo(b,j,k)fluoranthene	3.6		
Benzo(ghi)perylene	2.86		
Chrysene	1.34		
"Dibenzo(a,h)anthracene"	0.47		
Fluoranthene	3.71		
Fluorene	<0.1		
"Indeno(1,2,3-cd)pyrene"	2.16		
Naphthalene	<0.1		
Phenanthrene	1.62		
Pyrene	3.1		
Total Positive PAH's	23.8	N/A	SCC1 - General Solid Waste (suitable for recycling)
POLYCHLORINATED BIPHENYLS (PCB)			
Aroclor 1016	<0.2		
Aroclor 1221	<0.2		
Aroclor 1232	<0.2		
Aroclor 1242	<0.2		
Aroclor 1248	<0.2		
Aroclor 1254	<0.2		
Aroclor 1260	<0.2		
Aroclor 1262	<0.2		
Aroclor 1268	<0.2		
Total Positive PCB's	<0.2	N/A	SCC1 - General Solid Waste (suitable for recycling)
NITRATED COMPOUNDS - EXPLOSIVES			
"2,4-Dinitrotoluene"			Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
OTHER VOLATILE ORGANIC COMPOUNDS (VOC)			
Carbon tetrachloride	-		Not determined
Chlorobenzene	-		Not determined
Chloroform	-		Not determined
"1,2-Dichlorobenzene"	-		Not determined
"1,4-Dichlorobenzene"	-		Not determined
"1,2-Dichloroethane"	-		Not determined
"1,1-Dichloroethylene"	-		Not determined
Dichloromethane	-		Not determined
Styrene (vinyl benzene)	-		Not determined
"1,1,1,2-Tetrachloroethane"	-		Not determined
"1,1,2,2-Tetrachloroethane"	-		Not determined
Tetrachloroethylene	-		Not determined
"1,1,1-Trichloroethane"	-		Not determined
"1,1,2-Trichloroethane"	-		Not determined
Trichloroethylene	-		Not determined
Vinyl chloride	-		Not determined
OTHER SEMI-VOLATILE ORGANIC COMPOUNDS (SVOC)			
Chlorpyrifos			Not determined
Nitrobenzene			Not determined
Phenol (non-halogenated)			Not determined
"2,4,5-Trichlorophenol"			Not determined
"2,4,6-Trichlorophenol"			Not determined
OTHER CONTAMINANTS			
Methyl ethyl ketone			Not determined
Tebuconazole			Not determined
Plasticiser compounds			Not determined
Cresol (total)			Not determined
ASBESTOS_DETECTION			
Asbestos Detection			

DETAILED SUMMARY

Waste Classification Guidelines Part 1: Classifying Waste (EPA, Nov. 2014)

Abbreviations: ND - Not Determined (Analyte not tested)
SCC - Specific Contaminant Concentration
TCLP - Toxicity Characteristics Leaching Procedure

Limitation of liability: This document and the the limited analysis undertaken should not be construed as a site contamination report. It does not meet the NSW EPA requirements in relation to a contamination assessment for the proposed land use. The findings presented are based on a.) the sample submitted to SESL by the client or their agent, or b.) site conditions that existed at the time of sampling by SESL field personnel. In the case of sampling by SESL, conclusions are based on the investigation of conditions at specific locations, chosen to be representative as possible under the given circumstances. SESL has used a degree of care, skill and diligence normally exercised by environmental consultants in similar circumstances and locality. No other warranty expressed or implied is made or intended. Section 143 of the Protection of the Environment Operations Act 1997 states that if waste is transported to a place that cannot lawfully be used as a waste facility for that waste, then the transporter and owner of the waste are each guilty of an offence. The transporter and owner of the waste have duty to ensure that the waste is disposed of in an appropriate manner. SESL accepts no liability whatsoever for the unlawful disposal of any waste from any site. Subject to payment of all fees due, the client alone shall have a licence to use this document. This document may not be reproduced except in full.

Consultant:

Andrew Jacovides

Authorised Signatory:

All analyses performed by a NATA accredited sub-contracting laboratory.

SESL AUSTRALIA
Environment & Soil Sciences

Solid Waste Assessment & Classification

Sample Drop Off: 16 Chilvers Road, Thornleigh NSW 2120
Mailing Address: PO Box 357, Pennant Hills NSW 1715
Tel: 1300 30 40 80
Fax: 1300 64 46 89
Em: info@sesl.com.au
Web: www.sesl.com.au

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Batch N°: 49927A **Sample N°: 3** **Date Received: 5/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Job N°:
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and Contamination**
SESL Quote N°:
Sample Name: **Culvert 2**
Sample Type: **Soil**
Test Type: **PAH_TCLP, Pb_TCLP**

REPORT SUMMARY

Material Type: ◉ Soil ○ Other

The results of laboratory testing conducted on this material indicate the presence of a range of contaminants commonly encountered in the natural and urban areas. This assessment was conducted to provide a waste classification for off-site disposal, based on the *Waste Classification Guidelines Part 1: Classifying Waste* (NSW EPA November 2014). Comparison of the laboratory analysis results with the criteria, indicates the material is considered to be within the General Solid Waste (not suitable for recycling) classification and as a result of this process, it can be disposed of as per Schedule 1 Part 3 of the Protection of the Environment Operations Act 1997.

EC (dS/m): pH (in H_2O): -

CONTAMINANT		SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
METALS AND METALLOIDS				
Arsenic	(As)	<1	-	CT1 - General Solid Waste (suitable for recycling)
Beryllium	(Be)	-		Not determined
Cadmium	(Cd)	0.102		CT1 - General Solid Waste (suitable for recycling)
Chromium VI	(CrVI)	-		Not determined
Total Chromium	(Cr)	45		
Copper	(Cu)	60.8	N/A	Suitable for recycling
Fluoride	(F)	-		Not determined
Lead	(Pb)	174	<0.1	SCC1 / TCLP1 - General Solid Waste (not suitable for recycling)
Mercury	(Hg)	<0.1		CT1 - General Solid Waste (suitable for recycling)
Molybdenum	(Mo)	-		Not determined
Nickel	(Ni)	29.5		CT1 - General Solid Waste (suitable for recycling)
Selenium	(Se)	-		Not determined
Silver	(Ag)	-		Not determined
Zinc	(Zn)	285	N/A	Suitable for recycling
BTEX (MONO AROMATIC HYDROCARBONS)				
Benzene		<0.2		CT1 - General Solid Waste (suitable for recycling)
Toluene		<0.2		CT1 - General Solid Waste (suitable for recycling)
Ethylbenzene		<0.2		CT1 - General Solid Waste (suitable for recycling)
meta & para-Xylene		<0.2		
ortho-Xylene		<0.2		
Xylenes (total)		<0.2		CT1 - General Solid Waste (suitable for recycling)
TOTAL PETROLEUM HYDROCARBONS (TPH)				
C6 - C9		<25	N/A	SCC1 - General Solid Waste (suitable for recycling)
C10 - C14		<50		
C15 - C28		156		
C29 - C36		1161		
C10-C36 Total TPH		1320	N/A	SCC1 - General Solid Waste (suitable for recycling)
CYANIDES				
Cyanide (amenable)				Not determined
Cyanide (Total)				Not determined
PHENOXY ACID HERBICIDES				
2,4-D	(2,4-Dichlorophenoxy-acetic acid)			Not determined
Fluroxypyr				Not determined
Picloram				Not determined
Triclopyr				Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
SCHEDULED CHEMICALS - ORGANOCHLORINE PESTICIDES (OCP)			
Aldrin	<0.1		
"Benzene, hexachloro"	<0.1		
"Benzene, pentachloronitro"	-		
alpha - BHC	<0.1		
beta - BHC	<0.1		
gamma - BHC (Lindane)	<0.1		
delta - BHC	<0.1		
a - Chlordane	<0.1		
g - Chlordane	<0.1		
DDT, DDD & DDE	<0.1		
Dieldrin	<0.1		
Endrin	<0.1		
Endrin aldehyde	<0.1		
Endosulfan I	<0.1	-	CT1 - General Solid Waste (suitable for recycling)
Endosulfan II	<0.1	-	CT1 - General Solid Waste (suitable for recycling)
Heptachlor	<0.1		
Heptachlor epoxide	<0.1		
Hexachlorophene	-		
Isodrin	-		
Pentachlorobenzene	-		
Pentachlorophenol	-		
"1,2,4,5-tetrachlorobenzene"	-		
"2,3,4,6-tetrachlorophenol"	-		
"1,2,4-trichlorobenzene"	-		
"2,4,5-Trichlorophenoxy acetic acid, salts and esters"	-		
Total Positive Scheduled Chemicals	<0.1	N/A	SCC1 - General Solid Waste (suitable for recycling)
Total Moderately Harmful Pesticides		N/A	Not determined
POLYCYCLIC AROMATIC HYDROCARBONS (PAH)			
Acenaphthene	0.17		
Acenaphthylene	0.6		
Anthracene	0.86		
Benzo(a)anthracene	2.19		
Benzo(a)pyrene	2.92	<0.0005	SCC1 / TCLP1 - General Solid Waste (not suitable for recycling)
Benzo(b,j,k)fluoranthene	4.54		
Benzo(ghi)perylene	3.18		
Chrysene	1.92		
"Dibenzo(a,h)anthracene"	0.5		
Fluoranthene	5.6		
Fluorene	0.2		
"Indeno(1,2,3-cd)pyrene"	2.45		
Naphthalene	<0.1		
Phenanthrene	2.09		
Pyrene	4.81		
Total Positive PAH's	32	N/A	SCC1 - General Solid Waste (suitable for recycling)
POLYCHLORINATED BIPHENYLS (PCB)			
Aroclor 1016	<0.2		
Aroclor 1221	<0.2		
Aroclor 1232	<0.2		
Aroclor 1242	<0.2		
Aroclor 1248	<0.2		
Aroclor 1254	<0.2		
Aroclor 1260	<0.2		
Aroclor 1262	<0.2		
Aroclor 1268	<0.2		
Total Positive PCB's	<0.2	N/A	SCC1 - General Solid Waste (suitable for recycling)
NITRATED COMPOUNDS - EXPLOSIVES			
"2,4-Dinitrotoluene"			Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
OTHER VOLATILE ORGANIC COMPOUNDS (VOC)			
Carbon tetrachloride	-		Not determined
Chlorobenzene	-		Not determined
Chloroform	-		Not determined
"1,2-Dichlorobenzene"	-		Not determined
"1,4-Dichlorobenzene"	-		Not determined
"1,2-Dichloroethane"	-		Not determined
"1,1-Dichloroethylene"	-		Not determined
Dichloromethane	-		Not determined
Styrene (vinyl benzene)	-		Not determined
"1,1,1,2-Tetrachloroethane"	-		Not determined
"1,1,2,2-Tetrachloroethane"	-		Not determined
Tetrachloroethylene	-		Not determined
"1,1,1-Trichloroethane"	-		Not determined
"1,1,2-Trichloroethane"	-		Not determined
Trichloroethylene	-		Not determined
Vinyl chloride	-		Not determined
OTHER SEMI-VOLATILE ORGANIC COMPOUNDS (SVOC)			
Chlorpyrifos			Not determined
Nitrobenzene			Not determined
Phenol (non-halogenated)			Not determined
"2,4,5-Trichlorophenol"			Not determined
"2,4,6-Trichlorophenol"			Not determined
OTHER CONTAMINANTS			
Methyl ethyl ketone			Not determined
Tebuconazole			Not determined
Plasticiser compounds			Not determined
Cresol (total)			Not determined
ASBESTOS_DETECTION			
Asbestos Detection			

DETAILED SUMMARY

Waste Classification Guidelines Part 1: Classifying Waste (EPA, Nov. 2014)

Abbreviations: ND - Not Determined (Analyte not tested)
SCC - Specific Contaminant Concentration
TCLP - Toxicity Characteristics Leaching Procedure

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Consultant:

Andrew Jacovides

Authorised Signatory:

All analyses performed by a NATA accredited sub-contracting laboratory.

Solid Waste Assessment & Classification

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Web: www.sesl.com.au

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Batch N°: 49927A **Sample N°: 4** **Date Received: 5/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Job N°:
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and Contamination**
SESL Quote N°:
Sample Name: **Culvert 3 Surface**
Sample Type: **Soil**
Test Type: **PAH_TCLP**

REPORT SUMMARY

Material Type: ◉ Soil ○ Other

The results of laboratory testing conducted on this material indicate the presence of a range of contaminants commonly encountered in the natural and urban areas. This assessment was conducted to provide a waste classification for off-site disposal, based on the *Waste Classification Guidelines Part 1: Classifying Waste* (NSW EPA November 2014). Comparison of the laboratory analysis results with the criteria, indicates the material is considered to be within the General Solid Waste (not suitable for recycling) classification and as a result of this process, it can be disposed of as per Schedule 1 Part 3 of the Protection of the Environment Operations Act 1997.

EC (dS/m): pH (in H_2O): -

CONTAMINANT		SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
METALS AND METALLOIDS				
Arsenic	(As)	<1	-	CT1 - General Solid Waste (suitable for recycling)
Beryllium	(Be)	-		Not determined
Cadmium	(Cd)	<0.1		CT1 - General Solid Waste (suitable for recycling)
Chromium VI	(CrVI)	-		Not determined
Total Chromium	(Cr)	44		
Copper	(Cu)	14.4	N/A	Suitable for recycling
Fluoride	(F)	-		Not determined
Lead	(Pb)	54.5		CT1 - General Solid Waste (suitable for recycling)
Mercury	(Hg)	<0.1		CT1 - General Solid Waste (suitable for recycling)
Molybdenum	(Mo)	-		Not determined
Nickel	(Ni)	15		CT1 - General Solid Waste (suitable for recycling)
Selenium	(Se)	-		Not determined
Silver	(Ag)	-		Not determined
Zinc	(Zn)	81.8	N/A	Suitable for recycling
BTEX (MONO AROMATIC HYDROCARBONS)				
Benzene		<0.2		CT1 - General Solid Waste (suitable for recycling)
Toluene		<0.2		CT1 - General Solid Waste (suitable for recycling)
Ethylbenzene		<0.2		CT1 - General Solid Waste (suitable for recycling)
meta & para-Xylene		<0.2		
ortho-Xylene		<0.2		
Xylenes (total)		<0.2		CT1 - General Solid Waste (suitable for recycling)
TOTAL PETROLEUM HYDROCARBONS (TPH)				
C6 - C9		<25	N/A	SCC1 - General Solid Waste (suitable for recycling)
C10 - C14		<50		
C15 - C28		<100		
C29 - C36		349		
C10-C36 Total TPH		349	N/A	SCC1 - General Solid Waste (suitable for recycling)
CYANIDES				
Cyanide (amenable)				Not determined
Cyanide (Total)				Not determined
PHENOXY ACID HERBICIDES				
2,4-D	(2,4-Dichlorophenoxy-acetic acid)			Not determined
Fluroxypyr				Not determined
Picloram				Not determined
Triclopyr				Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
SCHEDULED CHEMICALS - ORGANOCHLORINE PESTICIDES (OCP)			
Aldrin	<0.1		
"Benzene, hexachloro"	<0.1		
"Benzene, pentachloronitro"	-		
alpha - BHC	<0.1		
beta - BHC	<0.1		
gamma - BHC (Lindane)	<0.1		
delta - BHC	<0.1		
a - Chlordane	<0.1		
g - Chlordane	<0.1		
DDT, DDD & DDE	<0.1		
Dieldrin	<0.1		
Endrin	<0.1		
Endrin aldehyde	<0.1		
Endosulfan I	<0.1	-	CT1 - General Solid Waste (suitable for recycling)
Endosulfan II	<0.1	-	CT1 - General Solid Waste (suitable for recycling)
Heptachlor	<0.1		
Heptachlor epoxide	<0.1		
Hexachlorophene	-		
Isodrin	-		
Pentachlorobenzene	-		
Pentachlorophenol	-		
"1,2,4,5-tetrachlorobenzene"	-		
"2,3,4,6-tetrachlorophenol"	-		
"1,2,4-trichlorobenzene"	-		
"2,4,5-Trichlorophenoxy acetic acid, salts and esters"	-		
Total Positive Scheduled Chemicals	<0.1	N/A	SCC1 - General Solid Waste (suitable for recycling)
Total Moderately Harmful Pesticides		N/A	Not determined
POLYCYCLIC AROMATIC HYDROCARBONS (PAH)			
Acenaphthene	<0.1		
Acenaphthylene	0.16		
Anthracene	0.23		
Benzo(a)anthracene	0.7		
Benzo(a)pyrene	0.93	<0.0005	SCC1 / TCLP1 - General Solid Waste (not suitable for recycling)
Benzo(b,j,k)fluoranthene	1.43		
Benzo(ghi)perylene	0.83		
Chrysene	0.58		
"Dibenzo(a,h)anthracene"	0.1		
Fluoranthene	1.81		
Fluorene	<0.1		
"Indeno(1,2,3-cd)pyrene"	0.64		
Naphthalene	<0.1		
Phenanthrene	0.64		
Pyrene	1.61		
Total Positive PAH's	9.66	N/A	SCC1 - General Solid Waste (suitable for recycling)
POLYCHLORINATED BIPHENYLS (PCB)			
Aroclor 1016	<0.2		
Aroclor 1221	<0.2		
Aroclor 1232	<0.2		
Aroclor 1242	<0.2		
Aroclor 1248	<0.2		
Aroclor 1254	<0.2		
Aroclor 1260	<0.2		
Aroclor 1262	<0.2		
Aroclor 1268	<0.2		
Total Positive PCB's	<0.2	N/A	SCC1 - General Solid Waste (suitable for recycling)
NITRATED COMPOUNDS - EXPLOSIVES			
"2,4-Dinitrotoluene"			Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
OTHER VOLATILE ORGANIC COMPOUNDS (VOC)			
Carbon tetrachloride	-		Not determined
Chlorobenzene	-		Not determined
Chloroform	-		Not determined
"1,2-Dichlorobenzene"	-		Not determined
"1,4-Dichlorobenzene"	-		Not determined
"1,2-Dichloroethane"	-		Not determined
"1,1-Dichloroethylene"	-		Not determined
Dichloromethane	-		Not determined
Styrene (vinyl benzene)	-		Not determined
"1,1,1,2-Tetrachloroethane"	-		Not determined
"1,1,2,2-Tetrachloroethane"	-		Not determined
Tetrachloroethylene	-		Not determined
"1,1,1-Trichloroethane"	-		Not determined
"1,1,2-Trichloroethane"	-		Not determined
Trichloroethylene	-		Not determined
Vinyl chloride	-		Not determined
OTHER SEMI-VOLATILE ORGANIC COMPOUNDS (SVOC)			
Chlorpyrifos			Not determined
Nitrobenzene			Not determined
Phenol (non-halogenated)			Not determined
"2,4,5-Trichlorophenol"			Not determined
"2,4,6-Trichlorophenol"			Not determined
OTHER CONTAMINANTS			
Methyl ethyl ketone			Not determined
Tebuconazole			Not determined
Plasticiser compounds			Not determined
Cresol (total)			Not determined
ASBESTOS_DETECTION			
Asbestos Detection			

DETAILED SUMMARY

Waste Classification Guidelines Part 1: Classifying Waste (EPA, Nov. 2014)

Abbreviations: ND - Not Determined (Analyte not tested)
SCC - Specific Contaminant Concentration
TCLP - Toxicity Characteristics Leaching Procedure

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Consultant:

Andrew Jacovides

Authorised Signatory:

All analyses performed by a NATA accredited sub-contracting laboratory.

Solid Waste Assessment & Classification

SESL AUSTRALIA
Environment & Soil Sciences

Sample Drop Off: 16 Chilvers Road, Thornleigh NSW 2120
Mailing Address: PO Box 357, Pennant Hills NSW 1715
Tel: 1300 30 40 80
Fax: 1300 64 46 89
Em: info@sesl.com.au
Web: www.sesl.com.au

Tests are performed under a quality system certified as complying with ISO 9001: 2008. Results and conclusions assume that sampling is representative. This document shall not be reproduced except in full.

Batch N°: 49927A **Sample N°: 6** **Date Received: 5/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Job N°:
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and Contamination**
SESL Quote N°:
Sample Name: **Culvert 4 Surface**
Sample Type: **Soil**
Test Type: **PAH_TCLP**

REPORT SUMMARY

Material Type: ◉ Soil ○ Other

The results of laboratory testing conducted on this material indicate the presence of a range of contaminants commonly encountered in the natural and urban areas. This assessment was conducted to provide a waste classification for off-site disposal, based on the *Waste Classification Guidelines Part 1: Classifying Waste* (NSW EPA November 2014). Comparison of the laboratory analysis results with the criteria, indicates the material is considered to be within the General Solid Waste (not suitable for recycling) classification and as a result of this process, it can be disposed of as per Schedule 1 Part 3 of the Protection of the Environment Operations Act 1997.

EC (dS/m): pH (in H_2O): -

CONTAMINANT		SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
METALS AND METALLOIDS				
Arsenic	(As)	<1	-	CT1 - General Solid Waste (suitable for recycling)
Beryllium	(Be)	-		Not determined
Cadmium	(Cd)	<0.1		CT1 - General Solid Waste (suitable for recycling)
Chromium VI	(CrVI)	-		Not determined
Total Chromium	(Cr)	9.5		
Copper	(Cu)	17.7	N/A	Suitable for recycling
Fluoride	(F)	-		Not determined
Lead	(Pb)	27.8		CT1 - General Solid Waste (suitable for recycling)
Mercury	(Hg)	<0.1		CT1 - General Solid Waste (suitable for recycling)
Molybdenum	(Mo)	-		Not determined
Nickel	(Ni)	15.9		CT1 - General Solid Waste (suitable for recycling)
Selenium	(Se)	-		Not determined
Silver	(Ag)	-		Not determined
Zinc	(Zn)	51.5	N/A	Suitable for recycling
BTEX (MONO AROMATIC HYDROCARBONS)				
Benzene		<0.2		CT1 - General Solid Waste (suitable for recycling)
Toluene		<0.2		CT1 - General Solid Waste (suitable for recycling)
Ethylbenzene		<0.2		CT1 - General Solid Waste (suitable for recycling)
meta & para-Xylene		<0.2		
ortho-Xylene		<0.2		
Xylenes (total)		<0.2		CT1 - General Solid Waste (suitable for recycling)
TOTAL PETROLEUM HYDROCARBONS (TPH)				
C6 - C9		<25	N/A	SCC1 - General Solid Waste (suitable for recycling)
C10 - C14		<50		
C15 - C28		<100		
C29 - C36		156		
C10-C36 Total TPH		156	N/A	SCC1 - General Solid Waste (suitable for recycling)
CYANIDES				
Cyanide (amenable)				Not determined
Cyanide (Total)				Not determined
PHENOXY ACID HERBICIDES				
2,4-D	(2,4-Dichlorophenoxy-acetic acid)			Not determined
Fluroxypyr				Not determined
Picloram				Not determined
Triclopyr				Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
SCHEDULED CHEMICALS - ORGANOCHLORINE PESTICIDES (OCP)			
Aldrin	<0.1		
"Benzene, hexachloro"	<0.1		
"Benzene, pentachloronitro"	-		
alpha - BHC	<0.1		
beta - BHC	<0.1		
gamma - BHC (Lindane)	<0.1		
delta - BHC	<0.1		
a - Chlordane	<0.1		
g - Chlordane	<0.1		
DDT, DDD & DDE	<0.1		
Dieldrin	<0.1		
Endrin	<0.1		
Endrin aldehyde	<0.1		
Endosulfan I	<0.1	-	CT1 - General Solid Waste (suitable for recycling)
Endosulfan II	<0.1	-	CT1 - General Solid Waste (suitable for recycling)
Heptachlor	<0.1		
Heptachlor epoxide	<0.1		
Hexachlorophene	-		
Isodrin	-		
Pentachlorobenzene	-		
Pentachlorophenol	-		
"1,2,4,5-tetrachlorobenzene"	-		
"2,3,4,6-tetrachlorophenol"	-		
"1,2,4-trichlorobenzene"	-		
"2,4,5-Trichlorophenoxy acetic acid, salts and esters"	-		
Total Positive Scheduled Chemicals	<0.1	N/A	SCC1 - General Solid Waste (suitable for recycling)
Total Moderately Harmful Pesticides		N/A	Not determined
POLYCYCLIC AROMATIC HYDROCARBONS (PAH)			
Acenaphthene	<0.1		
Acenaphthylene	0.11		
Anthracene	0.4		
Benzo(a)anthracene	0.77		
Benzo(a)pyrene	0.92	<0.0005	SCC1 / TCLP1 - General Solid Waste (not suitable for recycling)
Benzo(b,j,k)fluoranthene	1.33		
Benzo(ghi)perylene	0.94		
Chrysene	0.6		
"Dibenzo(a,h)anthracene"	<0.1		
Fluoranthene	1.93		
Fluorene	<0.1		
"Indeno(1,2,3-cd)pyrene"	0.64		
Naphthalene	<0.1		
Phenanthrene	0.96		
Pyrene	1.53		
Total Positive PAH's	10.1	N/A	SCC1 - General Solid Waste (suitable for recycling)
POLYCHLORINATED BIPHENYLS (PCB)			
Aroclor 1016	<0.2		
Aroclor 1221	<0.2		
Aroclor 1232	<0.2		
Aroclor 1242	<0.2		
Aroclor 1248	<0.2		
Aroclor 1254	<0.2		
Aroclor 1260	<0.2		
Aroclor 1262	<0.2		
Aroclor 1268	<0.2		
Total Positive PCB's	<0.2	N/A	SCC1 - General Solid Waste (suitable for recycling)
NITRATED COMPOUNDS - EXPLOSIVES			
"2,4-Dinitrotoluene"			Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
OTHER VOLATILE ORGANIC COMPOUNDS (VOC)			
Carbon tetrachloride	-		Not determined
Chlorobenzene	-		Not determined
Chloroform	-		Not determined
"1,2-Dichlorobenzene"	-		Not determined
"1,4-Dichlorobenzene"	-		Not determined
"1,2-Dichloroethane"	-		Not determined
"1,1-Dichloroethylene"	-		Not determined
Dichloromethane	-		Not determined
Styrene (vinyl benzene)	-		Not determined
"1,1,1,2-Tetrachloroethane"	-		Not determined
"1,1,2,2-Tetrachloroethane"	-		Not determined
Tetrachloroethylene	-		Not determined
"1,1,1-Trichloroethane"	-		Not determined
"1,1,2-Trichloroethane"	-		Not determined
Trichloroethylene	-		Not determined
Vinyl chloride	-		Not determined
OTHER SEMI-VOLATILE ORGANIC COMPOUNDS (SVOC)			
Chlorpyrifos			Not determined
Nitrobenzene			Not determined
Phenol (non-halogenated)			Not determined
"2,4,5-Trichlorophenol"			Not determined
"2,4,6-Trichlorophenol"			Not determined
OTHER CONTAMINANTS			
Methyl ethyl ketone			Not determined
Tebuconazole			Not determined
Plasticiser compounds			Not determined
Cresol (total)			Not determined
ASBESTOS_DETECTION			
Asbestos Detection			

DETAILED SUMMARY

Waste Classification Guidelines Part 1: Classifying Waste (EPA, Nov. 2014)

Abbreviations: ND - Not Determined (Analyte not tested)
SCC - Specific Contaminant Concentration
TCLP - Toxicity Characteristics Leaching Procedure

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Consultant:

Andrew Jacovides

Authorised Signatory:

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Environment & Soil Sciences

Solid Waste Assessment & Classification

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Batch N°: 49927A **Sample N°: 8** **Date Received: 5/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Job N°:
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and Contamination**
SESL Quote N°:
Sample Name: **Culvert 5 Surface**
Sample Type: **Soil**
Test Type: **PAH_TCLP, Ni_TCLP**

REPORT SUMMARY

Material Type: ◉ Soil ○ Other

The results of laboratory testing conducted on this material indicate the presence of a range of contaminants commonly encountered in the natural and urban areas. This assessment was conducted to provide a waste classification for off-site disposal, based on the *Waste Classification Guidelines Part 1: Classifying Waste* (NSW EPA November 2014). Comparison of the laboratory analysis results with the criteria, indicates the material is considered to be within the General Solid Waste (not suitable for recycling) classification and as a result of this process, it can be disposed of as per Schedule 1 Part 3 of the Protection of the Environment Operations Act 1997.

EC (dS/m): pH (in H_2O): -

CONTAMINANT		SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
METALS AND METALLOIDS				
Arsenic	(As)	1.12	-	CT1 - General Solid Waste (suitable for recycling)
Beryllium	(Be)	-		Not determined
Cadmium	(Cd)	<0.1		CT1 - General Solid Waste (suitable for recycling)
Chromium VI	(CrVI)	-		Not determined
Total Chromium	(Cr)	43		
Copper	(Cu)	57.3	N/A	Suitable for recycling
Fluoride	(F)	-		Not determined
Lead	(Pb)	43		CT1 - General Solid Waste (suitable for recycling)
Mercury	(Hg)	<0.1		CT1 - General Solid Waste (suitable for recycling)
Molybdenum	(Mo)	-		Not determined
Nickel	(Ni)	56.5	<0.1	SCC1 / TCLP1 - General Solid Waste (not suitable for recycling)
Selenium	(Se)	-		Not determined
Silver	(Ag)	-		Not determined
Zinc	(Zn)	78	N/A	Suitable for recycling
BTEX (MONO AROMATIC HYDROCARBONS)				
Benzene		<0.2		CT1 - General Solid Waste (suitable for recycling)
Toluene		<0.2		CT1 - General Solid Waste (suitable for recycling)
Ethylbenzene		<0.2		CT1 - General Solid Waste (suitable for recycling)
meta & para-Xylene		<0.2		
ortho-Xylene		<0.2		
Xylenes (total)		<0.2		CT1 - General Solid Waste (suitable for recycling)
TOTAL PETROLEUM HYDROCARBONS (TPH)				
C6 - C9		<25	N/A	SCC1 - General Solid Waste (suitable for recycling)
C10 - C14		<50		
C15 - C28		154		
C29 - C36		230		
C10-C36 Total TPH		384	N/A	SCC1 - General Solid Waste (suitable for recycling)
CYANIDES				
Cyanide (amenable)				Not determined
Cyanide (Total)				Not determined
PHENOXY ACID HERBICIDES				
2,4-D	(2,4-Dichlorophenoxy-acetic acid)			Not determined
Fluroxypyr				Not determined
Picloram				Not determined
Triclopyr				Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
SCHEDULED CHEMICALS - ORGANOCHLORINE PESTICIDES (OCP)			
Aldrin	<0.1		
"Benzene, hexachloro"	<0.1		
"Benzene, pentachloronitro"	-		
alpha - BHC	<0.1		
beta - BHC	<0.1		
gamma - BHC (Lindane)	<0.1		
delta - BHC	<0.1		
a - Chlordane	<0.1		
g - Chlordane	<0.1		
DDT, DDD & DDE	<0.1		
Dieldrin	<0.1		
Endrin	<0.1		
Endrin aldehyde	<0.1		
Endosulfan I	<0.1	-	CT1 - General Solid Waste (suitable for recycling)
Endosulfan II	<0.1	-	CT1 - General Solid Waste (suitable for recycling)
Heptachlor	<0.1		
Heptachlor epoxide	<0.1		
Hexachlorophene	-		
Isodrin	-		
Pentachlorobenzene	-		
Pentachlorophenol	-		
"1,2,4,5-tetrachlorobenzene"	-		
"2,3,4,6-tetrachlorophenol"	-		
"1,2,4-trichlorobenzene"	-		
"2,4,5-Trichlorophenoxy acetic acid, salts and esters"	-		
Total Positive Scheduled Chemicals	<0.1	N/A	SCC1 - General Solid Waste (suitable for recycling)
Total Moderately Harmful Pesticides		N/A	Not determined
POLYCYCLIC AROMATIC HYDROCARBONS (PAH)			
Acenaphthene	<0.1		
Acenaphthylene	0.36		
Anthracene	1		
Benzo(a)anthracene	7.08		
Benzo(a)pyrene	8.98	<0.0005	SCC1 / TCLP1 - General Solid Waste (not suitable for recycling)
Benzo(b,j,k)fluoranthene	16.1		
Benzo(ghi)perylene	10.1		
Chrysene	5.71		
"Dibenzo(a,h)anthracene"	2.08		
Fluoranthene	14.8		
Fluorene	0.1		
"Indeno(1,2,3-cd)pyrene"	7.91		
Naphthalene	<0.1		
Phenanthrene	3.19		
Pyrene	13.1		
Total Positive PAH's	90.5	N/A	SCC1 - General Solid Waste (not suitable for recycling)
POLYCHLORINATED BIPHENYLS (PCB)			
Aroclor 1016	<0.2		
Aroclor 1221	<0.2		
Aroclor 1232	<0.2		
Aroclor 1242	<0.2		
Aroclor 1248	<0.2		
Aroclor 1254	<0.2		
Aroclor 1260	<0.2		
Aroclor 1262	<0.2		
Aroclor 1268	<0.2		
Total Positive PCB's	<0.2	N/A	SCC1 - General Solid Waste (suitable for recycling)
NITRATED COMPOUNDS - EXPLOSIVES			
"2,4-Dinitrotoluene"			Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
OTHER VOLATILE ORGANIC COMPOUNDS (VOC)			
Carbon tetrachloride	-		Not determined
Chlorobenzene	-		Not determined
Chloroform	-		Not determined
"1,2-Dichlorobenzene"	-		Not determined
"1,4-Dichlorobenzene"	-		Not determined
"1,2-Dichloroethane"	-		Not determined
"1,1-Dichloroethylene"	-		Not determined
Dichloromethane	-		Not determined
Styrene (vinyl benzene)	-		Not determined
"1,1,1,2-Tetrachloroethane"	-		Not determined
"1,1,2,2-Tetrachloroethane"	-		Not determined
Tetrachloroethylene	-		Not determined
"1,1,1-Trichloroethane"	-		Not determined
"1,1,2-Trichloroethane"	-		Not determined
Trichloroethylene	-		Not determined
Vinyl chloride	-		Not determined
OTHER SEMI-VOLATILE ORGANIC COMPOUNDS (SVOC)			
Chlorpyrifos			Not determined
Nitrobenzene			Not determined
Phenol (non-halogenated)			Not determined
"2,4,5-Trichlorophenol"			Not determined
"2,4,6-Trichlorophenol"			Not determined
OTHER CONTAMINANTS			
Methyl ethyl ketone			Not determined
Tebuconazole			Not determined
Plasticiser compounds			Not determined
Cresol (total)			Not determined
ASBESTOS_DETECTION			
Asbestos Detection			

DETAILED SUMMARY

Waste Classification Guidelines Part 1: Classifying Waste (EPA, Nov. 2014)

Abbreviations: ND - Not Determined (Analyte not tested)
SCC - Specific Contaminant Concentration
TCLP - Toxicity Characteristics Leaching Procedure

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Consultant:

Andrew Jacovides

Authorised Signatory:

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Batch N°: 49927A **Sample N°: 10** **Date Received: 5/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Job N°:
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and Contamination**
SESL Quote N°:
Sample Name: **Culvert 6 Surface**
Sample Type: **Soil**
Test Type: **PAH_TCLP, Pb_TCLP**

REPORT SUMMARY

Material Type: ◉ Soil ○ Other

The results of laboratory testing conducted on this material indicate the presence of a range of contaminants commonly encountered in the natural and urban areas. This assessment was conducted to provide a waste classification for off-site disposal, based on the *Waste Classification Guidelines Part 1: Classifying Waste* (NSW EPA November 2014). Comparison of the laboratory analysis results with the criteria, indicates the material is considered to be within the General Solid Waste (not suitable for recycling) classification and as a result of this process, it can be disposed of as per Schedule 1 Part 3 of the Protection of the Environment Operations Act 1997.

EC (dS/m): pH (in H_2O): -

CONTAMINANT		SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
METALS AND METALLOIDS				
Arsenic	(As)	<1	-	CT1 - General Solid Waste (suitable for recycling)
Beryllium	(Be)	-		Not determined
Cadmium	(Cd)	<0.1		CT1 - General Solid Waste (suitable for recycling)
Chromium VI	(CrVI)	-		Not determined
Total Chromium	(Cr)	42		
Copper	(Cu)	31.2	N/A	Suitable for recycling
Fluoride	(F)	-		Not determined
Lead	(Pb)	173	0.2	SCC1 / TCLP1 - General Solid Waste (not suitable for recycling)
Mercury	(Hg)	<0.1		CT1 - General Solid Waste (suitable for recycling)
Molybdenum	(Mo)	-		Not determined
Nickel	(Ni)	16.8		CT1 - General Solid Waste (suitable for recycling)
Selenium	(Se)	-		Not determined
Silver	(Ag)	-		Not determined
Zinc	(Zn)	97.2	N/A	Suitable for recycling
BTEX (MONO AROMATIC HYDROCARBONS)				
Benzene		<0.2		CT1 - General Solid Waste (suitable for recycling)
Toluene		<0.2		CT1 - General Solid Waste (suitable for recycling)
Ethylbenzene		<0.2		CT1 - General Solid Waste (suitable for recycling)
meta & para-Xylene		<0.2		
ortho-Xylene		<0.2		
Xylenes (total)		<0.2		CT1 - General Solid Waste (suitable for recycling)
TOTAL PETROLEUM HYDROCARBONS (TPH)				
C6 - C9		<25	N/A	SCC1 - General Solid Waste (suitable for recycling)
C10 - C14		<50		
C15 - C28		<100		
C29 - C36		437		
C10-C36 Total TPH		437	N/A	SCC1 - General Solid Waste (suitable for recycling)
CYANIDES				
Cyanide (amenable)				Not determined
Cyanide (Total)				Not determined
PHENOXY ACID HERBICIDES				
2,4-D	(2,4-Dichlorophenoxy-acetic acid)			Not determined
Fluroxypyr				Not determined
Picloram				Not determined
Triclopyr				Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
SCHEDULED CHEMICALS - ORGANOCHLORINE PESTICIDES (OCP)			
Aldrin	<0.1		
"Benzene, hexachloro"	<0.1		
"Benzene, pentachloronitro"	-		
alpha - BHC	<0.1		
beta - BHC	<0.1		
gamma - BHC (Lindane)	<0.1		
delta - BHC	<0.1		
a - Chlordane	<0.1		
g - Chlordane	<0.1		
DDT, DDD & DDE	<0.1		
Dieldrin	<0.1		
Endrin	<0.1		
Endrin aldehyde	<0.1		
Endosulfan I	<0.1	-	CT1 - General Solid Waste (suitable for recycling)
Endosulfan II	<0.1	-	CT1 - General Solid Waste (suitable for recycling)
Heptachlor	<0.1		
Heptachlor epoxide	<0.1		
Hexachlorophene	-		
Isodrin	-		
Pentachlorobenzene	-		
Pentachlorophenol	-		
"1,2,4,5-tetrachlorobenzene"	-		
"2,3,4,6-tetrachlorophenol"	-		
"1,2,4-trichlorobenzene"	-		
"2,4,5-Trichlorophenoxy acetic acid, salts and esters"	-		
Total Positive Scheduled Chemicals	<0.1	N/A	SCC1 - General Solid Waste (suitable for recycling)
Total Moderately Harmful Pesticides		N/A	Not determined
POLYCYCLIC AROMATIC HYDROCARBONS (PAH)			
Acenaphthene	0.12		
Acenaphthylene	0.48		
Anthracene	0.61		
Benzo(a)anthracene	1.15		
Benzo(a)pyrene	2.09	<0.0005	SCC1 / TCLP1 - General Solid Waste (not suitable for recycling)
Benzo(b,j,k)fluoranthene	3.41		
Benzo(ghi)perylene	2.34		
Chrysene	1		
"Dibenzo(a,h)anthracene"	0.43		
Fluoranthene	2.66		
Fluorene	0.13		
"Indeno(1,2,3-cd)pyrene"	1.71		
Naphthalene	<0.1		
Phenanthrene	1.18		
Pyrene	2.54		
Total Positive PAH's	19.8	N/A	SCC1 - General Solid Waste (suitable for recycling)
POLYCHLORINATED BIPHENYLS (PCB)			
Aroclor 1016	<0.2		
Aroclor 1221	<0.2		
Aroclor 1232	<0.2		
Aroclor 1242	<0.2		
Aroclor 1248	<0.2		
Aroclor 1254	<0.2		
Aroclor 1260	<0.2		
Aroclor 1262	<0.2		
Aroclor 1268	<0.2		
Total Positive PCB's	<0.2	N/A	SCC1 - General Solid Waste (suitable for recycling)
NITRATED COMPOUNDS - EXPLOSIVES			
"2,4-Dinitrotoluene"			Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
OTHER VOLATILE ORGANIC COMPOUNDS (VOC)			
Carbon tetrachloride	-		Not determined
Chlorobenzene	-		Not determined
Chloroform	-		Not determined
"1,2-Dichlorobenzene"	-		Not determined
"1,4-Dichlorobenzene"	-		Not determined
"1,2-Dichloroethane"	-		Not determined
"1,1-Dichloroethylene"	-		Not determined
Dichloromethane	-		Not determined
Styrene (vinyl benzene)	-		Not determined
"1,1,1,2-Tetrachloroethane"	-		Not determined
"1,1,2,2-Tetrachloroethane"	-		Not determined
Tetrachloroethylene	-		Not determined
"1,1,1-Trichloroethane"	-		Not determined
"1,1,2-Trichloroethane"	-		Not determined
Trichloroethylene	-		Not determined
Vinyl chloride	-		Not determined
OTHER SEMI-VOLATILE ORGANIC COMPOUNDS (SVOC)			
Chlorpyrifos			Not determined
Nitrobenzene			Not determined
Phenol (non-halogenated)			Not determined
"2,4,5-Trichlorophenol"			Not determined
"2,4,6-Trichlorophenol"			Not determined
OTHER CONTAMINANTS			
Methyl ethyl ketone			Not determined
Tebuconazole			Not determined
Plasticiser compounds			Not determined
Cresol (total)			Not determined
ASBESTOS_DETECTION			
Asbestos Detection			

DETAILED SUMMARY

Waste Classification Guidelines Part 1: Classifying Waste (EPA, Nov. 2014)

Abbreviations: ND - Not Determined (Analyte not tested)
SCC - Specific Contaminant Concentration
TCLP - Toxicity Characteristics Leaching Procedure

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Consultant:

Andrew Jacovides

Authorised Signatory:

All analyses performed by a NATA accredited sub-contracting laboratory.

SESL AUSTRALIA
Environment & Soil Sciences

Solid Waste Assessment & Classification

Sample Drop Off: 16 Chilvers Road, Thornleigh NSW 2120
Mailing Address: PO Box 357, Pennant Hills NSW 1715
Tel: 1300 30 40 80
Fax: 1300 64 46 89
Em: info@sesl.com.au
Web: www.sesl.com.au

Tests are performed under a quality system certified as complying with ISO 9001: 2008. Results and conclusions assume that sampling is representative. This document shall not be reproduced except in full.

Batch N°: 49927A **Sample N°: 12** **Date Received: 5/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Job N°:
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and Contamination**
SESL Quote N°:
Sample Name: **Culvert 7 Creek Sediment**
Sample Type: **Soil**
Test Type:

REPORT SUMMARY

Material Type: ◉ Soil ○ Other

The results of laboratory testing conducted on this material indicate the presence of a range of contaminants commonly encountered in the natural and urban areas. This assessment was conducted to provide a waste classification for off-site disposal, based on the *Waste Classification Guidelines Part 1: Classifying Waste* (NSW EPA November 2014). Comparison of the laboratory analysis results with the criteria, indicates the material is considered to be within the General Solid Waste (not suitable for recycling) classification and as a result of this process, it can be disposed of as per Schedule 1 Part 3 of the Protection of the Environment Operations Act 1997.

EC (dS/m): pH (in H_2O): -

CONTAMINANT		SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
METALS AND METALLOIDS				
Arsenic	(As)	1.61	-	CT1 - General Solid Waste (suitable for recycling)
Beryllium	(Be)	-		Not determined
Cadmium	(Cd)	<0.1		CT1 - General Solid Waste (suitable for recycling)
Chromium VI	(CrVI)	-		Not determined
Total Chromium	(Cr)	5.5		
Copper	(Cu)	4.7	N/A	Suitable for recycling
Fluoride	(F)	-		Not determined
Lead	(Pb)	9.08		CT1 - General Solid Waste (suitable for recycling)
Mercury	(Hg)	<0.1		CT1 - General Solid Waste (suitable for recycling)
Molybdenum	(Mo)	-		Not determined
Nickel	(Ni)	5.81		CT1 - General Solid Waste (suitable for recycling)
Selenium	(Se)	-		Not determined
Silver	(Ag)	-		Not determined
Zinc	(Zn)	49.3	N/A	Suitable for recycling
BTEX (MONO AROMATIC HYDROCARBONS)				
Benzene		<0.2		CT1 - General Solid Waste (suitable for recycling)
Toluene		<0.2		CT1 - General Solid Waste (suitable for recycling)
Ethylbenzene		<0.2		CT1 - General Solid Waste (suitable for recycling)
meta & para-Xylene		<0.2		
ortho-Xylene		<0.2		
Xylenes (total)		<0.2		CT1 - General Solid Waste (suitable for recycling)
TOTAL PETROLEUM HYDROCARBONS (TPH)				
C6 - C9		<25	N/A	SCC1 - General Solid Waste (suitable for recycling)
C10 - C14		<50		
C15 - C28		<100		
C29 - C36		<100		
C10-C36 Total TPH		<100	N/A	SCC1 - General Solid Waste (suitable for recycling)
CYANIDES				
Cyanide (amenable)				Not determined
Cyanide (Total)				Not determined
PHENOXY ACID HERBICIDES				
2,4-D	(2,4-Dichlorophenoxy-acetic acid)			Not determined
Fluroxypyr				Not determined
Picloram				Not determined
Triclopyr				Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
SCHEDULED CHEMICALS - ORGANOCHLORINE PESTICIDES (OCP)			
Aldrin	<0.1		
"Benzene, hexachloro"	<0.1		
"Benzene, pentachloronitro"	-		
alpha - BHC	<0.1		
beta - BHC	<0.1		
gamma - BHC (Lindane)	<0.1		
delta - BHC	<0.1		
a - Chlordane	<0.1		
g - Chlordane	<0.1		
DDT, DDD & DDE	<0.1		
Dieldrin	<0.1		
Endrin	<0.1		
Endrin aldehyde	<0.1		
Endosulfan I	<0.1	-	CT1 - General Solid Waste (suitable for recycling)
Endosulfan II	<0.1	-	CT1 - General Solid Waste (suitable for recycling)
Heptachlor	<0.1		
Heptachlor epoxide	<0.1		
Hexachlorophene	-		
Isodrin	-		
Pentachlorobenzene	-		
Pentachlorophenol	-		
"1,2,4,5-tetrachlorobenzene"	-		
"2,3,4,6-tetrachlorophenol"	-		
"1,2,4-trichlorobenzene"	-		
"2,4,5-Trichlorophenoxy acetic acid, salts and esters"	-		
Total Positive Scheduled Chemicals	<0.1	N/A	SCC1 - General Solid Waste (suitable for recycling)
Total Moderately Harmful Pesticides		N/A	Not determined
POLYCYCLIC AROMATIC HYDROCARBONS (PAH)			
Acenaphthene	<0.1		
Acenaphthylene	0.34		
Anthracene	<0.1		
Benzo(a)anthracene	0.3		
Benzo(a)pyrene	0.6		CT1 - General Solid Waste (suitable for recycling)
Benzo(b,j,k)fluoranthene	1.28		
Benzo(ghi)perylene	0.55		
Chrysene	0.29		
"Dibenzo(a,h)anthracene"	0.12		
Fluoranthene	0.42		
Fluorene	<0.1		
"Indeno(1,2,3-cd)pyrene"	0.44		
Naphthalene	<0.1		
Phenanthrene	0.22		
Pyrene	0.55		
Total Positive PAH's	5.11	N/A	SCC1 - General Solid Waste (suitable for recycling)
POLYCHLORINATED BIPHENYLS (PCB)			
Aroclor 1016	<0.2		
Aroclor 1221	<0.2		
Aroclor 1232	<0.2		
Aroclor 1242	<0.2		
Aroclor 1248	<0.2		
Aroclor 1254	<0.2		
Aroclor 1260	<0.2		
Aroclor 1262	<0.2		
Aroclor 1268	<0.2		
Total Positive PCB's	<0.2	N/A	SCC1 - General Solid Waste (suitable for recycling)
NITRATED COMPOUNDS - EXPLOSIVES			
"2,4-Dinitrotoluene"			Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
OTHER VOLATILE ORGANIC COMPOUNDS (VOC)			
Carbon tetrachloride	-		Not determined
Chlorobenzene	-		Not determined
Chloroform	-		Not determined
"1,2-Dichlorobenzene"	-		Not determined
"1,4-Dichlorobenzene"	-		Not determined
"1,2-Dichloroethane"	-		Not determined
"1,1-Dichloroethylene"	-		Not determined
Dichloromethane	-		Not determined
Styrene (vinyl benzene)	-		Not determined
"1,1,1,2-Tetrachloroethane"	-		Not determined
"1,1,2,2-Tetrachloroethane"	-		Not determined
Tetrachloroethylene	-		Not determined
"1,1,1-Trichloroethane"	-		Not determined
"1,1,2-Trichloroethane"	-		Not determined
Trichloroethylene	-		Not determined
Vinyl chloride	-		Not determined
OTHER SEMI-VOLATILE ORGANIC COMPOUNDS (SVOC)			
Chlorpyrifos			Not determined
Nitrobenzene			Not determined
Phenol (non-halogenated)			Not determined
"2,4,5-Trichlorophenol"			Not determined
"2,4,6-Trichlorophenol"			Not determined
OTHER CONTAMINANTS			
Methyl ethyl ketone			Not determined
Tebuconazole			Not determined
Plasticiser compounds			Not determined
Cresol (total)			Not determined
ASBESTOS_DETECTION			
Asbestos Detection			

DETAILED SUMMARY

Waste Classification Guidelines Part 1: Classifying Waste (EPA, Nov. 2014)

Abbreviations: ND - Not Determined (Analyte not tested)
SCC - Specific Contaminant Concentration
TCLP - Toxicity Characteristics Leaching Procedure

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Consultant:

Andrew Jacovides

Authorised Signatory:

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Solid Waste Assessment & Classification

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Tests are performed under a quality system certified as complying with ISO 9001: 2008. Results and conclusions assume that sampling is representative. This document shall not be reproduced except in full.

Batch N°: 49927A **Sample N°: 14** **Date Received: 5/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Job N°:
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and Contamination**
SESL Quote N°:
Sample Name: **Culvert 8 Midbank**
Sample Type: **Soil**
Test Type:

REPORT SUMMARY

Material Type: ◉ Soil ○ Other

The results of laboratory testing conducted on this material indicate the presence of a range of contaminants commonly encountered in the natural and urban areas. This assessment was conducted to provide a waste classification for off-site disposal, based on the *Waste Classification Guidelines Part 1: Classifying Waste* (NSW EPA November 2014). Comparison of the laboratory analysis results with the criteria, indicates the material is considered to be within the General Solid Waste (not suitable for recycling) classification and as a result of this process, it can be disposed of as per Schedule 1 Part 3 of the Protection of the Environment Operations Act 1997.

EC (dS/m): pH (in H_2O): -

CONTAMINANT		SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
METALS AND METALLOIDS				
Arsenic	(As)	1.45	-	CT1 - General Solid Waste (suitable for recycling)
Beryllium	(Be)	-		Not determined
Cadmium	(Cd)	<0.1		CT1 - General Solid Waste (suitable for recycling)
Chromium VI	(CrVI)	-		Not determined
Total Chromium	(Cr)	11		
Copper	(Cu)	21	N/A	Suitable for recycling
Fluoride	(F)	-		Not determined
Lead	(Pb)	65.2		CT1 - General Solid Waste (suitable for recycling)
Mercury	(Hg)	<0.1		CT1 - General Solid Waste (suitable for recycling)
Molybdenum	(Mo)	-		Not determined
Nickel	(Ni)	8.43		CT1 - General Solid Waste (suitable for recycling)
Selenium	(Se)	-		Not determined
Silver	(Ag)	-		Not determined
Zinc	(Zn)	153	N/A	Suitable for recycling
BTEX (MONO AROMATIC HYDROCARBONS)				
Benzene		<0.2		CT1 - General Solid Waste (suitable for recycling)
Toluene		<0.2		CT1 - General Solid Waste (suitable for recycling)
Ethylbenzene		<0.2		CT1 - General Solid Waste (suitable for recycling)
meta & para-Xylene		<0.2		
ortho-Xylene		<0.2		
Xylenes (total)		<0.2		CT1 - General Solid Waste (suitable for recycling)
TOTAL PETROLEUM HYDROCARBONS (TPH)				
C6 - C9		<25	N/A	SCC1 - General Solid Waste (suitable for recycling)
C10 - C14		<50		
C15 - C28		<100		
C29 - C36		<100		
C10-C36 Total TPH		<100	N/A	SCC1 - General Solid Waste (suitable for recycling)
CYANIDES				
Cyanide (amenable)				Not determined
Cyanide (Total)				Not determined
PHENOXY ACID HERBICIDES				
2,4-D	(2,4-Dichlorophenoxy-acetic acid)			Not determined
Fluroxypyr				Not determined
Picloram				Not determined
Triclopyr				Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
SCHEDULED CHEMICALS - ORGANOCHLORINE PESTICIDES (OCP)			
Aldrin	<0.1		
"Benzene, hexachloro"	<0.1		
"Benzene, pentachloronitro"	-		
alpha - BHC	<0.1		
beta - BHC	<0.1		
gamma - BHC (Lindane)	<0.1		
delta - BHC	<0.1		
a - Chlordane	<0.1		
g - Chlordane	<0.1		
DDT, DDD & DDE	<0.1		
Dieldrin	<0.1		
Endrin	<0.1		
Endrin aldehyde	<0.1		
Endosulfan I	<0.1	-	CT1 - General Solid Waste (suitable for recycling)
Endosulfan II	<0.1	-	CT1 - General Solid Waste (suitable for recycling)
Heptachlor	<0.1		
Heptachlor epoxide	<0.1		
Hexachlorophene	-		
Isodrin	-		
Pentachlorobenzene	-		
Pentachlorophenol	-		
"1,2,4,5-tetrachlorobenzene"	-		
"2,3,4,6-tetrachlorophenol"	-		
"1,2,4-trichlorobenzene"	-		
"2,4,5-Trichlorophenoxy acetic acid, salts and esters"	-		
Total Positive Scheduled Chemicals	<0.1	N/A	SCC1 - General Solid Waste (suitable for recycling)
Total Moderately Harmful Pesticides		N/A	Not determined
POLYCYCLIC AROMATIC HYDROCARBONS (PAH)			
Acenaphthene	<0.1		
Acenaphthylene	<0.1		
Anthracene	0.13		
Benzo(a)anthracene	0.37		
Benzo(a)pyrene	0.44		CT1 - General Solid Waste (suitable for recycling)
Benzo(b,j,k)fluoranthene	0.77		
Benzo(ghi)perylene	0.5		
Chrysene	0.33		
"Dibenzo(a,h)anthracene"	<0.1		
Fluoranthene	1.05		
Fluorene	<0.1		
"Indeno(1,2,3-cd)pyrene"	0.41		
Naphthalene	<0.1		
Phenanthrene	0.29		
Pyrene	0.87		
Total Positive PAH's	5.16	N/A	SCC1 - General Solid Waste (suitable for recycling)
POLYCHLORINATED BIPHENYLS (PCB)			
Aroclor 1016	<0.2		
Aroclor 1221	<0.2		
Aroclor 1232	<0.2		
Aroclor 1242	<0.2		
Aroclor 1248	<0.2		
Aroclor 1254	<0.2		
Aroclor 1260	<0.2		
Aroclor 1262	<0.2		
Aroclor 1268	<0.2		
Total Positive PCB's	<0.2	N/A	SCC1 - General Solid Waste (suitable for recycling)
NITRATED COMPOUNDS - EXPLOSIVES			
"2,4-Dinitrotoluene"			Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
OTHER VOLATILE ORGANIC COMPOUNDS (VOC)			
Carbon tetrachloride	-		Not determined
Chlorobenzene	-		Not determined
Chloroform	-		Not determined
"1,2-Dichlorobenzene"	-		Not determined
"1,4-Dichlorobenzene"	-		Not determined
"1,2-Dichloroethane"	-		Not determined
"1,1-Dichloroethylene"	-		Not determined
Dichloromethane	-		Not determined
Styrene (vinyl benzene)	-		Not determined
"1,1,1,2-Tetrachloroethane"	-		Not determined
"1,1,2,2-Tetrachloroethane"	-		Not determined
Tetrachloroethylene	-		Not determined
"1,1,1-Trichloroethane"	-		Not determined
"1,1,2-Trichloroethane"	-		Not determined
Trichloroethylene	-		Not determined
Vinyl chloride	-		Not determined
OTHER SEMI-VOLATILE ORGANIC COMPOUNDS (SVOC)			
Chlorpyrifos			Not determined
Nitrobenzene			Not determined
Phenol (non-halogenated)			Not determined
"2,4,5-Trichlorophenol"			Not determined
"2,4,6-Trichlorophenol"			Not determined
OTHER CONTAMINANTS			
Methyl ethyl ketone			Not determined
Tebuconazole			Not determined
Plasticiser compounds			Not determined
Cresol (total)			Not determined
ASBESTOS_DETECTION			
Asbestos Detection			

DETAILED SUMMARY

Waste Classification Guidelines Part 1: Classifying Waste (EPA, Nov. 2014)

Abbreviations: ND - Not Determined (Analyte not tested)
SCC - Specific Contaminant Concentration
TCLP - Toxicity Characteristics Leaching Procedure

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Andrew Jacovides

Authorised Signatory:

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Em: info@sesl.com.au
Web: www.sesl.com.au

Tests are performed under a quality system certified as complying with ISO 9001: 2008. Results and conclusions assume that sampling is representative. This document shall not be reproduced except in full.

Batch N°: 49927A **Sample N°: 15** **Date Received: 5/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Job N°:
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and Contamination**
SESL Quote N°:
Sample Name: **Culvert 9 Surface**
Sample Type: **Soil**
Test Type:

REPORT SUMMARY

Material Type: ◉ Soil ○ Other

The results of laboratory testing conducted on this material indicate the presence of a range of contaminants commonly encountered in the natural and urban areas. This assessment was conducted to provide a waste classification for off-site disposal, based on the *Waste Classification Guidelines Part 1: Classifying Waste* (NSW EPA November 2014). Comparison of the laboratory analysis results with the criteria, indicates the material is considered to be within the General Solid Waste (not suitable for recycling) classification and as a result of this process, it can be disposed of as per Schedule 1 Part 3 of the Protection of the Environment Operations Act 1997.

EC (dS/m): pH (in H_2O): -

CONTAMINANT		SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
METALS AND METALLOIDS				
Arsenic	(As)	3.37	-	CT1 - General Solid Waste (suitable for recycling)
Beryllium	(Be)	-		Not determined
Cadmium	(Cd)	<0.1		CT1 - General Solid Waste (suitable for recycling)
Chromium VI	(CrVI)	-		Not determined
Total Chromium	(Cr)	33		
Copper	(Cu)	17.4	N/A	Suitable for recycling
Fluoride	(F)	-		Not determined
Lead	(Pb)	66.5		CT1 - General Solid Waste (suitable for recycling)
Mercury	(Hg)	<0.1		CT1 - General Solid Waste (suitable for recycling)
Molybdenum	(Mo)	-		Not determined
Nickel	(Ni)	20.8		CT1 - General Solid Waste (suitable for recycling)
Selenium	(Se)	-		Not determined
Silver	(Ag)	-		Not determined
Zinc	(Zn)	50.4	N/A	Suitable for recycling
BTEX (MONO AROMATIC HYDROCARBONS)				
Benzene		<0.2		CT1 - General Solid Waste (suitable for recycling)
Toluene		<0.2		CT1 - General Solid Waste (suitable for recycling)
Ethylbenzene		<0.2		CT1 - General Solid Waste (suitable for recycling)
meta & para-Xylene		<0.2		
ortho-Xylene		<0.2		
Xylenes (total)		<0.2		CT1 - General Solid Waste (suitable for recycling)
TOTAL PETROLEUM HYDROCARBONS (TPH)				
C6 - C9		<25	N/A	SCC1 - General Solid Waste (suitable for recycling)
C10 - C14		<50		
C15 - C28		609		
C29 - C36		2093		
C10-C36 Total TPH		2700	N/A	SCC1 - General Solid Waste (not suitable for recycling)
CYANIDES				
Cyanide (amenable)				Not determined
Cyanide (Total)				Not determined
PHENOXY ACID HERBICIDES				
2,4-D	(2,4-Dichlorophenoxy-acetic acid)			Not determined
Fluroxypyr				Not determined
Picloram				Not determined
Triclopyr				Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
SCHEDULED CHEMICALS - ORGANOCHLORINE PESTICIDES (OCP)			
Aldrin	<0.1		
"Benzene, hexachloro"	<0.1		
"Benzene, pentachloronitro"	-		
alpha - BHC	<0.1		
beta - BHC	<0.1		
gamma - BHC (Lindane)	<0.1		
delta - BHC	<0.1		
a - Chlordane	<0.1		
g - Chlordane	<0.1		
DDT, DDD & DDE	<0.1		
Dieldrin	<0.1		
Endrin	<0.1		
Endrin aldehyde	<0.1		
Endosulfan I	<0.1	-	CT1 - General Solid Waste (suitable for recycling)
Endosulfan II	<0.1	-	CT1 - General Solid Waste (suitable for recycling)
Heptachlor	<0.1		
Heptachlor epoxide	<0.1		
Hexachlorophene	-		
Isodrin	-		
Pentachlorobenzene	-		
Pentachlorophenol	-		
"1,2,4,5-tetrachlorobenzene"	-		
"2,3,4,6-tetrachlorophenol"	-		
"1,2,4-trichlorobenzene"	-		
"2,4,5-Trichlorophenoxy acetic acid, salts and esters"	-		
Total Positive Scheduled Chemicals	<0.1	N/A	SCC1 - General Solid Waste (suitable for recycling)
Total Moderately Harmful Pesticides		N/A	Not determined
POLYCYCLIC AROMATIC HYDROCARBONS (PAH)			
Acenaphthene	<0.1		
Acenaphthylene	<0.1		
Anthracene	<0.1		
Benzo(a)anthracene	0.2		
Benzo(a)pyrene	0.26		CT1 - General Solid Waste (suitable for recycling)
Benzo(b,j,k)fluoranthene	0.42		
Benzo(ghi)perylene	0.18		
Chrysene	0.18		
"Dibenzo(a,h)anthracene"	<0.1		
Fluoranthene	0.31		
Fluorene	<0.1		
"Indeno(1,2,3-cd)pyrene"	0.15		
Naphthalene	<0.1		
Phenanthrene	0.11		
Pyrene	0.26		
Total Positive PAH's	2.07	N/A	SCC1 - General Solid Waste (suitable for recycling)
POLYCHLORINATED BIPHENYLS (PCB)			
Aroclor 1016	<0.2		
Aroclor 1221	<0.2		
Aroclor 1232	<0.2		
Aroclor 1242	<0.2		
Aroclor 1248	<0.2		
Aroclor 1254	<0.2		
Aroclor 1260	<0.2		
Aroclor 1262	<0.2		
Aroclor 1268	<0.2		
Total Positive PCB's	<0.2	N/A	SCC1 - General Solid Waste (suitable for recycling)
NITRATED COMPOUNDS - EXPLOSIVES			
"2,4-Dinitrotoluene"			Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
OTHER VOLATILE ORGANIC COMPOUNDS (VOC)			
Carbon tetrachloride	-		Not determined
Chlorobenzene	-		Not determined
Chloroform	-		Not determined
"1,2-Dichlorobenzene"	-		Not determined
"1,4-Dichlorobenzene"	-		Not determined
"1,2-Dichloroethane"	-		Not determined
"1,1-Dichloroethylene"	-		Not determined
Dichloromethane	-		Not determined
Styrene (vinyl benzene)	-		Not determined
"1,1,1,2-Tetrachloroethane"	-		Not determined
"1,1,2,2-Tetrachloroethane"	-		Not determined
Tetrachloroethylene	-		Not determined
"1,1,1-Trichloroethane"	-		Not determined
"1,1,2-Trichloroethane"	-		Not determined
Trichloroethylene	-		Not determined
Vinyl chloride	-		Not determined
OTHER SEMI-VOLATILE ORGANIC COMPOUNDS (SVOC)			
Chlorpyrifos			Not determined
Nitrobenzene			Not determined
Phenol (non-halogenated)			Not determined
"2,4,5-Trichlorophenol"			Not determined
"2,4,6-Trichlorophenol"			Not determined
OTHER CONTAMINANTS			
Methyl ethyl ketone			Not determined
Tebuconazole			Not determined
Plasticiser compounds			Not determined
Cresol (total)			Not determined
ASBESTOS_DETECTION			
Asbestos Detection			

DETAILED SUMMARY

Waste Classification Guidelines Part 1: Classifying Waste (EPA, Nov. 2014)

Abbreviations: ND - Not Determined (Analyte not tested)
SCC - Specific Contaminant Concentration
TCLP - Toxicity Characteristics Leaching Procedure

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Consultant:

Andrew Jacovides

Authorised Signatory:

All analyses performed by a NATA accredited sub-contracting laboratory.

SESL AUSTRALIA
Environment & Soil Sciences

Solid Waste Assessment & Classification

Sample Drop Off: 16 Chilvers Road, Thornleigh NSW 2120
Mailing Address: PO Box 357, Pennant Hills NSW 1715
Tel: 1300 30 40 80
Fax: 1300 64 46 89
Em: info@sesl.com.au
Web: www.sesl.com.au

Tests are performed under a quality system certified as complying with ISO 9001: 2008. Results and conclusions assume that sampling is representative. This document shall not be reproduced except in full.

Batch N°: 49927A **Sample N°: 17** **Date Received: 5/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Job N°:
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and Contamination**
SESL Quote N°:
Sample Name: **Culvert 10 Surface**
Sample Type: **Soil**
Test Type:

REPORT SUMMARY

Material Type: ◉ Soil ○ Other

The results of laboratory testing conducted on this material indicate the presence of a range of contaminants commonly encountered in the natural and urban areas. This assessment was conducted to provide a waste classification for off-site disposal, based on the *Waste Classification Guidelines Part 1: Classifying Waste* (NSW EPA November 2014). Comparison of the laboratory analysis results with the criteria, indicates the material is considered to be within the General Solid Waste (not suitable for recycling) classification and as a result of this process, it can be disposed of as per Schedule 1 Part 3 of the Protection of the Environment Operations Act 1997.

EC (dS/m): pH (in H_2O): -

CONTAMINANT		SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
METALS AND METALLOIDS				
Arsenic	(As)	1.58	-	CT1 - General Solid Waste (suitable for recycling)
Beryllium	(Be)	-		Not determined
Cadmium	(Cd)	<0.1		CT1 - General Solid Waste (suitable for recycling)
Chromium VI	(CrVI)	-		Not determined
Total Chromium	(Cr)	19		
Copper	(Cu)	17.2	N/A	Suitable for recycling
Fluoride	(F)	-		Not determined
Lead	(Pb)	40.7		CT1 - General Solid Waste (suitable for recycling)
Mercury	(Hg)	<0.1		CT1 - General Solid Waste (suitable for recycling)
Molybdenum	(Mo)	-		Not determined
Nickel	(Ni)	19.1		CT1 - General Solid Waste (suitable for recycling)
Selenium	(Se)	-		Not determined
Silver	(Ag)	-		Not determined
Zinc	(Zn)	64.4	N/A	Suitable for recycling
BTEX (MONO AROMATIC HYDROCARBONS)				
Benzene		<0.2		CT1 - General Solid Waste (suitable for recycling)
Toluene		<0.2		CT1 - General Solid Waste (suitable for recycling)
Ethylbenzene		<0.2		CT1 - General Solid Waste (suitable for recycling)
meta & para-Xylene		<0.2		
ortho-Xylene		<0.2		
Xylenes (total)		<0.2		CT1 - General Solid Waste (suitable for recycling)
TOTAL PETROLEUM HYDROCARBONS (TPH)				
C6 - C9		<25	N/A	SCC1 - General Solid Waste (suitable for recycling)
C10 - C14		<50		
C15 - C28		<100		
C29 - C36		275		
C10-C36 Total TPH		275	N/A	SCC1 - General Solid Waste (suitable for recycling)
CYANIDES				
Cyanide (amenable)				Not determined
Cyanide (Total)				Not determined
PHENOXY ACID HERBICIDES				
2,4-D	(2,4-Dichlorophenoxy-acetic acid)			Not determined
Fluroxypyr				Not determined
Picloram				Not determined
Triclopyr				Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
SCHEDULED CHEMICALS - ORGANOCHLORINE PESTICIDES (OCP)			
Aldrin	<0.1		
"Benzene, hexachloro"	<0.1		
"Benzene, pentachloronitro"	-		
alpha - BHC	<0.1		
beta - BHC	<0.1		
gamma - BHC (Lindane)	<0.1		
delta - BHC	<0.1		
a - Chlordane	<0.1		
g - Chlordane	<0.1		
DDT, DDD & DDE	<0.1		
Dieldrin	<0.1		
Endrin	<0.1		
Endrin aldehyde	<0.1		
Endosulfan I	<0.1	-	CT1 - General Solid Waste (suitable for recycling)
Endosulfan II	<0.1	-	CT1 - General Solid Waste (suitable for recycling)
Heptachlor	<0.1		
Heptachlor epoxide	<0.1		
Hexachlorophene	-		
Isodrin	-		
Pentachlorobenzene	-		
Pentachlorophenol	-		
"1,2,4,5-tetrachlorobenzene"	-		
"2,3,4,6-tetrachlorophenol"	-		
"1,2,4-trichlorobenzene"	-		
"2,4,5-Trichlorophenoxy acetic acid, salts and esters"	-		
Total Positive Scheduled Chemicals	<0.1	N/A	SCC1 - General Solid Waste (suitable for recycling)
Total Moderately Harmful Pesticides		N/A	Not determined
POLYCYCLIC AROMATIC HYDROCARBONS (PAH)			
Acenaphthene	<0.1		
Acenaphthylene	<0.1		
Anthracene	<0.1		
Benzo(a)anthracene	0.24		
Benzo(a)pyrene	0.31		CT1 - General Solid Waste (suitable for recycling)
Benzo(b,j,k)fluoranthene	0.61		
Benzo(ghi)perylene	0.35		
Chrysene	0.26		
"Dibenzo(a,h)anthracene"	<0.1		
Fluoranthene	0.37		
Fluorene	<0.1		
"Indeno(1,2,3-cd)pyrene"	0.28		
Naphthalene	<0.1		
Phenanthrene	0.13		
Pyrene	0.33		
Total Positive PAH's	2.88	N/A	SCC1 - General Solid Waste (suitable for recycling)
POLYCHLORINATED BIPHENYLS (PCB)			
Aroclor 1016	<0.2		
Aroclor 1221	<0.2		
Aroclor 1232	<0.2		
Aroclor 1242	<0.2		
Aroclor 1248	<0.2		
Aroclor 1254	<0.2		
Aroclor 1260	<0.2		
Aroclor 1262	<0.2		
Aroclor 1268	<0.2		
Total Positive PCB's	<0.2	N/A	SCC1 - General Solid Waste (suitable for recycling)
NITRATED COMPOUNDS - EXPLOSIVES			
"2,4-Dinitrotoluene"			Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
OTHER VOLATILE ORGANIC COMPOUNDS (VOC)			
Carbon tetrachloride	-		Not determined
Chlorobenzene	-		Not determined
Chloroform	-		Not determined
"1,2-Dichlorobenzene"	-		Not determined
"1,4-Dichlorobenzene"	-		Not determined
"1,2-Dichloroethane"	-		Not determined
"1,1-Dichloroethylene"	-		Not determined
Dichloromethane	-		Not determined
Styrene (vinyl benzene)	-		Not determined
"1,1,1,2-Tetrachloroethane"	-		Not determined
"1,1,2,2-Tetrachloroethane"	-		Not determined
Tetrachloroethylene	-		Not determined
"1,1,1-Trichloroethane"	-		Not determined
"1,1,2-Trichloroethane"	-		Not determined
Trichloroethylene	-		Not determined
Vinyl chloride	-		Not determined
OTHER SEMI-VOLATILE ORGANIC COMPOUNDS (SVOC)			
Chlorpyrifos			Not determined
Nitrobenzene			Not determined
Phenol (non-halogenated)			Not determined
"2,4,5-Trichlorophenol"			Not determined
"2,4,6-Trichlorophenol"			Not determined
OTHER CONTAMINANTS			
Methyl ethyl ketone			Not determined
Tebuconazole			Not determined
Plasticiser compounds			Not determined
Cresol (total)			Not determined
ASBESTOS_DETECTION			
Asbestos Detection			

DETAILED SUMMARY

Waste Classification Guidelines Part 1: Classifying Waste (EPA, Nov. 2014)

Abbreviations: ND - Not Determined (Analyte not tested)
SCC - Specific Contaminant Concentration
TCLP - Toxicity Characteristics Leaching Procedure

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Consultant:

Andrew Jacovides

Authorised Signatory:

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Solid Waste Assessment & Classification

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Environment & Soil Sciences

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Web: www.sesl.com.au

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Batch N°: 50239 **Sample N°: 1** **Date Received: 29/10/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Job N°:
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and Contamination - Part 2**
SESL Quote N°: **WFM**
Sample Name: **Culvert 11 - 300-700**
Sample Type: **Soil**
Test Type: **BWC, Spec, PSD - 4.75, Atterberg Limits_RL, CBR_RL, sPOCAS_ALS**

REPORT SUMMARY

Material Type: ○ Soil ○ Other

The results of laboratory testing conducted on this material indicate the presence of a range of contaminants commonly encountered in the natural and urban areas. This assessment was conducted to provide a waste classification for off-site disposal, based on the *Waste Classification Guidelines Part 1: Classifying Waste* (NSW EPA November 2014). Comparison of the laboratory analysis results with the criteria, indicates the material is considered to be within the General Solid Waste (not suitable for recycling) classification and as a result of this process, it can be disposed of as per Schedule 1 Part 3 of the Protection of the Environment Operations Act 1997.

EC (dS/m): pH (in H_2O): -

CONTAMINANT		SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
METALS AND METALLOIDS				
Arsenic	(As)	<1	-	CT1 - General Solid Waste (suitable for recycling)
Beryllium	(Be)	-		Not determined
Cadmium	(Cd)	<0.1		CT1 - General Solid Waste (suitable for recycling)
Chromium VI	(CrVI)	-		Not determined
Total Chromium	(Cr)	4.7		
Copper	(Cu)	1.97	N/A	Suitable for recycling
Fluoride	(F)	-		Not determined
Lead	(Pb)	22		CT1 - General Solid Waste (suitable for recycling)
Mercury	(Hg)	<0.1		CT1 - General Solid Waste (suitable for recycling)
Molybdenum	(Mo)	-		Not determined
Nickel	(Ni)	1.35		CT1 - General Solid Waste (suitable for recycling)
Selenium	(Se)	-		Not determined
Silver	(Ag)	-		Not determined
Zinc	(Zn)	7.19	N/A	Suitable for recycling
BTEX (MONO AROMATIC HYDROCARBONS)				
Benzene		<0.2		CT1 - General Solid Waste (suitable for recycling)
Toluene		<0.5		CT1 - General Solid Waste (suitable for recycling)
Ethylbenzene		<0.5		CT1 - General Solid Waste (suitable for recycling)
meta & para-Xylene		<0.5		
ortho-Xylene		<0.5		
Xylenes (total)		<0.5		CT1 - General Solid Waste (suitable for recycling)
TOTAL PETROLEUM HYDROCARBONS (TPH)				
C6 - C9		<10	N/A	SCC1 - General Solid Waste (suitable for recycling)
C10 - C14		<50		
C15 - C28		<100		
C29 - C36		<100		
C10-C36 Total TPH		<100	N/A	SCC1 - General Solid Waste (suitable for recycling)
CYANIDES				
Cyanide (amenable)				Not determined
Cyanide (Total)				Not determined
PHENOXY ACID HERBICIDES				
2,4-D	(2,4-Dichlorophenoxy-acetic acid)			Not determined
Fluroxypyr				Not determined
Picloram				Not determined
Triclopyr				Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
SCHEDULED CHEMICALS - ORGANOCHLORINE PESTICIDES (OCP)			
Aldrin	<0.1		
"Benzene, hexachloro"	<0.1		
"Benzene, pentachloronitro"	-		
alpha - BHC	<0.1		
beta - BHC	<0.1		
gamma - BHC (Lindane)	<0.1		
delta - BHC	<0.1		
a - Chlordane	<0.1		
g - Chlordane	<0.1		
DDT, DDD & DDE	<0.1		
Dieldrin	<0.1		
Endrin	<0.1		
Endrin aldehyde	<0.1		
Endosulfan I	<0.1	-	CT1 - General Solid Waste (suitable for recycling)
Endosulfan II	<0.1	-	CT1 - General Solid Waste (suitable for recycling)
Heptachlor	<0.1		
Heptachlor epoxide	<0.1		
Hexachlorophene	-		
Isodrin	-		
Pentachlorobenzene	-		
Pentachlorophenol	-		
"1,2,4,5-tetrachlorobenzene"	-		
"2,3,4,6-tetrachlorophenol"	-		
"1,2,4-trichlorobenzene"	-		
"2,4,5-Trichlorophenoxy acetic acid, salts and esters"	-		
Total Positive Scheduled Chemicals	<0.1	N/A	SCC1 - General Solid Waste (suitable for recycling)
Total Moderately Harmful Pesticides		N/A	Not determined
POLYCYCLIC AROMATIC HYDROCARBONS (PAH)			
Acenaphthene	<0.5		
Acenaphthylene	<0.5		
Anthracene	<0.5		
Benzo(a)anthracene	<0.5		
Benzo(a)pyrene	<0.5		CT1 - General Solid Waste (suitable for recycling)
Benzo(b,j,k)fluoranthene	<0.5		
Benzo(ghi)perylene	<0.5		
Chrysene	<0.5		
"Dibenzo(a,h)anthracene"	<0.5		
Fluoranthene	<0.5		
Fluorene	<0.5		
"Indeno(1,2,3-cd)pyrene"	<0.5		
Naphthalene	<0.5		
Phenanthrene	<0.5		
Pyrene	<0.5		
Total Positive PAH's	<0.5	N/A	SCC1 - General Solid Waste (suitable for recycling)
POLYCHLORINATED BIPHENYLS (PCB)			
Aroclor 1016	<0.2		
Aroclor 1221	<0.2		
Aroclor 1232	<0.2		
Aroclor 1242	<0.2		
Aroclor 1248	<0.2		
Aroclor 1254	<0.2		
Aroclor 1260	<0.2		
Aroclor 1262	<0.2		
Aroclor 1268	<0.2		
Total Positive PCB's	<0.2	N/A	SCC1 - General Solid Waste (suitable for recycling)
NITRATED COMPOUNDS - EXPLOSIVES			
"2,4-Dinitrotoluene"			Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
OTHER VOLATILE ORGANIC COMPOUNDS (VOC)			
Carbon tetrachloride	-		Not determined
Chlorobenzene	-		Not determined
Chloroform	-		Not determined
"1,2-Dichlorobenzene"	-		Not determined
"1,4-Dichlorobenzene"	-		Not determined
"1,2-Dichloroethane"	-		Not determined
"1,1-Dichloroethylene"	-		Not determined
Dichloromethane	-		Not determined
Styrene (vinyl benzene)	-		Not determined
"1,1,1,2-Tetrachloroethane"	-		Not determined
"1,1,2,2-Tetrachloroethane"	-		Not determined
Tetrachloroethylene	-		Not determined
"1,1,1-Trichloroethane"	-		Not determined
"1,1,2-Trichloroethane"	-		Not determined
Trichloroethylene	-		Not determined
Vinyl chloride	-		Not determined
OTHER SEMI-VOLATILE ORGANIC COMPOUNDS (SVOC)			
Chlorpyrifos			Not determined
Nitrobenzene			Not determined
Phenol (non-halogenated)			Not determined
"2,4,5-Trichlorophenol"			Not determined
"2,4,6-Trichlorophenol"			Not determined
OTHER CONTAMINANTS			
Methyl ethyl ketone			Not determined
Tebuconazole			Not determined
Plasticiser compounds			Not determined
Cresol (total)			Not determined
ASBESTOS_DETECTION			
Asbestos Detection			

DETAILED SUMMARY

Waste Classification Guidelines Part 1: Classifying Waste (EPA, Nov. 2014)

Abbreviations: ND - Not Determined (Analyte not tested)
SCC - Specific Contaminant Concentration
TCLP - Toxicity Characteristics Leaching Procedure

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Consultant:

Andrew Jacovides

Authorised Signatory:

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Solid Waste Assessment & Classification

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Web: www.sesl.com.au

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Batch N°: 50239 **Sample N°: 2** **Date Received: 29/10/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Job N°:
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and Contamination - Part 2**
SESL Quote N°: **WFM**
Sample Name: **Culvert 12 - 300 - 700**
Sample Type: **Soil**
Test Type: **BWC, Spec, PSD - 4.75, Atterberg Limits_RL, CBR_RL, sPOCAS_ALS**

REPORT SUMMARY

Material Type: ○ Soil ○ Other

The results of laboratory testing conducted on this material indicate the presence of a range of contaminants commonly encountered in the natural and urban areas. This assessment was conducted to provide a waste classification for off-site disposal, based on the *Waste Classification Guidelines Part 1: Classifying Waste* (NSW EPA November 2014). Comparison of the laboratory analysis results with the criteria, indicates the material is considered to be within the General Solid Waste (not suitable for recycling) classification and as a result of this process, it can be disposed of as per Schedule 1 Part 3 of the Protection of the Environment Operations Act 1997.

EC (dS/m): pH (in H_2O): -

CONTAMINANT		SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
METALS AND METALLOIDS				
Arsenic	(As)	<1	-	CT1 - General Solid Waste (suitable for recycling)
Beryllium	(Be)	-		Not determined
Cadmium	(Cd)	<0.1		CT1 - General Solid Waste (suitable for recycling)
Chromium VI	(CrVI)	-		Not determined
Total Chromium	(Cr)	18		
Copper	(Cu)	4.51	N/A	Suitable for recycling
Fluoride	(F)	-		Not determined
Lead	(Pb)	37.8		CT1 - General Solid Waste (suitable for recycling)
Mercury	(Hg)	<0.1		CT1 - General Solid Waste (suitable for recycling)
Molybdenum	(Mo)	-		Not determined
Nickel	(Ni)	3		CT1 - General Solid Waste (suitable for recycling)
Selenium	(Se)	-		Not determined
Silver	(Ag)	-		Not determined
Zinc	(Zn)	10.4	N/A	Suitable for recycling
BTEX (MONO AROMATIC HYDROCARBONS)				
Benzene		<0.2		CT1 - General Solid Waste (suitable for recycling)
Toluene		<0.5		CT1 - General Solid Waste (suitable for recycling)
Ethylbenzene		<0.5		CT1 - General Solid Waste (suitable for recycling)
meta & para-Xylene		<0.5		
ortho-Xylene		<0.5		
Xylenes (total)		<0.5		CT1 - General Solid Waste (suitable for recycling)
TOTAL PETROLEUM HYDROCARBONS (TPH)				
C6 - C9		<10	N/A	SCC1 - General Solid Waste (suitable for recycling)
C10 - C14		<50		
C15 - C28		<100		
C29 - C36		<100		
C10-C36 Total TPH		<100	N/A	SCC1 - General Solid Waste (suitable for recycling)
CYANIDES				
Cyanide (amenable)				Not determined
Cyanide (Total)				Not determined
PHENOXY ACID HERBICIDES				
2,4-D	(2,4-Dichlorophenoxy-acetic acid)			Not determined
Fluroxypyr				Not determined
Picloram				Not determined
Triclopyr				Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
SCHEDULED CHEMICALS - ORGANOCHLORINE PESTICIDES (OCP)			
Aldrin	<0.1		
"Benzene, hexachloro"	<0.1		
"Benzene, pentachloronitro"	-		
alpha - BHC	<0.1		
beta - BHC	<0.1		
gamma - BHC (Lindane)	<0.1		
delta - BHC	<0.1		
a - Chlordane	<0.1		
g - Chlordane	<0.1		
DDT, DDD & DDE	<0.1		
Dieldrin	<0.1		
Endrin	<0.1		
Endrin aldehyde	<0.1		
Endosulfan I	<0.1	-	CT1 - General Solid Waste (suitable for recycling)
Endosulfan II	<0.1	-	CT1 - General Solid Waste (suitable for recycling)
Heptachlor	<0.1		
Heptachlor epoxide	<0.1		
Hexachlorophene	-		
Isodrin	-		
Pentachlorobenzene	-		
Pentachlorophenol	-		
"1,2,4,5-tetrachlorobenzene"	-		
"2,3,4,6-tetrachlorophenol"	-		
"1,2,4-trichlorobenzene"	-		
"2,4,5-Trichlorophenoxy acetic acid, salts and esters"	-		
Total Positive Scheduled Chemicals	<0.1	N/A	SCC1 - General Solid Waste (suitable for recycling)
Total Moderately Harmful Pesticides		N/A	Not determined
POLYCYCLIC AROMATIC HYDROCARBONS (PAH)			
Acenaphthene	<0.5		
Acenaphthylene	<0.5		
Anthracene	<0.5		
Benzo(a)anthracene	<0.5		
Benzo(a)pyrene	<0.5		CT1 - General Solid Waste (suitable for recycling)
Benzo(b,j,k)fluoranthene	<0.5		
Benzo(ghi)perylene	<0.5		
Chrysene	<0.5		
"Dibenzo(a,h)anthracene"	<0.5		
Fluoranthene	<0.5		
Fluorene	<0.5		
"Indeno(1,2,3-cd)pyrene"	<0.5		
Naphthalene	<0.5		
Phenanthrene	<0.5		
Pyrene	<0.5		
Total Positive PAH's	<0.5	N/A	SCC1 - General Solid Waste (suitable for recycling)
POLYCHLORINATED BIPHENYLS (PCB)			
Aroclor 1016	<0.2		
Aroclor 1221	<0.2		
Aroclor 1232	<0.2		
Aroclor 1242	<0.2		
Aroclor 1248	<0.2		
Aroclor 1254	<0.2		
Aroclor 1260	<0.2		
Aroclor 1262	<0.2		
Aroclor 1268	<0.2		
Total Positive PCB's	<0.2	N/A	SCC1 - General Solid Waste (suitable for recycling)
NITRATED COMPOUNDS - EXPLOSIVES			
"2,4-Dinitrotoluene"			Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
OTHER VOLATILE ORGANIC COMPOUNDS (VOC)			
Carbon tetrachloride	-		Not determined
Chlorobenzene	-		Not determined
Chloroform	-		Not determined
"1,2-Dichlorobenzene"	-		Not determined
"1,4-Dichlorobenzene"	-		Not determined
"1,2-Dichloroethane"	-		Not determined
"1,1-Dichloroethylene"	-		Not determined
Dichloromethane	-		Not determined
Styrene (vinyl benzene)	-		Not determined
"1,1,1,2-Tetrachloroethane"	-		Not determined
"1,1,2,2-Tetrachloroethane"	-		Not determined
Tetrachloroethylene	-		Not determined
"1,1,1-Trichloroethane"	-		Not determined
"1,1,2-Trichloroethane"	-		Not determined
Trichloroethylene	-		Not determined
Vinyl chloride	-		Not determined
OTHER SEMI-VOLATILE ORGANIC COMPOUNDS (SVOC)			
Chlorpyrifos			Not determined
Nitrobenzene			Not determined
Phenol (non-halogenated)			Not determined
"2,4,5-Trichlorophenol"			Not determined
"2,4,6-Trichlorophenol"			Not determined
OTHER CONTAMINANTS			
Methyl ethyl ketone			Not determined
Tebuconazole			Not determined
Plasticiser compounds			Not determined
Cresol (total)			Not determined
ASBESTOS_DETECTION			
Asbestos Detection			

DETAILED SUMMARY

Waste Classification Guidelines Part 1: Classifying Waste (EPA, Nov. 2014)

Abbreviations: ND - Not Determined (Analyte not tested)
SCC - Specific Contaminant Concentration
TCLP - Toxicity Characteristics Leaching Procedure

Limitation of liability: This document and the the limited analysis undertaken should not be construed as a site contamination report. It does not meet the NSW EPA requirements in relation to a contamination assessment for the proposed land use. The findings presented are based on a.) the sample submitted to SESL by the client or their agent, or b.) site conditions that existed at the time of sampling by SESL field personnel. In the case of sampling by SESL, conclusions are based on the investigation of conditions at specific locations, chosen to be representative as possible under the given circumstances. SESL has used a degree of care, skill and diligence normally exercised by environmental consultants in similar circumstances and locality. No other warranty expressed or implied is made or intended. Section 143 of the Protection of the Environment Operations Act 1997 states that if waste is transported to a place that cannot lawfully be used as a waste facility for that waste, then the transporter and owner of the waste are each guilty of an offence. The transporter and owner of the waste have duty to ensure that the waste is disposed of in an appropriate manner. SESL accepts no liability whatsoever for the unlawful disposal of any waste from any site. Subject to payment of all fees due, the client alone shall have a licence to use this document. This document may not be reproduced except in full.

Consultant:

Andrew Jacovides

Authorised Signatory:

All analyses performed by a NATA accredited sub-contracting laboratory.

SESL AUSTRALIA
Environment & Soil Sciences

Solid Waste Assessment & Classification

Sample Drop Off: 16 Chilvers Road, Thornleigh NSW 2120
Mailing Address: PO Box 357, Pennant Hills NSW 1715
Tel: 1300 30 40 80
Fax: 1300 64 46 89
Em: info@sesl.com.au
Web: www.sesl.com.au

Tests are performed under a quality system certified as complying with ISO 9001: 2008. Results and conclusions assume that sampling is representative. This document shall not be reproduced except in full.

Batch N°: 50296 **Sample N°: 1** **Date Received: 1/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Job N°:
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and Contamination - The Bends**
SESL Quote N°:
Sample Name: **BH1 Surface**
Sample Type: **Soil**
Test Type: **BWC_EXT, ASS1**

REPORT SUMMARY

Material Type: ○ Soil ○ Other

The results of laboratory testing conducted on this material indicate the presence of a range of contaminants commonly encountered in the natural and urban areas. This assessment was conducted to provide a waste classification for off-site disposal, based on the *Waste Classification Guidelines Part 1: Classifying Waste* (NSW EPA November 2014). Comparison of the laboratory analysis results with the criteria, indicates the material is considered to be within the General Solid Waste classification and as a result of this process, it can be disposed of as per Schedule 1 Part 3 of the Protection of the Environment Operations Act 1997.

EC (dS/m): pH (in H_2O): -

CONTAMINANT		SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
METALS AND METALLOIDS				
Arsenic	(As)	<5	-	CT1 - General Solid Waste (suitable for recycling)
Beryllium	(Be)	-		Not determined
Cadmium	(Cd)	<1		CT1 - General Solid Waste (suitable for recycling)
Chromium VI	(CrVI)	-		Not determined
Total Chromium	(Cr)	<2		
Copper	(Cu)	<5	N/A	Suitable for recycling
Fluoride	(F)	-		Not determined
Lead	(Pb)	<5		CT1 - General Solid Waste (suitable for recycling)
Mercury	(Hg)	<0.1		CT1 - General Solid Waste (suitable for recycling)
Molybdenum	(Mo)	-		Not determined
Nickel	(Ni)	<2		CT1 - General Solid Waste (suitable for recycling)
Selenium	(Se)	-		Not determined
Silver	(Ag)	-		Not determined
Zinc	(Zn)	11	N/A	Suitable for recycling
BTEX (MONO AROMATIC HYDROCARBONS)				
Benzene		<0.2		CT1 - General Solid Waste (suitable for recycling)
Toluene		<0.5		CT1 - General Solid Waste (suitable for recycling)
Ethylbenzene		<0.5		CT1 - General Solid Waste (suitable for recycling)
meta & para-Xylene		<0.5		
ortho-Xylene		<0.5		
Xylenes (total)		<0.5		CT1 - General Solid Waste (suitable for recycling)
TOTAL PETROLEUM HYDROCARBONS (TPH)				
C6 - C9		<10	N/A	SCC1 - General Solid Waste (suitable for recycling)
C10 - C14		<50		
C15 - C28		<100		
C29 - C36		<100		
C10-C36 Total TPH		<100	N/A	SCC1 - General Solid Waste (suitable for recycling)
CYANIDES				
Cyanide (amenable)				Not determined
Cyanide (Total)				Not determined
PHENOXY ACID HERBICIDES				
2,4-D	(2,4-Dichlorophenoxy-acetic acid)			Not determined
Fluroxypyr				Not determined
Picloram				Not determined
Triclopyr				Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
SCHEDULED CHEMICALS - ORGANOCHLORINE PESTICIDES (OCP)			
Aldrin	<0.05		
"Benzene, hexachloro"	<0.05		
"Benzene, pentachloronitro"	-		
alpha - BHC	<0.05		
beta - BHC	<0.05		
gamma - BHC (Lindane)	<0.05		
delta - BHC	<0.05		
a - Chlordane	<0.05		
g - Chlordane	<0.05		
DDT, DDD & DDE	<0.2		
Dieldrin	<0.05		
Endrin	<0.05		
Endrin aldehyde	<0.05		
Endosulfan I	<0.05	-	CT1 - General Solid Waste (suitable for recycling)
Endosulfan II	<0.05	-	CT1 - General Solid Waste (suitable for recycling)
Heptachlor	<0.05		
Heptachlor epoxide	<0.05		
Hexachlorophene	-		
Isodrin	-		
Pentachlorobenzene	-		
Pentachlorophenol	-		
"1,2,4,5-tetrachlorobenzene"	-		
"2,3,4,6-tetrachlorophenol"	-		
"1,2,4-trichlorobenzene"	-		
"2,4,5-Trichlorophenoxy acetic acid, salts and esters"	-		
Total Positive Scheduled Chemicals	<0.2	N/A	SCC1 - General Solid Waste (suitable for recycling)
Total Moderately Harmful Pesticides		N/A	Not determined
POLYCYCLIC AROMATIC HYDROCARBONS (PAH)			
Acenaphthene	<0.5		
Acenaphthylene	<0.5		
Anthracene	<0.5		
Benzo(a)anthracene	<0.5		
Benzo(a)pyrene	<0.5		CT1 - General Solid Waste (suitable for recycling)
Benzo(b,j,k)fluoranthene	<0.5		
Benzo(ghi)perylene	<0.5		
Chrysene	<0.5		
"Dibenzo(a,h)anthracene"	<0.5		
Fluoranthene	<0.5		
Fluorene	<0.5		
"Indeno(1,2,3-cd)pyrene"	<0.5		
Naphthalene	<0.5		
Phenanthrene	<0.5		
Pyrene	<0.5		
Total Positive PAH's	<0.5	N/A	SCC1 - General Solid Waste (suitable for recycling)
POLYCHLORINATED BIPHENYLS (PCB)			
Aroclor 1016	-		
Aroclor 1221	-		
Aroclor 1232	-		
Aroclor 1242	-		
Aroclor 1248	-		
Aroclor 1254	-		
Aroclor 1260	-		
Aroclor 1262	-		
Aroclor 1268	-		
Total Positive PCB's	<0.1	N/A	SCC1 - General Solid Waste (suitable for recycling)
NITRATED COMPOUNDS - EXPLOSIVES			
"2,4-Dinitrotoluene"			Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
OTHER VOLATILE ORGANIC COMPOUNDS (VOC)			
Carbon tetrachloride	-		Not determined
Chlorobenzene	-		Not determined
Chloroform	-		Not determined
"1,2-Dichlorobenzene"	-		Not determined
"1,4-Dichlorobenzene"	-		Not determined
"1,2-Dichloroethane"	-		Not determined
"1,1-Dichloroethylene"	-		Not determined
Dichloromethane	-		Not determined
Styrene (vinyl benzene)	-		Not determined
"1,1,1,2-Tetrachloroethane"	-		Not determined
"1,1,2,2-Tetrachloroethane"	-		Not determined
Tetrachloroethylene	-		Not determined
"1,1,1-Trichloroethane"	-		Not determined
"1,1,2-Trichloroethane"	-		Not determined
Trichloroethylene	-		Not determined
Vinyl chloride	-		Not determined
OTHER SEMI-VOLATILE ORGANIC COMPOUNDS (SVOC)			
Chlorpyrifos			Not determined
Nitrobenzene			Not determined
Phenol (non-halogenated)			Not determined
"2,4,5-Trichlorophenol"			Not determined
"2,4,6-Trichlorophenol"			Not determined
OTHER CONTAMINANTS			
Methyl ethyl ketone			Not determined
Tebuconazole			Not determined
Plasticiser compounds			Not determined
Cresol (total)			Not determined
ASBESTOS_DETECTION			
Asbestos Detection			

DETAILED SUMMARY

Waste Classification Guidelines Part 1: Classifying Waste (EPA, Nov. 2014)

Abbreviations: ND - Not Determined (Analyte not tested)
SCC - Specific Contaminant Concentration
TCLP - Toxicity Characteristics Leaching Procedure

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Consultant:

Andrew Jacovides

Authorised Signatory:

All analyses performed by a NATA accredited sub-contracting laboratory.

SESL AUSTRALIA
Environment & Soil Sciences

Solid Waste Assessment & Classification

Sample Drop Off: 16 Chilvers Road, Thornleigh NSW 2120
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Web: www.sesl.com.au

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Batch N°: 50296 **Sample N°: 2** **Date Received: 1/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Job N°:
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and Contamination - The Bends**
SESL Quote N°:
Sample Name: **BH1 500 - 600**
Sample Type: **Soil**
Test Type: **BWC_EXT, sPOCAS_ALS**

REPORT SUMMARY

Material Type: ○ Soil ○ Other

The results of laboratory testing conducted on this material indicate the presence of a range of contaminants commonly encountered in the natural and urban areas. This assessment was conducted to provide a waste classification for off-site disposal, based on the *Waste Classification Guidelines Part 1: Classifying Waste* (NSW EPA November 2014). Comparison of the laboratory analysis results with the criteria, indicates the material is considered to be within the General Solid Waste classification and as a result of this process, it can be disposed of as per Schedule 1 Part 3 of the Protection of the Environment Operations Act 1997.

EC (dS/m): pH (in H_2O): -

CONTAMINANT		SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
METALS AND METALLOIDS				
Arsenic	(As)	<5	-	CT1 - General Solid Waste (suitable for recycling)
Beryllium	(Be)	-		Not determined
Cadmium	(Cd)	<1		CT1 - General Solid Waste (suitable for recycling)
Chromium VI	(CrVI)	-		Not determined
Total Chromium	(Cr)	2		
Copper	(Cu)	<5	N/A	Suitable for recycling
Fluoride	(F)	-		Not determined
Lead	(Pb)	5		CT1 - General Solid Waste (suitable for recycling)
Mercury	(Hg)	<0.1		CT1 - General Solid Waste (suitable for recycling)
Molybdenum	(Mo)	-		Not determined
Nickel	(Ni)	<2		CT1 - General Solid Waste (suitable for recycling)
Selenium	(Se)	-		Not determined
Silver	(Ag)	-		Not determined
Zinc	(Zn)	18	N/A	Suitable for recycling
BTEX (MONO AROMATIC HYDROCARBONS)				
Benzene		<0.2		CT1 - General Solid Waste (suitable for recycling)
Toluene		<0.5		CT1 - General Solid Waste (suitable for recycling)
Ethylbenzene		<0.5		CT1 - General Solid Waste (suitable for recycling)
meta & para-Xylene		<0.5		
ortho-Xylene		<0.5		
Xylenes (total)		<0.5		CT1 - General Solid Waste (suitable for recycling)
TOTAL PETROLEUM HYDROCARBONS (TPH)				
C6 - C9		<10	N/A	SCC1 - General Solid Waste (suitable for recycling)
C10 - C14		<50		
C15 - C28		<100		
C29 - C36		<100		
C10-C36 Total TPH		<100	N/A	SCC1 - General Solid Waste (suitable for recycling)
CYANIDES				
Cyanide (amenable)				Not determined
Cyanide (Total)				Not determined
PHENOXY ACID HERBICIDES				
2,4-D	(2,4-Dichlorophenoxy-acetic acid)			Not determined
Fluroxypyr				Not determined
Picloram				Not determined
Triclopyr				Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
SCHEDULED CHEMICALS - ORGANOCHLORINE PESTICIDES (OCP)			
Aldrin	<0.05		
"Benzene, hexachloro"	<0.05		
"Benzene, pentachloronitro"	-		
alpha - BHC	<0.05		
beta - BHC	<0.05		
gamma - BHC (Lindane)	<0.05		
delta - BHC	<0.05		
a - Chlordane	<0.05		
g - Chlordane	<0.05		
DDT, DDD & DDE	<0.2		
Dieldrin	<0.05		
Endrin	<0.05		
Endrin aldehyde	<0.05		
Endosulfan I	<0.05	-	CT1 - General Solid Waste (suitable for recycling)
Endosulfan II	<0.05	-	CT1 - General Solid Waste (suitable for recycling)
Heptachlor	<0.05		
Heptachlor epoxide	<0.05		
Hexachlorophene	-		
Isodrin	-		
Pentachlorobenzene	-		
Pentachlorophenol	-		
"1,2,4,5-tetrachlorobenzene"	-		
"2,3,4,6-tetrachlorophenol"	-		
"1,2,4-trichlorobenzene"	-		
"2,4,5-Trichlorophenoxy acetic acid, salts and esters"	-		
Total Positive Scheduled Chemicals	<0.2	N/A	SCC1 - General Solid Waste (suitable for recycling)
Total Moderately Harmful Pesticides		N/A	Not determined
POLYCYCLIC AROMATIC HYDROCARBONS (PAH)			
Acenaphthene	<0.5		
Acenaphthylene	<0.5		
Anthracene	<0.5		
Benzo(a)anthracene	<0.5		
Benzo(a)pyrene	<0.5		CT1 - General Solid Waste (suitable for recycling)
Benzo(b,j,k)fluoranthene	<0.5		
Benzo(ghi)perylene	<0.5		
Chrysene	<0.5		
"Dibenzo(a,h)anthracene"	<0.5		
Fluoranthene	<0.5		
Fluorene	<0.5		
"Indeno(1,2,3-cd)pyrene"	<0.5		
Naphthalene	<0.5		
Phenanthrene	<0.5		
Pyrene	<0.5		
Total Positive PAH's	<0.5	N/A	SCC1 - General Solid Waste (suitable for recycling)
POLYCHLORINATED BIPHENYLS (PCB)			
Aroclor 1016	-		
Aroclor 1221	-		
Aroclor 1232	-		
Aroclor 1242	-		
Aroclor 1248	-		
Aroclor 1254	-		
Aroclor 1260	-		
Aroclor 1262	-		
Aroclor 1268	-		
Total Positive PCB's	<0.1	N/A	SCC1 - General Solid Waste (suitable for recycling)
NITRATED COMPOUNDS - EXPLOSIVES			
"2,4-Dinitrotoluene"			Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
OTHER VOLATILE ORGANIC COMPOUNDS (VOC)			
Carbon tetrachloride	-		Not determined
Chlorobenzene	-		Not determined
Chloroform	-		Not determined
"1,2-Dichlorobenzene"	-		Not determined
"1,4-Dichlorobenzene"	-		Not determined
"1,2-Dichloroethane"	-		Not determined
"1,1-Dichloroethylene"	-		Not determined
Dichloromethane	-		Not determined
Styrene (vinyl benzene)	-		Not determined
"1,1,1,2-Tetrachloroethane"	-		Not determined
"1,1,2,2-Tetrachloroethane"	-		Not determined
Tetrachloroethylene	-		Not determined
"1,1,1-Trichloroethane"	-		Not determined
"1,1,2-Trichloroethane"	-		Not determined
Trichloroethylene	-		Not determined
Vinyl chloride	-		Not determined
OTHER SEMI-VOLATILE ORGANIC COMPOUNDS (SVOC)			
Chlorpyrifos			Not determined
Nitrobenzene			Not determined
Phenol (non-halogenated)			Not determined
"2,4,5-Trichlorophenol"			Not determined
"2,4,6-Trichlorophenol"			Not determined
OTHER CONTAMINANTS			
Methyl ethyl ketone			Not determined
Tebuconazole			Not determined
Plasticiser compounds			Not determined
Cresol (total)			Not determined
ASBESTOS_DETECTION			
Asbestos Detection			

DETAILED SUMMARY

Waste Classification Guidelines Part 1: Classifying Waste (EPA, Nov. 2014)

Abbreviations: ND - Not Determined (Analyte not tested)
SCC - Specific Contaminant Concentration
TCLP - Toxicity Characteristics Leaching Procedure

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Consultant:

Andrew Jacovides

Authorised Signatory:

All analyses performed by a NATA accredited sub-contracting laboratory.

Solid Waste Assessment & Classification

SESL AUSTRALIA
Environment & Soil Sciences

Sample Drop Off: 16 Chilvers Road, Thornleigh NSW 2120
Mailing Address: PO Box 357, Pennant Hills NSW 1715
Tel: 1300 30 40 80
Fax: 1300 64 46 89
Em: info@sesl.com.au
Web: www.sesl.com.au

Tests are performed under a quality system certified as complying with ISO 9001: 2008. Results and conclusions assume that sampling is representative. This document shall not be reproduced except in full.

Batch N°: 50296 **Sample N°: 3** **Date Received: 1/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Job N°:
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and Contamination - The Bends**
SESL Quote N°:
Sample Name: **BH1 800 - 900**
Sample Type: **Soil**
Test Type: **BWC_EXT, ASS1**

REPORT SUMMARY

Material Type: ○ Soil ○ Other

The results of laboratory testing conducted on this material indicate the presence of a range of contaminants commonly encountered in the natural and urban areas. This assessment was conducted to provide a waste classification for off-site disposal, based on the *Waste Classification Guidelines Part 1: Classifying Waste* (NSW EPA November 2014). Comparison of the laboratory analysis results with the criteria, indicates the material is considered to be within the General Solid Waste classification and as a result of this process, it can be disposed of as per Schedule 1 Part 3 of the Protection of the Environment Operations Act 1997.

EC (dS/m): pH (in H_2O): -

CONTAMINANT		SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
METALS AND METALLOIDS				
Arsenic	(As)	<5	-	CT1 - General Solid Waste (suitable for recycling)
Beryllium	(Be)	-		Not determined
Cadmium	(Cd)	<1		CT1 - General Solid Waste (suitable for recycling)
Chromium VI	(CrVI)	-		Not determined
Total Chromium	(Cr)	7		
Copper	(Cu)	8	N/A	Suitable for recycling
Fluoride	(F)	-		Not determined
Lead	(Pb)	20		CT1 - General Solid Waste (suitable for recycling)
Mercury	(Hg)	<0.1		CT1 - General Solid Waste (suitable for recycling)
Molybdenum	(Mo)	-		Not determined
Nickel	(Ni)	3		CT1 - General Solid Waste (suitable for recycling)
Selenium	(Se)	-		Not determined
Silver	(Ag)	-		Not determined
Zinc	(Zn)	60	N/A	Suitable for recycling
BTEX (MONO AROMATIC HYDROCARBONS)				
Benzene		<0.2		CT1 - General Solid Waste (suitable for recycling)
Toluene		<0.5		CT1 - General Solid Waste (suitable for recycling)
Ethylbenzene		<0.5		CT1 - General Solid Waste (suitable for recycling)
meta & para-Xylene		<0.5		
ortho-Xylene		<0.5		
Xylenes (total)		<0.5		CT1 - General Solid Waste (suitable for recycling)
TOTAL PETROLEUM HYDROCARBONS (TPH)				
C6 - C9		<10	N/A	SCC1 - General Solid Waste (suitable for recycling)
C10 - C14		<50		
C15 - C28		<100		
C29 - C36		<100		
C10-C36 Total TPH		<100	N/A	SCC1 - General Solid Waste (suitable for recycling)
CYANIDES				
Cyanide (amenable)				Not determined
Cyanide (Total)				Not determined
PHENOXY ACID HERBICIDES				
2,4-D	(2,4-Dichlorophenoxy-acetic acid)			Not determined
Fluroxypyr				Not determined
Picloram				Not determined
Triclopyr				Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
SCHEDULED CHEMICALS - ORGANOCHLORINE PESTICIDES (OCP)			
Aldrin	<0.05		
"Benzene, hexachloro"	<0.05		
"Benzene, pentachloronitro"	-		
alpha - BHC	<0.05		
beta - BHC	<0.05		
gamma - BHC (Lindane)	<0.05		
delta - BHC	<0.05		
a - Chlordane	<0.05		
g - Chlordane	<0.05		
DDT, DDD & DDE	<0.2		
Dieldrin	<0.05		
Endrin	<0.05		
Endrin aldehyde	<0.05		
Endosulfan I	<0.05	-	CT1 - General Solid Waste (suitable for recycling)
Endosulfan II	<0.05	-	CT1 - General Solid Waste (suitable for recycling)
Heptachlor	<0.05		
Heptachlor epoxide	<0.05		
Hexachlorophene	-		
Isodrin	-		
Pentachlorobenzene	-		
Pentachlorophenol	-		
"1,2,4,5-tetrachlorobenzene"	-		
"2,3,4,6-tetrachlorophenol"	-		
"1,2,4-trichlorobenzene"	-		
"2,4,5-Trichlorophenoxy acetic acid, salts and esters"	-		
Total Positive Scheduled Chemicals	<0.2	N/A	SCC1 - General Solid Waste (suitable for recycling)
Total Moderately Harmful Pesticides		N/A	Not determined
POLYCYCLIC AROMATIC HYDROCARBONS (PAH)			
Acenaphthene	<0.5		
Acenaphthylene	<0.5		
Anthracene	<0.5		
Benzo(a)anthracene	<0.5		
Benzo(a)pyrene	<0.5		CT1 - General Solid Waste (suitable for recycling)
Benzo(b,j,k)fluoranthene	<0.5		
Benzo(ghi)perylene	<0.5		
Chrysene	<0.5		
"Dibenzo(a,h)anthracene"	<0.5		
Fluoranthene	<0.5		
Fluorene	<0.5		
"Indeno(1,2,3-cd)pyrene"	<0.5		
Naphthalene	<0.5		
Phenanthrene	<0.5		
Pyrene	<0.5		
Total Positive PAH's	<0.5	N/A	SCC1 - General Solid Waste (suitable for recycling)
POLYCHLORINATED BIPHENYLS (PCB)			
Aroclor 1016	-		
Aroclor 1221	-		
Aroclor 1232	-		
Aroclor 1242	-		
Aroclor 1248	-		
Aroclor 1254	-		
Aroclor 1260	-		
Aroclor 1262	-		
Aroclor 1268	-		
Total Positive PCB's	<0.1	N/A	SCC1 - General Solid Waste (suitable for recycling)
NITRATED COMPOUNDS - EXPLOSIVES			
"2,4-Dinitrotoluene"			Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
OTHER VOLATILE ORGANIC COMPOUNDS (VOC)			
Carbon tetrachloride	-		Not determined
Chlorobenzene	-		Not determined
Chloroform	-		Not determined
"1,2-Dichlorobenzene"	-		Not determined
"1,4-Dichlorobenzene"	-		Not determined
"1,2-Dichloroethane"	-		Not determined
"1,1-Dichloroethylene"	-		Not determined
Dichloromethane	-		Not determined
Styrene (vinyl benzene)	-		Not determined
"1,1,1,2-Tetrachloroethane"	-		Not determined
"1,1,2,2-Tetrachloroethane"	-		Not determined
Tetrachloroethylene	-		Not determined
"1,1,1-Trichloroethane"	-		Not determined
"1,1,2-Trichloroethane"	-		Not determined
Trichloroethylene	-		Not determined
Vinyl chloride	-		Not determined
OTHER SEMI-VOLATILE ORGANIC COMPOUNDS (SVOC)			
Chlorpyrifos			Not determined
Nitrobenzene			Not determined
Phenol (non-halogenated)			Not determined
"2,4,5-Trichlorophenol"			Not determined
"2,4,6-Trichlorophenol"			Not determined
OTHER CONTAMINANTS			
Methyl ethyl ketone			Not determined
Tebuconazole			Not determined
Plasticiser compounds			Not determined
Cresol (total)			Not determined
ASBESTOS_DETECTION			
Asbestos Detection			

DETAILED SUMMARY

Waste Classification Guidelines Part 1: Classifying Waste (EPA, Nov. 2014)

Abbreviations: ND - Not Determined (Analyte not tested)
SCC - Specific Contaminant Concentration
TCLP - Toxicity Characteristics Leaching Procedure

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Consultant:

Andrew Jacovides

Authorised Signatory:

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Environment & Soil Sciences

Solid Waste Assessment & Classification

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Batch N°: 50296 **Sample N°: 4** **Date Received: 1/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Job N°:
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and Contamination - The Bends**
SESL Quote N°:
Sample Name: **BH2 0 - 200**
Sample Type: **Soil**
Test Type: **BWC_EXT, ASS1**

REPORT SUMMARY

Material Type: ○ Soil ○ Other

The results of laboratory testing conducted on this material indicate the presence of a range of contaminants commonly encountered in the natural and urban areas. This assessment was conducted to provide a waste classification for off-site disposal, based on the *Waste Classification Guidelines Part 1: Classifying Waste* (NSW EPA November 2014). Comparison of the laboratory analysis results with the criteria, indicates the material is considered to be within the General Solid Waste classification and as a result of this process, it can be disposed of as per Schedule 1 Part 3 of the Protection of the Environment Operations Act 1997.

EC (dS/m): pH (in H_2O): -

CONTAMINANT		SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
METALS AND METALLOIDS				
Arsenic	(As)	<5	-	CT1 - General Solid Waste (suitable for recycling)
Beryllium	(Be)	-		Not determined
Cadmium	(Cd)	<1		CT1 - General Solid Waste (suitable for recycling)
Chromium VI	(CrVI)	-		Not determined
Total Chromium	(Cr)	3		
Copper	(Cu)	<5	N/A	Suitable for recycling
Fluoride	(F)	-		Not determined
Lead	(Pb)	6		CT1 - General Solid Waste (suitable for recycling)
Mercury	(Hg)	<0.1		CT1 - General Solid Waste (suitable for recycling)
Molybdenum	(Mo)	-		Not determined
Nickel	(Ni)	<2		CT1 - General Solid Waste (suitable for recycling)
Selenium	(Se)	-		Not determined
Silver	(Ag)	-		Not determined
Zinc	(Zn)	18	N/A	Suitable for recycling
BTEX (MONO AROMATIC HYDROCARBONS)				
Benzene		<0.2		CT1 - General Solid Waste (suitable for recycling)
Toluene		<0.5		CT1 - General Solid Waste (suitable for recycling)
Ethylbenzene		<0.5		CT1 - General Solid Waste (suitable for recycling)
meta & para-Xylene		<0.5		
ortho-Xylene		<0.5		
Xylenes (total)		<0.5		CT1 - General Solid Waste (suitable for recycling)
TOTAL PETROLEUM HYDROCARBONS (TPH)				
C6 - C9		<10	N/A	SCC1 - General Solid Waste (suitable for recycling)
C10 - C14		<50		
C15 - C28		<100		
C29 - C36		<100		
C10-C36 Total TPH		<100	N/A	SCC1 - General Solid Waste (suitable for recycling)
CYANIDES				
Cyanide (amenable)				Not determined
Cyanide (Total)				Not determined
PHENOXY ACID HERBICIDES				
2,4-D	(2,4-Dichlorophenoxy-acetic acid)			Not determined
Fluroxypyr				Not determined
Picloram				Not determined
Triclopyr				Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
SCHEDULED CHEMICALS - ORGANOCHLORINE PESTICIDES (OCP)			
Aldrin	<0.05		
"Benzene, hexachloro"	<0.05		
"Benzene, pentachloronitro"	-		
alpha - BHC	<0.05		
beta - BHC	<0.05		
gamma - BHC (Lindane)	<0.05		
delta - BHC	<0.05		
a - Chlordane	<0.05		
g - Chlordane	<0.05		
DDT, DDD & DDE	<0.2		
Dieldrin	<0.05		
Endrin	<0.05		
Endrin aldehyde	<0.05		
Endosulfan I	<0.05	-	CT1 - General Solid Waste (suitable for recycling)
Endosulfan II	<0.05	-	CT1 - General Solid Waste (suitable for recycling)
Heptachlor	<0.05		
Heptachlor epoxide	<0.05		
Hexachlorophene	-		
Isodrin	-		
Pentachlorobenzene	-		
Pentachlorophenol	-		
"1,2,4,5-tetrachlorobenzene"	-		
"2,3,4,6-tetrachlorophenol"	-		
"1,2,4-trichlorobenzene"	-		
"2,4,5-Trichlorophenoxy acetic acid, salts and esters"	-		
Total Positive Scheduled Chemicals	<0.2	N/A	SCC1 - General Solid Waste (suitable for recycling)
Total Moderately Harmful Pesticides		N/A	Not determined
POLYCYCLIC AROMATIC HYDROCARBONS (PAH)			
Acenaphthene	<0.5		
Acenaphthylene	<0.5		
Anthracene	<0.5		
Benzo(a)anthracene	<0.5		
Benzo(a)pyrene	<0.5		CT1 - General Solid Waste (suitable for recycling)
Benzo(b,j,k)fluoranthene	<0.5		
Benzo(ghi)perylene	<0.5		
Chrysene	<0.5		
"Dibenzo(a,h)anthracene"	<0.5		
Fluoranthene	<0.5		
Fluorene	<0.5		
"Indeno(1,2,3-cd)pyrene"	<0.5		
Naphthalene	<0.5		
Phenanthrene	<0.5		
Pyrene	<0.5		
Total Positive PAH's	<0.5	N/A	SCC1 - General Solid Waste (suitable for recycling)
POLYCHLORINATED BIPHENYLS (PCB)			
Aroclor 1016	-		
Aroclor 1221	-		
Aroclor 1232	-		
Aroclor 1242	-		
Aroclor 1248	-		
Aroclor 1254	-		
Aroclor 1260	-		
Aroclor 1262	-		
Aroclor 1268	-		
Total Positive PCB's	<0.1	N/A	SCC1 - General Solid Waste (suitable for recycling)
NITRATED COMPOUNDS - EXPLOSIVES			
"2,4-Dinitrotoluene"			Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
OTHER VOLATILE ORGANIC COMPOUNDS (VOC)			
Carbon tetrachloride	-		Not determined
Chlorobenzene	-		Not determined
Chloroform	-		Not determined
"1,2-Dichlorobenzene"	-		Not determined
"1,4-Dichlorobenzene"	-		Not determined
"1,2-Dichloroethane"	-		Not determined
"1,1-Dichloroethylene"	-		Not determined
Dichloromethane	-		Not determined
Styrene (vinyl benzene)	-		Not determined
"1,1,1,2-Tetrachloroethane"	-		Not determined
"1,1,2,2-Tetrachloroethane"	-		Not determined
Tetrachloroethylene	-		Not determined
"1,1,1-Trichloroethane"	-		Not determined
"1,1,2-Trichloroethane"	-		Not determined
Trichloroethylene	-		Not determined
Vinyl chloride	-		Not determined
OTHER SEMI-VOLATILE ORGANIC COMPOUNDS (SVOC)			
Chlorpyrifos			Not determined
Nitrobenzene			Not determined
Phenol (non-halogenated)			Not determined
"2,4,5-Trichlorophenol"			Not determined
"2,4,6-Trichlorophenol"			Not determined
OTHER CONTAMINANTS			
Methyl ethyl ketone			Not determined
Tebuconazole			Not determined
Plasticiser compounds			Not determined
Cresol (total)			Not determined
ASBESTOS_DETECTION			
Asbestos Detection			

DETAILED SUMMARY

Waste Classification Guidelines Part 1: Classifying Waste (EPA, Nov. 2014)

Abbreviations: ND - Not Determined (Analyte not tested)
SCC - Specific Contaminant Concentration
TCLP - Toxicity Characteristics Leaching Procedure

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Consultant:

Andrew Jacovides

Authorised Signatory:

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Batch N°: 50296 **Sample N°: 5** **Date Received: 1/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Job N°:
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and Contamination - The Bends**
SESL Quote N°:
Sample Name: **BH2 500 - 600**
Sample Type: **Soil**
Test Type: **BWC_EXT, ASS1**

REPORT SUMMARY

Material Type: ○ Soil ○ Other

The results of laboratory testing conducted on this material indicate the presence of a range of contaminants commonly encountered in the natural and urban areas. This assessment was conducted to provide a waste classification for off-site disposal, based on the *Waste Classification Guidelines Part 1: Classifying Waste* (NSW EPA November 2014). Comparison of the laboratory analysis results with the criteria, indicates the material is considered to be within the General Solid Waste classification and as a result of this process, it can be disposed of as per Schedule 1 Part 3 of the Protection of the Environment Operations Act 1997.

EC (dS/m): pH (in H_2O): -

CONTAMINANT		SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
METALS AND METALLOIDS				
Arsenic	(As)	<5	-	CT1 - General Solid Waste (suitable for recycling)
Beryllium	(Be)	-		Not determined
Cadmium	(Cd)	<1		CT1 - General Solid Waste (suitable for recycling)
Chromium VI	(CrVI)	-		Not determined
Total Chromium	(Cr)	2		
Copper	(Cu)	<5	N/A	Suitable for recycling
Fluoride	(F)	-		Not determined
Lead	(Pb)	6		CT1 - General Solid Waste (suitable for recycling)
Mercury	(Hg)	<0.1		CT1 - General Solid Waste (suitable for recycling)
Molybdenum	(Mo)	-		Not determined
Nickel	(Ni)	<2		CT1 - General Solid Waste (suitable for recycling)
Selenium	(Se)	-		Not determined
Silver	(Ag)	-		Not determined
Zinc	(Zn)	18	N/A	Suitable for recycling
BTEX (MONO AROMATIC HYDROCARBONS)				
Benzene		<0.2		CT1 - General Solid Waste (suitable for recycling)
Toluene		<0.5		CT1 - General Solid Waste (suitable for recycling)
Ethylbenzene		<0.5		CT1 - General Solid Waste (suitable for recycling)
meta & para-Xylene		<0.5		
ortho-Xylene		<0.5		
Xylenes (total)		<0.5		CT1 - General Solid Waste (suitable for recycling)
TOTAL PETROLEUM HYDROCARBONS (TPH)				
C6 - C9		<10	N/A	SCC1 - General Solid Waste (suitable for recycling)
C10 - C14		<50		
C15 - C28		<100		
C29 - C36		<100		
C10-C36 Total TPH		<100	N/A	SCC1 - General Solid Waste (suitable for recycling)
CYANIDES				
Cyanide (amenable)				Not determined
Cyanide (Total)				Not determined
PHENOXY ACID HERBICIDES				
2,4-D	(2,4-Dichlorophenoxy-acetic acid)			Not determined
Fluroxypyr				Not determined
Picloram				Not determined
Triclopyr				Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
SCHEDULED CHEMICALS - ORGANOCHLORINE PESTICIDES (OCP)			
Aldrin	<0.05		
"Benzene, hexachloro"	<0.05		
"Benzene, pentachloronitro"	-		
alpha - BHC	<0.05		
beta - BHC	<0.05		
gamma - BHC (Lindane)	<0.05		
delta - BHC	<0.05		
a - Chlordane	<0.05		
g - Chlordane	<0.05		
DDT, DDD & DDE	<0.2		
Dieldrin	<0.05		
Endrin	<0.05		
Endrin aldehyde	<0.05		
Endosulfan I	<0.05	-	CT1 - General Solid Waste (suitable for recycling)
Endosulfan II	<0.05	-	CT1 - General Solid Waste (suitable for recycling)
Heptachlor	<0.05		
Heptachlor epoxide	<0.05		
Hexachlorophene	-		
Isodrin	-		
Pentachlorobenzene	-		
Pentachlorophenol	-		
"1,2,4,5-tetrachlorobenzene"	-		
"2,3,4,6-tetrachlorophenol"	-		
"1,2,4-trichlorobenzene"	-		
"2,4,5-Trichlorophenoxy acetic acid, salts and esters"	-		
Total Positive Scheduled Chemicals	<0.2	N/A	SCC1 - General Solid Waste (suitable for recycling)
Total Moderately Harmful Pesticides		N/A	Not determined
POLYCYCLIC AROMATIC HYDROCARBONS (PAH)			
Acenaphthene	<0.5		
Acenaphthylene	<0.5		
Anthracene	<0.5		
Benzo(a)anthracene	<0.5		
Benzo(a)pyrene	<0.5		CT1 - General Solid Waste (suitable for recycling)
Benzo(b,j,k)fluoranthene	<0.5		
Benzo(ghi)perylene	<0.5		
Chrysene	<0.5		
"Dibenzo(a,h)anthracene"	<0.5		
Fluoranthene	<0.5		
Fluorene	<0.5		
"Indeno(1,2,3-cd)pyrene"	<0.5		
Naphthalene	<0.5		
Phenanthrene	<0.5		
Pyrene	<0.5		
Total Positive PAH's	<0.5	N/A	SCC1 - General Solid Waste (suitable for recycling)
POLYCHLORINATED BIPHENYLS (PCB)			
Aroclor 1016	-		
Aroclor 1221	-		
Aroclor 1232	-		
Aroclor 1242	-		
Aroclor 1248	-		
Aroclor 1254	-		
Aroclor 1260	-		
Aroclor 1262	-		
Aroclor 1268	-		
Total Positive PCB's	<0.1	N/A	SCC1 - General Solid Waste (suitable for recycling)
NITRATED COMPOUNDS - EXPLOSIVES			
"2,4-Dinitrotoluene"			Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
OTHER VOLATILE ORGANIC COMPOUNDS (VOC)			
Carbon tetrachloride	-		Not determined
Chlorobenzene	-		Not determined
Chloroform	-		Not determined
"1,2-Dichlorobenzene"	-		Not determined
"1,4-Dichlorobenzene"	-		Not determined
"1,2-Dichloroethane"	-		Not determined
"1,1-Dichloroethylene"	-		Not determined
Dichloromethane	-		Not determined
Styrene (vinyl benzene)	-		Not determined
"1,1,1,2-Tetrachloroethane"	-		Not determined
"1,1,2,2-Tetrachloroethane"	-		Not determined
Tetrachloroethylene	-		Not determined
"1,1,1-Trichloroethane"	-		Not determined
"1,1,2-Trichloroethane"	-		Not determined
Trichloroethylene	-		Not determined
Vinyl chloride	-		Not determined
OTHER SEMI-VOLATILE ORGANIC COMPOUNDS (SVOC)			
Chlorpyrifos			Not determined
Nitrobenzene			Not determined
Phenol (non-halogenated)			Not determined
"2,4,5-Trichlorophenol"			Not determined
"2,4,6-Trichlorophenol"			Not determined
OTHER CONTAMINANTS			
Methyl ethyl ketone			Not determined
Tebuconazole			Not determined
Plasticiser compounds			Not determined
Cresol (total)			Not determined
ASBESTOS_DETECTION			
Asbestos Detection			

DETAILED SUMMARY

Waste Classification Guidelines Part 1: Classifying Waste (EPA, Nov. 2014)

Abbreviations: ND - Not Determined (Analyte not tested)
SCC - Specific Contaminant Concentration
TCLP - Toxicity Characteristics Leaching Procedure

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Consultant:

Andrew Jacovides

Authorised Signatory:

All analyses performed by a NATA accredited sub-contracting laboratory.

Solid Waste Assessment & Classification

SESL AUSTRALIA
Environment & Soil Sciences

Sample Drop Off: 16 Chilvers Road, Thornleigh NSW 2120
Mailing Address: PO Box 357, Pennant Hills NSW 1715
Tel: 1300 30 40 80
Fax: 1300 64 46 89
Em: info@sesl.com.au
Web: www.sesl.com.au

Tests are performed under a quality system certified as complying with ISO 9001: 2008. Results and conclusions assume that sampling is representative. This document shall not be reproduced except in full.

Batch N°: 50296 **Sample N°: 6** **Date Received: 1/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Job N°:
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and Contamination - The Bends**
SESL Quote N°:
Sample Name: **BH2 1100 - 1200**
Sample Type: **Soil**
Test Type: **BWC_EXT, sPOCAS_ALS**

REPORT SUMMARY

Material Type: ○ Soil ○ Other

The results of laboratory testing conducted on this material indicate the presence of a range of contaminants commonly encountered in the natural and urban areas. This assessment was conducted to provide a waste classification for off-site disposal, based on the *Waste Classification Guidelines Part 1: Classifying Waste* (NSW EPA November 2014). Comparison of the laboratory analysis results with the criteria, indicates the material is considered to be within the General Solid Waste classification and as a result of this process, it can be disposed of as per Schedule 1 Part 3 of the Protection of the Environment Operations Act 1997.

EC (dS/m): pH (in H_2O): -

CONTAMINANT		SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
METALS AND METALLOIDS				
Arsenic	(As)	<5	-	CT1 - General Solid Waste (suitable for recycling)
Beryllium	(Be)	-		Not determined
Cadmium	(Cd)	<1		CT1 - General Solid Waste (suitable for recycling)
Chromium VI	(CrVI)	-		Not determined
Total Chromium	(Cr)	4		
Copper	(Cu)	<5	N/A	Suitable for recycling
Fluoride	(F)	-		Not determined
Lead	(Pb)	16		CT1 - General Solid Waste (suitable for recycling)
Mercury	(Hg)	<0.1		CT1 - General Solid Waste (suitable for recycling)
Molybdenum	(Mo)	-		Not determined
Nickel	(Ni)	<2		CT1 - General Solid Waste (suitable for recycling)
Selenium	(Se)	-		Not determined
Silver	(Ag)	-		Not determined
Zinc	(Zn)	14	N/A	Suitable for recycling
BTEX (MONO AROMATIC HYDROCARBONS)				
Benzene		<0.2		CT1 - General Solid Waste (suitable for recycling)
Toluene		<0.5		CT1 - General Solid Waste (suitable for recycling)
Ethylbenzene		<0.5		CT1 - General Solid Waste (suitable for recycling)
meta & para-Xylene		<0.5		
ortho-Xylene		<0.5		
Xylenes (total)		<0.5		CT1 - General Solid Waste (suitable for recycling)
TOTAL PETROLEUM HYDROCARBONS (TPH)				
C6 - C9		<10	N/A	SCC1 - General Solid Waste (suitable for recycling)
C10 - C14		<50		
C15 - C28		<100		
C29 - C36		<100		
C10-C36 Total TPH		<100	N/A	SCC1 - General Solid Waste (suitable for recycling)
CYANIDES				
Cyanide (amenable)				Not determined
Cyanide (Total)				Not determined
PHENOXY ACID HERBICIDES				
2,4-D	(2,4-Dichlorophenoxy-acetic acid)			Not determined
Fluroxypyr				Not determined
Picloram				Not determined
Triclopyr				Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
SCHEDULED CHEMICALS - ORGANOCHLORINE PESTICIDES (OCP)			
Aldrin	<0.05		
"Benzene, hexachloro"	<0.05		
"Benzene, pentachloronitro"	-		
alpha - BHC	<0.05		
beta - BHC	<0.05		
gamma - BHC (Lindane)	<0.05		
delta - BHC	<0.05		
a - Chlordane	<0.05		
g - Chlordane	<0.05		
DDT, DDD & DDE	<0.2		
Dieldrin	<0.05		
Endrin	<0.05		
Endrin aldehyde	<0.05		
Endosulfan I	<0.05	-	CT1 - General Solid Waste (suitable for recycling)
Endosulfan II	<0.05	-	CT1 - General Solid Waste (suitable for recycling)
Heptachlor	<0.05		
Heptachlor epoxide	<0.05		
Hexachlorophene	-		
Isodrin	-		
Pentachlorobenzene	-		
Pentachlorophenol	-		
"1,2,4,5-tetrachlorobenzene"	-		
"2,3,4,6-tetrachlorophenol"	-		
"1,2,4-trichlorobenzene"	-		
"2,4,5-Trichlorophenoxy acetic acid, salts and esters"	-		
Total Positive Scheduled Chemicals	<0.2	N/A	SCC1 - General Solid Waste (suitable for recycling)
Total Moderately Harmful Pesticides		N/A	Not determined
POLYCYCLIC AROMATIC HYDROCARBONS (PAH)			
Acenaphthene	<0.5		
Acenaphthylene	<0.5		
Anthracene	<0.5		
Benzo(a)anthracene	<0.5		
Benzo(a)pyrene	<0.5		CT1 - General Solid Waste (suitable for recycling)
Benzo(b,j,k)fluoranthene	<0.5		
Benzo(ghi)perylene	<0.5		
Chrysene	<0.5		
"Dibenzo(a,h)anthracene"	<0.5		
Fluoranthene	<0.5		
Fluorene	<0.5		
"Indeno(1,2,3-cd)pyrene"	<0.5		
Naphthalene	<0.5		
Phenanthrene	<0.5		
Pyrene	<0.5		
Total Positive PAH's	<0.5	N/A	SCC1 - General Solid Waste (suitable for recycling)
POLYCHLORINATED BIPHENYLS (PCB)			
Aroclor 1016	-		
Aroclor 1221	-		
Aroclor 1232	-		
Aroclor 1242	-		
Aroclor 1248	-		
Aroclor 1254	-		
Aroclor 1260	-		
Aroclor 1262	-		
Aroclor 1268	-		
Total Positive PCB's	<0.1	N/A	SCC1 - General Solid Waste (suitable for recycling)
NITRATED COMPOUNDS - EXPLOSIVES			
"2,4-Dinitrotoluene"			Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
OTHER VOLATILE ORGANIC COMPOUNDS (VOC)			
Carbon tetrachloride	-		Not determined
Chlorobenzene	-		Not determined
Chloroform	-		Not determined
"1,2-Dichlorobenzene"	-		Not determined
"1,4-Dichlorobenzene"	-		Not determined
"1,2-Dichloroethane"	-		Not determined
"1,1-Dichloroethylene"	-		Not determined
Dichloromethane	-		Not determined
Styrene (vinyl benzene)	-		Not determined
"1,1,1,2-Tetrachloroethane"	-		Not determined
"1,1,2,2-Tetrachloroethane"	-		Not determined
Tetrachloroethylene	-		Not determined
"1,1,1-Trichloroethane"	-		Not determined
"1,1,2-Trichloroethane"	-		Not determined
Trichloroethylene	-		Not determined
Vinyl chloride	-		Not determined
OTHER SEMI-VOLATILE ORGANIC COMPOUNDS (SVOC)			
Chlorpyrifos			Not determined
Nitrobenzene			Not determined
Phenol (non-halogenated)			Not determined
"2,4,5-Trichlorophenol"			Not determined
"2,4,6-Trichlorophenol"			Not determined
OTHER CONTAMINANTS			
Methyl ethyl ketone			Not determined
Tebuconazole			Not determined
Plasticiser compounds			Not determined
Cresol (total)			Not determined
ASBESTOS_DETECTION			
Asbestos Detection			

DETAILED SUMMARY

Waste Classification Guidelines Part 1: Classifying Waste (EPA, Nov. 2014)

Abbreviations: ND - Not Determined (Analyte not tested)
SCC - Specific Contaminant Concentration
TCLP - Toxicity Characteristics Leaching Procedure

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Consultant:

Andrew Jacovides

Authorised Signatory:

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Solid Waste Assessment & Classification

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Batch N°: 50296 **Sample N°: 7** **Date Received: 1/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Job N°:
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and Contamination - The Bends**
SESL Quote N°:
Sample Name: **BH3 0 - 200**
Sample Type: **Soil**
Test Type: **BWC_EXT, ASS1**

REPORT SUMMARY

Material Type: ○ Soil ○ Other

The results of laboratory testing conducted on this material indicate the presence of a range of contaminants commonly encountered in the natural and urban areas. This assessment was conducted to provide a waste classification for off-site disposal, based on the *Waste Classification Guidelines Part 1: Classifying Waste* (NSW EPA November 2014). Comparison of the laboratory analysis results with the criteria, indicates the material is considered to be within the General Solid Waste classification and as a result of this process, it can be disposed of as per Schedule 1 Part 3 of the Protection of the Environment Operations Act 1997.

EC (dS/m): pH (in H_2O): -

CONTAMINANT		SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
METALS AND METALLOIDS				
Arsenic	(As)	<5	-	CT1 - General Solid Waste (suitable for recycling)
Beryllium	(Be)	-		Not determined
Cadmium	(Cd)	<1		CT1 - General Solid Waste (suitable for recycling)
Chromium VI	(CrVI)	-		Not determined
Total Chromium	(Cr)	4		
Copper	(Cu)	<5	N/A	Suitable for recycling
Fluoride	(F)	-		Not determined
Lead	(Pb)	11		CT1 - General Solid Waste (suitable for recycling)
Mercury	(Hg)	<0.1		CT1 - General Solid Waste (suitable for recycling)
Molybdenum	(Mo)	-		Not determined
Nickel	(Ni)	2		CT1 - General Solid Waste (suitable for recycling)
Selenium	(Se)	-		Not determined
Silver	(Ag)	-		Not determined
Zinc	(Zn)	35	N/A	Suitable for recycling
BTEX (MONO AROMATIC HYDROCARBONS)				
Benzene		<0.2		CT1 - General Solid Waste (suitable for recycling)
Toluene		<0.5		CT1 - General Solid Waste (suitable for recycling)
Ethylbenzene		<0.5		CT1 - General Solid Waste (suitable for recycling)
meta & para-Xylene		<0.5		
ortho-Xylene		<0.5		
Xylenes (total)		<0.5		CT1 - General Solid Waste (suitable for recycling)
TOTAL PETROLEUM HYDROCARBONS (TPH)				
C6 - C9		<10	N/A	SCC1 - General Solid Waste (suitable for recycling)
C10 - C14		<50		
C15 - C28		<100		
C29 - C36		<100		
C10-C36 Total TPH		<100	N/A	SCC1 - General Solid Waste (suitable for recycling)
CYANIDES				
Cyanide (amenable)				Not determined
Cyanide (Total)				Not determined
PHENOXY ACID HERBICIDES				
2,4-D	(2,4-Dichlorophenoxy-acetic acid)			Not determined
Fluroxypyr				Not determined
Picloram				Not determined
Triclopyr				Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
SCHEDULED CHEMICALS - ORGANOCHLORINE PESTICIDES (OCP)			
Aldrin	<0.05		
"Benzene, hexachloro"	<0.05		
"Benzene, pentachloronitro"	-		
alpha - BHC	<0.05		
beta - BHC	<0.05		
gamma - BHC (Lindane)	<0.05		
delta - BHC	<0.05		
a - Chlordane	<0.05		
g - Chlordane	<0.05		
DDT, DDD & DDE	<0.2		
Dieldrin	<0.05		
Endrin	<0.05		
Endrin aldehyde	<0.05		
Endosulfan I	<0.05	-	CT1 - General Solid Waste (suitable for recycling)
Endosulfan II	<0.05	-	CT1 - General Solid Waste (suitable for recycling)
Heptachlor	<0.05		
Heptachlor epoxide	<0.05		
Hexachlorophene	-		
Isodrin	-		
Pentachlorobenzene	-		
Pentachlorophenol	-		
"1,2,4,5-tetrachlorobenzene"	-		
"2,3,4,6-tetrachlorophenol"	-		
"1,2,4-trichlorobenzene"	-		
"2,4,5-Trichlorophenoxy acetic acid, salts and esters"	-		
Total Positive Scheduled Chemicals	<0.2	N/A	SCC1 - General Solid Waste (suitable for recycling)
Total Moderately Harmful Pesticides		N/A	Not determined
POLYCYCLIC AROMATIC HYDROCARBONS (PAH)			
Acenaphthene	<0.5		
Acenaphthylene	<0.5		
Anthracene	<0.5		
Benzo(a)anthracene	<0.5		
Benzo(a)pyrene	<0.5		CT1 - General Solid Waste (suitable for recycling)
Benzo(b,j,k)fluoranthene	<0.5		
Benzo(ghi)perylene	<0.5		
Chrysene	<0.5		
"Dibenzo(a,h)anthracene"	<0.5		
Fluoranthene	<0.5		
Fluorene	<0.5		
"Indeno(1,2,3-cd)pyrene"	<0.5		
Naphthalene	<0.5		
Phenanthrene	<0.5		
Pyrene	<0.5		
Total Positive PAH's	<0.5	N/A	SCC1 - General Solid Waste (suitable for recycling)
POLYCHLORINATED BIPHENYLS (PCB)			
Aroclor 1016	-		
Aroclor 1221	-		
Aroclor 1232	-		
Aroclor 1242	-		
Aroclor 1248	-		
Aroclor 1254	-		
Aroclor 1260	-		
Aroclor 1262	-		
Aroclor 1268	-		
Total Positive PCB's	<0.1	N/A	SCC1 - General Solid Waste (suitable for recycling)
NITRATED COMPOUNDS - EXPLOSIVES			
"2,4-Dinitrotoluene"			Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
OTHER VOLATILE ORGANIC COMPOUNDS (VOC)			
Carbon tetrachloride	-		Not determined
Chlorobenzene	-		Not determined
Chloroform	-		Not determined
"1,2-Dichlorobenzene"	-		Not determined
"1,4-Dichlorobenzene"	-		Not determined
"1,2-Dichloroethane"	-		Not determined
"1,1-Dichloroethylene"	-		Not determined
Dichloromethane	-		Not determined
Styrene (vinyl benzene)	-		Not determined
"1,1,1,2-Tetrachloroethane"	-		Not determined
"1,1,2,2-Tetrachloroethane"	-		Not determined
Tetrachloroethylene	-		Not determined
"1,1,1-Trichloroethane"	-		Not determined
"1,1,2-Trichloroethane"	-		Not determined
Trichloroethylene	-		Not determined
Vinyl chloride	-		Not determined
OTHER SEMI-VOLATILE ORGANIC COMPOUNDS (SVOC)			
Chlorpyrifos			Not determined
Nitrobenzene			Not determined
Phenol (non-halogenated)			Not determined
"2,4,5-Trichlorophenol"			Not determined
"2,4,6-Trichlorophenol"			Not determined
OTHER CONTAMINANTS			
Methyl ethyl ketone			Not determined
Tebuconazole			Not determined
Plasticiser compounds			Not determined
Cresol (total)			Not determined
ASBESTOS_DETECTION			
Asbestos Detection			

DETAILED SUMMARY

Waste Classification Guidelines Part 1: Classifying Waste (EPA, Nov. 2014)

Abbreviations: ND - Not Determined (Analyte not tested)
SCC - Specific Contaminant Concentration
TCLP - Toxicity Characteristics Leaching Procedure

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Consultant:

Andrew Jacovides

Authorised Signatory:

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Environment & Soil Sciences

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Web: www.sesl.com.au

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Batch N°: 50296 **Sample N°: 8** **Date Received: 1/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Job N°:
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and Contamination - The Bends**
SESL Quote N°:
Sample Name: **BH3 200 - 300**
Sample Type: **Soil**
Test Type: **BWC_EXT, ASS1**

REPORT SUMMARY

Material Type: ○ Soil ○ Other

The results of laboratory testing conducted on this material indicate the presence of a range of contaminants commonly encountered in the natural and urban areas. This assessment was conducted to provide a waste classification for off-site disposal, based on the *Waste Classification Guidelines Part 1: Classifying Waste* (NSW EPA November 2014). Comparison of the laboratory analysis results with the criteria, indicates the material is considered to be within the General Solid Waste classification and as a result of this process, it can be disposed of as per Schedule 1 Part 3 of the Protection of the Environment Operations Act 1997.

EC (dS/m): pH (in H_2O): -

CONTAMINANT		SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
METALS AND METALLOIDS				
Arsenic	(As)	<5	-	CT1 - General Solid Waste (suitable for recycling)
Beryllium	(Be)	-		Not determined
Cadmium	(Cd)	<1		CT1 - General Solid Waste (suitable for recycling)
Chromium VI	(CrVI)	-		Not determined
Total Chromium	(Cr)	5		
Copper	(Cu)	5	N/A	Suitable for recycling
Fluoride	(F)	-		Not determined
Lead	(Pb)	15		CT1 - General Solid Waste (suitable for recycling)
Mercury	(Hg)	<0.1		CT1 - General Solid Waste (suitable for recycling)
Molybdenum	(Mo)	-		Not determined
Nickel	(Ni)	2		CT1 - General Solid Waste (suitable for recycling)
Selenium	(Se)	-		Not determined
Silver	(Ag)	-		Not determined
Zinc	(Zn)	43	N/A	Suitable for recycling
BTEX (MONO AROMATIC HYDROCARBONS)				
Benzene		<0.2		CT1 - General Solid Waste (suitable for recycling)
Toluene		<0.5		CT1 - General Solid Waste (suitable for recycling)
Ethylbenzene		<0.5		CT1 - General Solid Waste (suitable for recycling)
meta & para-Xylene		<0.5		
ortho-Xylene		<0.5		
Xylenes (total)		<0.5		CT1 - General Solid Waste (suitable for recycling)
TOTAL PETROLEUM HYDROCARBONS (TPH)				
C6 - C9		<10	N/A	SCC1 - General Solid Waste (suitable for recycling)
C10 - C14		<50		
C15 - C28		<100		
C29 - C36		<100		
C10-C36 Total TPH		<100	N/A	SCC1 - General Solid Waste (suitable for recycling)
CYANIDES				
Cyanide (amenable)				Not determined
Cyanide (Total)				Not determined
PHENOXY ACID HERBICIDES				
2,4-D	(2,4-Dichlorophenoxy-acetic acid)			Not determined
Fluroxypyr				Not determined
Picloram				Not determined
Triclopyr				Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
SCHEDULED CHEMICALS - ORGANOCHLORINE PESTICIDES (OCP)			
Aldrin	<0.05		
"Benzene, hexachloro"	<0.05		
"Benzene, pentachloronitro"	-		
alpha - BHC	<0.05		
beta - BHC	<0.05		
gamma - BHC (Lindane)	<0.05		
delta - BHC	<0.05		
a - Chlordane	<0.05		
g - Chlordane	<0.05		
DDT, DDD & DDE	<0.2		
Dieldrin	<0.05		
Endrin	<0.05		
Endrin aldehyde	<0.05		
Endosulfan I	<0.05	-	CT1 - General Solid Waste (suitable for recycling)
Endosulfan II	<0.05	-	CT1 - General Solid Waste (suitable for recycling)
Heptachlor	<0.05		
Heptachlor epoxide	<0.05		
Hexachlorophene	-		
Isodrin	-		
Pentachlorobenzene	-		
Pentachlorophenol	-		
"1,2,4,5-tetrachlorobenzene"	-		
"2,3,4,6-tetrachlorophenol"	-		
"1,2,4-trichlorobenzene"	-		
"2,4,5-Trichlorophenoxy acetic acid, salts and esters"	-		
Total Positive Scheduled Chemicals	<0.2	N/A	SCC1 - General Solid Waste (suitable for recycling)
Total Moderately Harmful Pesticides		N/A	Not determined
POLYCYCLIC AROMATIC HYDROCARBONS (PAH)			
Acenaphthene	<0.5		
Acenaphthylene	<0.5		
Anthracene	<0.5		
Benzo(a)anthracene	<0.5		
Benzo(a)pyrene	<0.5		CT1 - General Solid Waste (suitable for recycling)
Benzo(b,j,k)fluoranthene	<0.5		
Benzo(ghi)perylene	<0.5		
Chrysene	<0.5		
"Dibenzo(a,h)anthracene"	<0.5		
Fluoranthene	<0.5		
Fluorene	<0.5		
"Indeno(1,2,3-cd)pyrene"	<0.5		
Naphthalene	<0.5		
Phenanthrene	<0.5		
Pyrene	<0.5		
Total Positive PAH's	<0.5	N/A	SCC1 - General Solid Waste (suitable for recycling)
POLYCHLORINATED BIPHENYLS (PCB)			
Aroclor 1016	-		
Aroclor 1221	-		
Aroclor 1232	-		
Aroclor 1242	-		
Aroclor 1248	-		
Aroclor 1254	-		
Aroclor 1260	-		
Aroclor 1262	-		
Aroclor 1268	-		
Total Positive PCB's	<0.1	N/A	SCC1 - General Solid Waste (suitable for recycling)
NITRATED COMPOUNDS - EXPLOSIVES			
"2,4-Dinitrotoluene"			Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
OTHER VOLATILE ORGANIC COMPOUNDS (VOC)			
Carbon tetrachloride	-		Not determined
Chlorobenzene	-		Not determined
Chloroform	-		Not determined
"1,2-Dichlorobenzene"	-		Not determined
"1,4-Dichlorobenzene"	-		Not determined
"1,2-Dichloroethane"	-		Not determined
"1,1-Dichloroethylene"	-		Not determined
Dichloromethane	-		Not determined
Styrene (vinyl benzene)	-		Not determined
"1,1,1,2-Tetrachloroethane"	-		Not determined
"1,1,2,2-Tetrachloroethane"	-		Not determined
Tetrachloroethylene	-		Not determined
"1,1,1-Trichloroethane"	-		Not determined
"1,1,2-Trichloroethane"	-		Not determined
Trichloroethylene	-		Not determined
Vinyl chloride	-		Not determined
OTHER SEMI-VOLATILE ORGANIC COMPOUNDS (SVOC)			
Chlorpyrifos			Not determined
Nitrobenzene			Not determined
Phenol (non-halogenated)			Not determined
"2,4,5-Trichlorophenol"			Not determined
"2,4,6-Trichlorophenol"			Not determined
OTHER CONTAMINANTS			
Methyl ethyl ketone			Not determined
Tebuconazole			Not determined
Plasticiser compounds			Not determined
Cresol (total)			Not determined
ASBESTOS_DETECTION			
Asbestos Detection			

DETAILED SUMMARY

Waste Classification Guidelines Part 1: Classifying Waste (EPA, Nov. 2014)

Abbreviations: ND - Not Determined (Analyte not tested)
SCC - Specific Contaminant Concentration
TCLP - Toxicity Characteristics Leaching Procedure

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Consultant:

Andrew Jacovides

Authorised Signatory:

All analyses performed by a NATA accredited sub-contracting laboratory.

Solid Waste Assessment & Classification

SESL AUSTRALIA
Environment & Soil Sciences

Sample Drop Off: 16 Chilvers Road, Thornleigh NSW 2120
Mailing Address: PO Box 357, Pennant Hills NSW 1715
Tel: 1300 30 40 80
Fax: 1300 64 46 89
Em: info@sesl.com.au
Web: www.sesl.com.au

Tests are performed under a quality system certified as complying with ISO 9001: 2008. Results and conclusions assume that sampling is representative. This document shall not be reproduced except in full.

Batch N°: 50296 **Sample N°: 9** **Date Received: 1/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Job N°:
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and Contamination - The Bends**
SESL Quote N°:
Sample Name: **BH3 800 - 900**
Sample Type: **Soil**
Test Type: **BWC_EXT, sPOCAS_ALS**

REPORT SUMMARY

Material Type: ○ Soil ○ Other

The results of laboratory testing conducted on this material indicate the presence of a range of contaminants commonly encountered in the natural and urban areas. This assessment was conducted to provide a waste classification for off-site disposal, based on the *Waste Classification Guidelines Part 1: Classifying Waste* (NSW EPA November 2014). Comparison of the laboratory analysis results with the criteria, indicates the material is considered to be within the General Solid Waste classification and as a result of this process, it can be disposed of as per Schedule 1 Part 3 of the Protection of the Environment Operations Act 1997.

EC (dS/m): pH (in H_2O): -

CONTAMINANT		SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
METALS AND METALLOIDS				
Arsenic	(As)	<5	-	CT1 - General Solid Waste (suitable for recycling)
Beryllium	(Be)	-		Not determined
Cadmium	(Cd)	<1		CT1 - General Solid Waste (suitable for recycling)
Chromium VI	(CrVI)	-		Not determined
Total Chromium	(Cr)	<2		
Copper	(Cu)	<5	N/A	Suitable for recycling
Fluoride	(F)	-		Not determined
Lead	(Pb)	<5		CT1 - General Solid Waste (suitable for recycling)
Mercury	(Hg)	<0.1		CT1 - General Solid Waste (suitable for recycling)
Molybdenum	(Mo)	-		Not determined
Nickel	(Ni)	<2		CT1 - General Solid Waste (suitable for recycling)
Selenium	(Se)	-		Not determined
Silver	(Ag)	-		Not determined
Zinc	(Zn)	15	N/A	Suitable for recycling
BTEX (MONO AROMATIC HYDROCARBONS)				
Benzene		<0.2		CT1 - General Solid Waste (suitable for recycling)
Toluene		<0.5		CT1 - General Solid Waste (suitable for recycling)
Ethylbenzene		<0.5		CT1 - General Solid Waste (suitable for recycling)
meta & para-Xylene		<0.5		
ortho-Xylene		<0.5		
Xylenes (total)		<0.5		CT1 - General Solid Waste (suitable for recycling)
TOTAL PETROLEUM HYDROCARBONS (TPH)				
C6 - C9		<10	N/A	SCC1 - General Solid Waste (suitable for recycling)
C10 - C14		<50		
C15 - C28		<100		
C29 - C36		<100		
C10-C36 Total TPH		<100	N/A	SCC1 - General Solid Waste (suitable for recycling)
CYANIDES				
Cyanide (amenable)				Not determined
Cyanide (Total)				Not determined
PHENOXY ACID HERBICIDES				
2,4-D	(2,4-Dichlorophenoxy-acetic acid)			Not determined
Fluroxypyr				Not determined
Picloram				Not determined
Triclopyr				Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
SCHEDULED CHEMICALS - ORGANOCHLORINE PESTICIDES (OCP)			
Aldrin	<0.05		
"Benzene, hexachloro"	<0.05		
"Benzene, pentachloronitro"	-		
alpha - BHC	<0.05		
beta - BHC	<0.05		
gamma - BHC (Lindane)	<0.05		
delta - BHC	<0.05		
a - Chlordane	<0.05		
g - Chlordane	<0.05		
DDT, DDD & DDE	<0.2		
Dieldrin	<0.05		
Endrin	<0.05		
Endrin aldehyde	<0.05		
Endosulfan I	<0.05	-	CT1 - General Solid Waste (suitable for recycling)
Endosulfan II	<0.05	-	CT1 - General Solid Waste (suitable for recycling)
Heptachlor	<0.05		
Heptachlor epoxide	<0.05		
Hexachlorophene	-		
Isodrin	-		
Pentachlorobenzene	-		
Pentachlorophenol	-		
"1,2,4,5-tetrachlorobenzene"	-		
"2,3,4,6-tetrachlorophenol"	-		
"1,2,4-trichlorobenzene"	-		
"2,4,5-Trichlorophenoxy acetic acid, salts and esters"	-		
Total Positive Scheduled Chemicals	<0.2	N/A	SCC1 - General Solid Waste (suitable for recycling)
Total Moderately Harmful Pesticides		N/A	Not determined
POLYCYCLIC AROMATIC HYDROCARBONS (PAH)			
Acenaphthene	<0.5		
Acenaphthylene	<0.5		
Anthracene	<0.5		
Benzo(a)anthracene	<0.5		
Benzo(a)pyrene	<0.5		CT1 - General Solid Waste (suitable for recycling)
Benzo(b,j,k)fluoranthene	<0.5		
Benzo(ghi)perylene	<0.5		
Chrysene	<0.5		
"Dibenzo(a,h)anthracene"	<0.5		
Fluoranthene	<0.5		
Fluorene	<0.5		
"Indeno(1,2,3-cd)pyrene"	<0.5		
Naphthalene	<0.5		
Phenanthrene	<0.5		
Pyrene	<0.5		
Total Positive PAH's	<0.5	N/A	SCC1 - General Solid Waste (suitable for recycling)
POLYCHLORINATED BIPHENYLS (PCB)			
Aroclor 1016	-		
Aroclor 1221	-		
Aroclor 1232	-		
Aroclor 1242	-		
Aroclor 1248	-		
Aroclor 1254	-		
Aroclor 1260	-		
Aroclor 1262	-		
Aroclor 1268	-		
Total Positive PCB's	<0.1	N/A	SCC1 - General Solid Waste (suitable for recycling)
NITRATED COMPOUNDS - EXPLOSIVES			
"2,4-Dinitrotoluene"			Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
OTHER VOLATILE ORGANIC COMPOUNDS (VOC)			
Carbon tetrachloride	-		Not determined
Chlorobenzene	-		Not determined
Chloroform	-		Not determined
"1,2-Dichlorobenzene"	-		Not determined
"1,4-Dichlorobenzene"	-		Not determined
"1,2-Dichloroethane"	-		Not determined
"1,1-Dichloroethylene"	-		Not determined
Dichloromethane	-		Not determined
Styrene (vinyl benzene)	-		Not determined
"1,1,1,2-Tetrachloroethane"	-		Not determined
"1,1,2,2-Tetrachloroethane"	-		Not determined
Tetrachloroethylene	-		Not determined
"1,1,1-Trichloroethane"	-		Not determined
"1,1,2-Trichloroethane"	-		Not determined
Trichloroethylene	-		Not determined
Vinyl chloride	-		Not determined
OTHER SEMI-VOLATILE ORGANIC COMPOUNDS (SVOC)			
Chlorpyrifos			Not determined
Nitrobenzene			Not determined
Phenol (non-halogenated)			Not determined
"2,4,5-Trichlorophenol"			Not determined
"2,4,6-Trichlorophenol"			Not determined
OTHER CONTAMINANTS			
Methyl ethyl ketone			Not determined
Tebuconazole			Not determined
Plasticiser compounds			Not determined
Cresol (total)			Not determined
ASBESTOS_DETECTION			
Asbestos Detection			

DETAILED SUMMARY

Waste Classification Guidelines Part 1: Classifying Waste (EPA, Nov. 2014)

Abbreviations: ND - Not Determined (Analyte not tested)
SCC - Specific Contaminant Concentration
TCLP - Toxicity Characteristics Leaching Procedure

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Consultant:

Andrew Jacovides

Authorised Signatory:

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Environment & Soil Sciences

Solid Waste Assessment & Classification

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Web: www.sesl.com.au

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Batch N°: 50296 **Sample N°: 10** **Date Received: 1/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Job N°:
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and Contamination - The Bends**
SESL Quote N°:
Sample Name: **BH4 0 - 200**
Sample Type: **Soil**
Test Type: **BWC_EXT, ASS1**

REPORT SUMMARY

Material Type: ○ Soil ○ Other

The results of laboratory testing conducted on this material indicate the presence of a range of contaminants commonly encountered in the natural and urban areas. This assessment was conducted to provide a waste classification for off-site disposal, based on the *Waste Classification Guidelines Part 1: Classifying Waste* (NSW EPA November 2014). Comparison of the laboratory analysis results with the criteria, indicates the material is considered to be within the General Solid Waste classification and as a result of this process, it can be disposed of as per Schedule 1 Part 3 of the Protection of the Environment Operations Act 1997.

EC (dS/m): pH (in H_2O): -

CONTAMINANT		SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
METALS AND METALLOIDS				
Arsenic	(As)	<5	-	CT1 - General Solid Waste (suitable for recycling)
Beryllium	(Be)	-		Not determined
Cadmium	(Cd)	<1		CT1 - General Solid Waste (suitable for recycling)
Chromium VI	(CrVI)	-		Not determined
Total Chromium	(Cr)	5		
Copper	(Cu)	6	N/A	Suitable for recycling
Fluoride	(F)	-		Not determined
Lead	(Pb)	15		CT1 - General Solid Waste (suitable for recycling)
Mercury	(Hg)	<0.1		CT1 - General Solid Waste (suitable for recycling)
Molybdenum	(Mo)	-		Not determined
Nickel	(Ni)	2		CT1 - General Solid Waste (suitable for recycling)
Selenium	(Se)	-		Not determined
Silver	(Ag)	-		Not determined
Zinc	(Zn)	48	N/A	Suitable for recycling
BTEX (MONO AROMATIC HYDROCARBONS)				
Benzene		<0.2		CT1 - General Solid Waste (suitable for recycling)
Toluene		<0.5		CT1 - General Solid Waste (suitable for recycling)
Ethylbenzene		<0.5		CT1 - General Solid Waste (suitable for recycling)
meta & para-Xylene		<0.5		
ortho-Xylene		<0.5		
Xylenes (total)		<0.5		CT1 - General Solid Waste (suitable for recycling)
TOTAL PETROLEUM HYDROCARBONS (TPH)				
C6 - C9		<10	N/A	SCC1 - General Solid Waste (suitable for recycling)
C10 - C14		<50		
C15 - C28		<100		
C29 - C36		<100		
C10-C36 Total TPH		<100	N/A	SCC1 - General Solid Waste (suitable for recycling)
CYANIDES				
Cyanide (amenable)				Not determined
Cyanide (Total)				Not determined
PHENOXY ACID HERBICIDES				
2,4-D	(2,4-Dichlorophenoxy-acetic acid)			Not determined
Fluroxypyr				Not determined
Picloram				Not determined
Triclopyr				Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
SCHEDULED CHEMICALS - ORGANOCHLORINE PESTICIDES (OCP)			
Aldrin	<0.05		
"Benzene, hexachloro"	<0.05		
"Benzene, pentachloronitro"	-		
alpha - BHC	<0.05		
beta - BHC	<0.05		
gamma - BHC (Lindane)	<0.05		
delta - BHC	<0.05		
a - Chlordane	<0.05		
g - Chlordane	<0.05		
DDT, DDD & DDE	<0.2		
Dieldrin	<0.05		
Endrin	<0.05		
Endrin aldehyde	<0.05		
Endosulfan I	<0.05	-	CT1 - General Solid Waste (suitable for recycling)
Endosulfan II	<0.05	-	CT1 - General Solid Waste (suitable for recycling)
Heptachlor	<0.05		
Heptachlor epoxide	<0.05		
Hexachlorophene	-		
Isodrin	-		
Pentachlorobenzene	-		
Pentachlorophenol	-		
"1,2,4,5-tetrachlorobenzene"	-		
"2,3,4,6-tetrachlorophenol"	-		
"1,2,4-trichlorobenzene"	-		
"2,4,5-Trichlorophenoxy acetic acid, salts and esters"	-		
Total Positive Scheduled Chemicals	<0.2	N/A	SCC1 - General Solid Waste (suitable for recycling)
Total Moderately Harmful Pesticides		N/A	Not determined
POLYCYCLIC AROMATIC HYDROCARBONS (PAH)			
Acenaphthene	<0.5		
Acenaphthylene	<0.5		
Anthracene	<0.5		
Benzo(a)anthracene	<0.5		
Benzo(a)pyrene	<0.5		CT1 - General Solid Waste (suitable for recycling)
Benzo(b,j,k)fluoranthene	<0.5		
Benzo(ghi)perylene	<0.5		
Chrysene	<0.5		
"Dibenzo(a,h)anthracene"	<0.5		
Fluoranthene	<0.5		
Fluorene	<0.5		
"Indeno(1,2,3-cd)pyrene"	<0.5		
Naphthalene	<0.5		
Phenanthrene	<0.5		
Pyrene	<0.5		
Total Positive PAH's	<0.5	N/A	SCC1 - General Solid Waste (suitable for recycling)
POLYCHLORINATED BIPHENYLS (PCB)			
Aroclor 1016	-		
Aroclor 1221	-		
Aroclor 1232	-		
Aroclor 1242	-		
Aroclor 1248	-		
Aroclor 1254	-		
Aroclor 1260	-		
Aroclor 1262	-		
Aroclor 1268	-		
Total Positive PCB's	<0.1	N/A	SCC1 - General Solid Waste (suitable for recycling)
NITRATED COMPOUNDS - EXPLOSIVES			
"2,4-Dinitrotoluene"			Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
OTHER VOLATILE ORGANIC COMPOUNDS (VOC)			
Carbon tetrachloride	-		Not determined
Chlorobenzene	-		Not determined
Chloroform	-		Not determined
"1,2-Dichlorobenzene"	-		Not determined
"1,4-Dichlorobenzene"	-		Not determined
"1,2-Dichloroethane"	-		Not determined
"1,1-Dichloroethylene"	-		Not determined
Dichloromethane	-		Not determined
Styrene (vinyl benzene)	-		Not determined
"1,1,1,2-Tetrachloroethane"	-		Not determined
"1,1,2,2-Tetrachloroethane"	-		Not determined
Tetrachloroethylene	-		Not determined
"1,1,1-Trichloroethane"	-		Not determined
"1,1,2-Trichloroethane"	-		Not determined
Trichloroethylene	-		Not determined
Vinyl chloride	-		Not determined
OTHER SEMI-VOLATILE ORGANIC COMPOUNDS (SVOC)			
Chlorpyrifos			Not determined
Nitrobenzene			Not determined
Phenol (non-halogenated)			Not determined
"2,4,5-Trichlorophenol"			Not determined
"2,4,6-Trichlorophenol"			Not determined
OTHER CONTAMINANTS			
Methyl ethyl ketone			Not determined
Tebuconazole			Not determined
Plasticiser compounds			Not determined
Cresol (total)			Not determined
ASBESTOS_DETECTION			
Asbestos Detection			

DETAILED SUMMARY

Waste Classification Guidelines Part 1: Classifying Waste (EPA, Nov. 2014)

Abbreviations: ND - Not Determined (Analyte not tested)
SCC - Specific Contaminant Concentration
TCLP - Toxicity Characteristics Leaching Procedure

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Consultant:

Andrew Jacovides

Authorised Signatory:

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Environment & Soil Sciences

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Web: www.sesl.com.au

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Batch N°: 50296 **Sample N°: 11** **Date Received: 1/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Job N°:
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and Contamination - The Bends**
SESL Quote N°:
Sample Name: **BH4 300 - 400**
Sample Type: **Soil**
Test Type: **BWC_EXT, sPOCAS_ALS**

REPORT SUMMARY

Material Type: ○ Soil ○ Other

The results of laboratory testing conducted on this material indicate the presence of a range of contaminants commonly encountered in the natural and urban areas. This assessment was conducted to provide a waste classification for off-site disposal, based on the *Waste Classification Guidelines Part 1: Classifying Waste* (NSW EPA November 2014). Comparison of the laboratory analysis results with the criteria, indicates the material is considered to be within the General Solid Waste classification and as a result of this process, it can be disposed of as per Schedule 1 Part 3 of the Protection of the Environment Operations Act 1997.

EC (dS/m): pH (in H_2O): -

CONTAMINANT		SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
METALS AND METALLOIDS				
Arsenic	(As)	<5	-	CT1 - General Solid Waste (suitable for recycling)
Beryllium	(Be)	-		Not determined
Cadmium	(Cd)	<1		CT1 - General Solid Waste (suitable for recycling)
Chromium VI	(CrVI)	-		Not determined
Total Chromium	(Cr)	6		
Copper	(Cu)	8	N/A	Suitable for recycling
Fluoride	(F)	-		Not determined
Lead	(Pb)	19		CT1 - General Solid Waste (suitable for recycling)
Mercury	(Hg)	<0.1		CT1 - General Solid Waste (suitable for recycling)
Molybdenum	(Mo)	-		Not determined
Nickel	(Ni)	3		CT1 - General Solid Waste (suitable for recycling)
Selenium	(Se)	-		Not determined
Silver	(Ag)	-		Not determined
Zinc	(Zn)	63	N/A	Suitable for recycling
BTEX (MONO AROMATIC HYDROCARBONS)				
Benzene		<0.2		CT1 - General Solid Waste (suitable for recycling)
Toluene		<0.5		CT1 - General Solid Waste (suitable for recycling)
Ethylbenzene		<0.5		CT1 - General Solid Waste (suitable for recycling)
meta & para-Xylene		<0.5		
ortho-Xylene		<0.5		
Xylenes (total)		<0.5		CT1 - General Solid Waste (suitable for recycling)
TOTAL PETROLEUM HYDROCARBONS (TPH)				
C6 - C9		<10	N/A	SCC1 - General Solid Waste (suitable for recycling)
C10 - C14		<50		
C15 - C28		<100		
C29 - C36		<100		
C10-C36 Total TPH		<100	N/A	SCC1 - General Solid Waste (suitable for recycling)
CYANIDES				
Cyanide (amenable)				Not determined
Cyanide (Total)				Not determined
PHENOXY ACID HERBICIDES				
2,4-D	(2,4-Dichlorophenoxy-acetic acid)			Not determined
Fluroxypyr				Not determined
Picloram				Not determined
Triclopyr				Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
SCHEDULED CHEMICALS - ORGANOCHLORINE PESTICIDES (OCP)			
Aldrin	<0.05		
"Benzene, hexachloro"	<0.05		
"Benzene, pentachloronitro"	-		
alpha - BHC	<0.05		
beta - BHC	<0.05		
gamma - BHC (Lindane)	<0.05		
delta - BHC	<0.05		
a - Chlordane	<0.05		
g - Chlordane	<0.05		
DDT, DDD & DDE	<0.2		
Dieldrin	<0.05		
Endrin	<0.05		
Endrin aldehyde	<0.05		
Endosulfan I	<0.05	-	CT1 - General Solid Waste (suitable for recycling)
Endosulfan II	<0.05	-	CT1 - General Solid Waste (suitable for recycling)
Heptachlor	<0.05		
Heptachlor epoxide	<0.05		
Hexachlorophene	-		
Isodrin	-		
Pentachlorobenzene	-		
Pentachlorophenol	-		
"1,2,4,5-tetrachlorobenzene"	-		
"2,3,4,6-tetrachlorophenol"	-		
"1,2,4-trichlorobenzene"	-		
"2,4,5-Trichlorophenoxy acetic acid, salts and esters"	-		
Total Positive Scheduled Chemicals	<0.2	N/A	SCC1 - General Solid Waste (suitable for recycling)
Total Moderately Harmful Pesticides		N/A	Not determined
POLYCYCLIC AROMATIC HYDROCARBONS (PAH)			
Acenaphthene	<0.5		
Acenaphthylene	<0.5		
Anthracene	<0.5		
Benzo(a)anthracene	<0.5		
Benzo(a)pyrene	<0.5		CT1 - General Solid Waste (suitable for recycling)
Benzo(b,j,k)fluoranthene	<0.5		
Benzo(ghi)perylene	<0.5		
Chrysene	<0.5		
"Dibenzo(a,h)anthracene"	<0.5		
Fluoranthene	<0.5		
Fluorene	<0.5		
"Indeno(1,2,3-cd)pyrene"	<0.5		
Naphthalene	<0.5		
Phenanthrene	<0.5		
Pyrene	<0.5		
Total Positive PAH's	<0.5	N/A	SCC1 - General Solid Waste (suitable for recycling)
POLYCHLORINATED BIPHENYLS (PCB)			
Aroclor 1016	-		
Aroclor 1221	-		
Aroclor 1232	-		
Aroclor 1242	-		
Aroclor 1248	-		
Aroclor 1254	-		
Aroclor 1260	-		
Aroclor 1262	-		
Aroclor 1268	-		
Total Positive PCB's	<0.1	N/A	SCC1 - General Solid Waste (suitable for recycling)
NITRATED COMPOUNDS - EXPLOSIVES			
"2,4-Dinitrotoluene"			Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
OTHER VOLATILE ORGANIC COMPOUNDS (VOC)			
Carbon tetrachloride	-		Not determined
Chlorobenzene	-		Not determined
Chloroform	-		Not determined
"1,2-Dichlorobenzene"	-		Not determined
"1,4-Dichlorobenzene"	-		Not determined
"1,2-Dichloroethane"	-		Not determined
"1,1-Dichloroethylene"	-		Not determined
Dichloromethane	-		Not determined
Styrene (vinyl benzene)	-		Not determined
"1,1,1,2-Tetrachloroethane"	-		Not determined
"1,1,2,2-Tetrachloroethane"	-		Not determined
Tetrachloroethylene	-		Not determined
"1,1,1-Trichloroethane"	-		Not determined
"1,1,2-Trichloroethane"	-		Not determined
Trichloroethylene	-		Not determined
Vinyl chloride	-		Not determined
OTHER SEMI-VOLATILE ORGANIC COMPOUNDS (SVOC)			
Chlorpyrifos			Not determined
Nitrobenzene			Not determined
Phenol (non-halogenated)			Not determined
"2,4,5-Trichlorophenol"			Not determined
"2,4,6-Trichlorophenol"			Not determined
OTHER CONTAMINANTS			
Methyl ethyl ketone			Not determined
Tebuconazole			Not determined
Plasticiser compounds			Not determined
Cresol (total)			Not determined
ASBESTOS_DETECTION			
Asbestos Detection			

DETAILED SUMMARY

Waste Classification Guidelines Part 1: Classifying Waste (EPA, Nov. 2014)

Abbreviations: ND - Not Determined (Analyte not tested)
SCC - Specific Contaminant Concentration
TCLP - Toxicity Characteristics Leaching Procedure

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Consultant:

Andrew Jacovides

Authorised Signatory:

All analyses performed by a NATA accredited sub-contracting laboratory.

SESL AUSTRALIA
Environment & Soil Sciences

Solid Waste Assessment & Classification

Sample Drop Off: 16 Chilvers Road, Thornleigh NSW 2120
Mailing Address: PO Box 357, Pennant Hills NSW 1715
Tel: 1300 30 40 80
Fax: 1300 64 46 89
Em: info@sesl.com.au
Web: www.sesl.com.au

Tests are performed under a quality system certified as complying with ISO 9001: 2008. Results and conclusions assume that sampling is representative. This document shall not be reproduced except in full.

Batch N°: 50296 **Sample N°: 12** **Date Received: 1/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Job N°:
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and Contamination - The Bends**
SESL Quote N°:
Sample Name: **BH4 500 - 700**
Sample Type: **Soil**
Test Type: **BWC_EXT, ASS1**

REPORT SUMMARY

Material Type: ○ Soil ○ Other

The results of laboratory testing conducted on this material indicate the presence of a range of contaminants commonly encountered in the natural and urban areas. This assessment was conducted to provide a waste classification for off-site disposal, based on the *Waste Classification Guidelines Part 1: Classifying Waste* (NSW EPA November 2014). Comparison of the laboratory analysis results with the criteria, indicates the material is considered to be within the General Solid Waste classification and as a result of this process, it can be disposed of as per Schedule 1 Part 3 of the Protection of the Environment Operations Act 1997.

EC (dS/m): pH (in H_2O): -

CONTAMINANT		SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
METALS AND METALLOIDS				
Arsenic	(As)	<5	-	CT1 - General Solid Waste (suitable for recycling)
Beryllium	(Be)	-		Not determined
Cadmium	(Cd)	<1		CT1 - General Solid Waste (suitable for recycling)
Chromium VI	(CrVI)	-		Not determined
Total Chromium	(Cr)	14		
Copper	(Cu)	16	N/A	Suitable for recycling
Fluoride	(F)	-		Not determined
Lead	(Pb)	53		CT1 - General Solid Waste (suitable for recycling)
Mercury	(Hg)	<0.1		CT1 - General Solid Waste (suitable for recycling)
Molybdenum	(Mo)	-		Not determined
Nickel	(Ni)	6		CT1 - General Solid Waste (suitable for recycling)
Selenium	(Se)	-		Not determined
Silver	(Ag)	-		Not determined
Zinc	(Zn)	123	N/A	Suitable for recycling
BTEX (MONO AROMATIC HYDROCARBONS)				
Benzene		<0.2		CT1 - General Solid Waste (suitable for recycling)
Toluene		<0.5		CT1 - General Solid Waste (suitable for recycling)
Ethylbenzene		<0.5		CT1 - General Solid Waste (suitable for recycling)
meta & para-Xylene		<0.5		
ortho-Xylene		<0.5		
Xylenes (total)		<0.5		CT1 - General Solid Waste (suitable for recycling)
TOTAL PETROLEUM HYDROCARBONS (TPH)				
C6 - C9		<10	N/A	SCC1 - General Solid Waste (suitable for recycling)
C10 - C14		<50		
C15 - C28		<100		
C29 - C36		<100		
C10-C36 Total TPH		<100	N/A	SCC1 - General Solid Waste (suitable for recycling)
CYANIDES				
Cyanide (amenable)				Not determined
Cyanide (Total)				Not determined
PHENOXY ACID HERBICIDES				
2,4-D	(2,4-Dichlorophenoxy-acetic acid)			Not determined
Fluroxypyr				Not determined
Picloram				Not determined
Triclopyr				Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
SCHEDULED CHEMICALS - ORGANOCHLORINE PESTICIDES (OCP)			
Aldrin	<0.05		
"Benzene, hexachloro"	<0.05		
"Benzene, pentachloronitro"	-		
alpha - BHC	<0.05		
beta - BHC	<0.05		
gamma - BHC (Lindane)	<0.05		
delta - BHC	<0.05		
a - Chlordane	<0.05		
g - Chlordane	<0.05		
DDT, DDD & DDE	<0.2		
Dieldrin	<0.05		
Endrin	<0.05		
Endrin aldehyde	<0.05		
Endosulfan I	<0.05	-	CT1 - General Solid Waste (suitable for recycling)
Endosulfan II	<0.05	-	CT1 - General Solid Waste (suitable for recycling)
Heptachlor	<0.05		
Heptachlor epoxide	<0.05		
Hexachlorophene	-		
Isodrin	-		
Pentachlorobenzene	-		
Pentachlorophenol	-		
"1,2,4,5-tetrachlorobenzene"	-		
"2,3,4,6-tetrachlorophenol"	-		
"1,2,4-trichlorobenzene"	-		
"2,4,5-Trichlorophenoxy acetic acid, salts and esters"	-		
Total Positive Scheduled Chemicals	<0.2	N/A	SCC1 - General Solid Waste (suitable for recycling)
Total Moderately Harmful Pesticides		N/A	Not determined
POLYCYCLIC AROMATIC HYDROCARBONS (PAH)			
Acenaphthene	<0.5		
Acenaphthylene	<0.5		
Anthracene	<0.5		
Benzo(a)anthracene	<0.5		
Benzo(a)pyrene	<0.5		CT1 - General Solid Waste (suitable for recycling)
Benzo(b,j,k)fluoranthene	<0.5		
Benzo(ghi)perylene	<0.5		
Chrysene	<0.5		
"Dibenzo(a,h)anthracene"	<0.5		
Fluoranthene	<0.5		
Fluorene	<0.5		
"Indeno(1,2,3-cd)pyrene"	<0.5		
Naphthalene	<0.5		
Phenanthrene	<0.5		
Pyrene	<0.5		
Total Positive PAH's	<0.5	N/A	SCC1 - General Solid Waste (suitable for recycling)
POLYCHLORINATED BIPHENYLS (PCB)			
Aroclor 1016	-		
Aroclor 1221	-		
Aroclor 1232	-		
Aroclor 1242	-		
Aroclor 1248	-		
Aroclor 1254	-		
Aroclor 1260	-		
Aroclor 1262	-		
Aroclor 1268	-		
Total Positive PCB's	<0.1	N/A	SCC1 - General Solid Waste (suitable for recycling)
NITRATED COMPOUNDS - EXPLOSIVES			
"2,4-Dinitrotoluene"			Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
OTHER VOLATILE ORGANIC COMPOUNDS (VOC)			
Carbon tetrachloride	-		Not determined
Chlorobenzene	-		Not determined
Chloroform	-		Not determined
"1,2-Dichlorobenzene"	-		Not determined
"1,4-Dichlorobenzene"	-		Not determined
"1,2-Dichloroethane"	-		Not determined
"1,1-Dichloroethylene"	-		Not determined
Dichloromethane	-		Not determined
Styrene (vinyl benzene)	-		Not determined
"1,1,1,2-Tetrachloroethane"	-		Not determined
"1,1,2,2-Tetrachloroethane"	-		Not determined
Tetrachloroethylene	-		Not determined
"1,1,1-Trichloroethane"	-		Not determined
"1,1,2-Trichloroethane"	-		Not determined
Trichloroethylene	-		Not determined
Vinyl chloride	-		Not determined
OTHER SEMI-VOLATILE ORGANIC COMPOUNDS (SVOC)			
Chlorpyrifos			Not determined
Nitrobenzene			Not determined
Phenol (non-halogenated)			Not determined
"2,4,5-Trichlorophenol"			Not determined
"2,4,6-Trichlorophenol"			Not determined
OTHER CONTAMINANTS			
Methyl ethyl ketone			Not determined
Tebuconazole			Not determined
Plasticiser compounds			Not determined
Cresol (total)			Not determined
ASBESTOS_DETECTION			
Asbestos Detection			

DETAILED SUMMARY

Waste Classification Guidelines Part 1: Classifying Waste (EPA, Nov. 2014)

Abbreviations: ND - Not Determined (Analyte not tested)
SCC - Specific Contaminant Concentration
TCLP - Toxicity Characteristics Leaching Procedure

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Consultant:

Andrew Jacovides

Authorised Signatory:

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Environment & Soil Sciences

Solid Waste Assessment & Classification

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Web: www.sesl.com.au

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Batch N°: 50296 **Sample N°: 13** **Date Received: 1/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Job N°:
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and Contamination - The Bends**
SESL Quote N°:
Sample Name: **BH5 0 - 200**
Sample Type: **Soil**
Test Type: **BWC_EXT, ASS1**

REPORT SUMMARY

Material Type: ○ Soil ○ Other

The results of laboratory testing conducted on this material indicate the presence of a range of contaminants commonly encountered in the natural and urban areas. This assessment was conducted to provide a waste classification for off-site disposal, based on the *Waste Classification Guidelines Part 1: Classifying Waste* (NSW EPA November 2014). Comparison of the laboratory analysis results with the criteria, indicates the material is considered to be within the General Solid Waste classification and as a result of this process, it can be disposed of as per Schedule 1 Part 3 of the Protection of the Environment Operations Act 1997.

EC (dS/m): pH (in H_2O): -

CONTAMINANT		SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
METALS AND METALLOIDS				
Arsenic	(As)	<5	-	CT1 - General Solid Waste (suitable for recycling)
Beryllium	(Be)	-		Not determined
Cadmium	(Cd)	<1		CT1 - General Solid Waste (suitable for recycling)
Chromium VI	(CrVI)	-		Not determined
Total Chromium	(Cr)	5		
Copper	(Cu)	6	N/A	Suitable for recycling
Fluoride	(F)	-		Not determined
Lead	(Pb)	16		CT1 - General Solid Waste (suitable for recycling)
Mercury	(Hg)	<0.1		CT1 - General Solid Waste (suitable for recycling)
Molybdenum	(Mo)	-		Not determined
Nickel	(Ni)	3		CT1 - General Solid Waste (suitable for recycling)
Selenium	(Se)	-		Not determined
Silver	(Ag)	-		Not determined
Zinc	(Zn)	50	N/A	Suitable for recycling
BTEX (MONO AROMATIC HYDROCARBONS)				
Benzene		<0.2		CT1 - General Solid Waste (suitable for recycling)
Toluene		<0.5		CT1 - General Solid Waste (suitable for recycling)
Ethylbenzene		<0.5		CT1 - General Solid Waste (suitable for recycling)
meta & para-Xylene		<0.5		
ortho-Xylene		<0.5		
Xylenes (total)		<0.5		CT1 - General Solid Waste (suitable for recycling)
TOTAL PETROLEUM HYDROCARBONS (TPH)				
C6 - C9		<10	N/A	SCC1 - General Solid Waste (suitable for recycling)
C10 - C14		<50		
C15 - C28		<100		
C29 - C36		<100		
C10-C36 Total TPH		<100	N/A	SCC1 - General Solid Waste (suitable for recycling)
CYANIDES				
Cyanide (amenable)				Not determined
Cyanide (Total)				Not determined
PHENOXY ACID HERBICIDES				
2,4-D	(2,4-Dichlorophenoxy-acetic acid)			Not determined
Fluroxypyr				Not determined
Picloram				Not determined
Triclopyr				Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
SCHEDULED CHEMICALS - ORGANOCHLORINE PESTICIDES (OCP)			
Aldrin	<0.05		
"Benzene, hexachloro"	<0.05		
"Benzene, pentachloronitro"	-		
alpha - BHC	<0.05		
beta - BHC	<0.05		
gamma - BHC (Lindane)	<0.05		
delta - BHC	<0.05		
a - Chlordane	<0.05		
g - Chlordane	<0.05		
DDT, DDD & DDE	<0.2		
Dieldrin	<0.05		
Endrin	<0.05		
Endrin aldehyde	<0.05		
Endosulfan I	<0.05	-	CT1 - General Solid Waste (suitable for recycling)
Endosulfan II	<0.05	-	CT1 - General Solid Waste (suitable for recycling)
Heptachlor	<0.05		
Heptachlor epoxide	<0.05		
Hexachlorophene	-		
Isodrin	-		
Pentachlorobenzene	-		
Pentachlorophenol	-		
"1,2,4,5-tetrachlorobenzene"	-		
"2,3,4,6-tetrachlorophenol"	-		
"1,2,4-trichlorobenzene"	-		
"2,4,5-Trichlorophenoxy acetic acid, salts and esters"	-		
Total Positive Scheduled Chemicals	<0.2	N/A	SCC1 - General Solid Waste (suitable for recycling)
Total Moderately Harmful Pesticides		N/A	Not determined
POLYCYCLIC AROMATIC HYDROCARBONS (PAH)			
Acenaphthene	<0.5		
Acenaphthylene	<0.5		
Anthracene	<0.5		
Benzo(a)anthracene	<0.5		
Benzo(a)pyrene	<0.5		CT1 - General Solid Waste (suitable for recycling)
Benzo(b,j,k)fluoranthene	<0.5		
Benzo(ghi)perylene	<0.5		
Chrysene	<0.5		
"Dibenzo(a,h)anthracene"	<0.5		
Fluoranthene	<0.5		
Fluorene	<0.5		
"Indeno(1,2,3-cd)pyrene"	<0.5		
Naphthalene	<0.5		
Phenanthrene	<0.5		
Pyrene	<0.5		
Total Positive PAH's	<0.5	N/A	SCC1 - General Solid Waste (suitable for recycling)
POLYCHLORINATED BIPHENYLS (PCB)			
Aroclor 1016	-		
Aroclor 1221	-		
Aroclor 1232	-		
Aroclor 1242	-		
Aroclor 1248	-		
Aroclor 1254	-		
Aroclor 1260	-		
Aroclor 1262	-		
Aroclor 1268	-		
Total Positive PCB's	<0.1	N/A	SCC1 - General Solid Waste (suitable for recycling)
NITRATED COMPOUNDS - EXPLOSIVES			
"2,4-Dinitrotoluene"			Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
OTHER VOLATILE ORGANIC COMPOUNDS (VOC)			
Carbon tetrachloride	-		Not determined
Chlorobenzene	-		Not determined
Chloroform	-		Not determined
"1,2-Dichlorobenzene"	-		Not determined
"1,4-Dichlorobenzene"	-		Not determined
"1,2-Dichloroethane"	-		Not determined
"1,1-Dichloroethylene"	-		Not determined
Dichloromethane	-		Not determined
Styrene (vinyl benzene)	-		Not determined
"1,1,1,2-Tetrachloroethane"	-		Not determined
"1,1,2,2-Tetrachloroethane"	-		Not determined
Tetrachloroethylene	-		Not determined
"1,1,1-Trichloroethane"	-		Not determined
"1,1,2-Trichloroethane"	-		Not determined
Trichloroethylene	-		Not determined
Vinyl chloride	-		Not determined
OTHER SEMI-VOLATILE ORGANIC COMPOUNDS (SVOC)			
Chlorpyrifos			Not determined
Nitrobenzene			Not determined
Phenol (non-halogenated)			Not determined
"2,4,5-Trichlorophenol"			Not determined
"2,4,6-Trichlorophenol"			Not determined
OTHER CONTAMINANTS			
Methyl ethyl ketone			Not determined
Tebuconazole			Not determined
Plasticiser compounds			Not determined
Cresol (total)			Not determined
ASBESTOS_DETECTION			
Asbestos Detection			

DETAILED SUMMARY

Waste Classification Guidelines Part 1: Classifying Waste (EPA, Nov. 2014)

Abbreviations: ND - Not Determined (Analyte not tested)
SCC - Specific Contaminant Concentration
TCLP - Toxicity Characteristics Leaching Procedure

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Consultant:

Andrew Jacovides

Authorised Signatory:

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Web: www.sesl.com.au

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Batch N°: 50296 **Sample N°: 14** **Date Received: 1/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Job N°:
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and Contamination - The Bends**
SESL Quote N°:
Sample Name: **BH5 500 - 600**
Sample Type: **Soil**
Test Type: **BWC_EXT, sPOCAS_ALS**

REPORT SUMMARY

Material Type: ○ Soil ○ Other

The results of laboratory testing conducted on this material indicate the presence of a range of contaminants commonly encountered in the natural and urban areas. This assessment was conducted to provide a waste classification for off-site disposal, based on the *Waste Classification Guidelines Part 1: Classifying Waste* (NSW EPA November 2014). Comparison of the laboratory analysis results with the criteria, indicates the material is considered to be within the General Solid Waste classification and as a result of this process, it can be disposed of as per Schedule 1 Part 3 of the Protection of the Environment Operations Act 1997.

EC (dS/m): pH (in H_2O): -

CONTAMINANT		SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
METALS AND METALLOIDS				
Arsenic	(As)	<5	-	CT1 - General Solid Waste (suitable for recycling)
Beryllium	(Be)	-		Not determined
Cadmium	(Cd)	<1		CT1 - General Solid Waste (suitable for recycling)
Chromium VI	(CrVI)	-		Not determined
Total Chromium	(Cr)	4		
Copper	(Cu)	<5	N/A	Suitable for recycling
Fluoride	(F)	-		Not determined
Lead	(Pb)	11		CT1 - General Solid Waste (suitable for recycling)
Mercury	(Hg)	<0.1		CT1 - General Solid Waste (suitable for recycling)
Molybdenum	(Mo)	-		Not determined
Nickel	(Ni)	<2		CT1 - General Solid Waste (suitable for recycling)
Selenium	(Se)	-		Not determined
Silver	(Ag)	-		Not determined
Zinc	(Zn)	29	N/A	Suitable for recycling
BTEX (MONO AROMATIC HYDROCARBONS)				
Benzene		<0.2		CT1 - General Solid Waste (suitable for recycling)
Toluene		<0.5		CT1 - General Solid Waste (suitable for recycling)
Ethylbenzene		<0.5		CT1 - General Solid Waste (suitable for recycling)
meta & para-Xylene		<0.5		
ortho-Xylene		<0.5		
Xylenes (total)		<0.5		CT1 - General Solid Waste (suitable for recycling)
TOTAL PETROLEUM HYDROCARBONS (TPH)				
C6 - C9		<10	N/A	SCC1 - General Solid Waste (suitable for recycling)
C10 - C14		<50		
C15 - C28		<100		
C29 - C36		<100		
C10-C36 Total TPH		<100	N/A	SCC1 - General Solid Waste (suitable for recycling)
CYANIDES				
Cyanide (amenable)				Not determined
Cyanide (Total)				Not determined
PHENOXY ACID HERBICIDES				
2,4-D	(2,4-Dichlorophenoxy-acetic acid)			Not determined
Fluroxypyr				Not determined
Picloram				Not determined
Triclopyr				Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
SCHEDULED CHEMICALS - ORGANOCHLORINE PESTICIDES (OCP)			
Aldrin	<0.05		
"Benzene, hexachloro"	<0.05		
"Benzene, pentachloronitro"	-		
alpha - BHC	<0.05		
beta - BHC	<0.05		
gamma - BHC (Lindane)	<0.05		
delta - BHC	<0.05		
a - Chlordane	<0.05		
g - Chlordane	<0.05		
DDT, DDD & DDE	<0.2		
Dieldrin	<0.05		
Endrin	<0.05		
Endrin aldehyde	<0.05		
Endosulfan I	<0.05	-	CT1 - General Solid Waste (suitable for recycling)
Endosulfan II	<0.05	-	CT1 - General Solid Waste (suitable for recycling)
Heptachlor	<0.05		
Heptachlor epoxide	<0.05		
Hexachlorophene	-		
Isodrin	-		
Pentachlorobenzene	-		
Pentachlorophenol	-		
"1,2,4,5-tetrachlorobenzene"	-		
"2,3,4,6-tetrachlorophenol"	-		
"1,2,4-trichlorobenzene"	-		
"2,4,5-Trichlorophenoxy acetic acid, salts and esters"	-		
Total Positive Scheduled Chemicals	<0.2	N/A	SCC1 - General Solid Waste (suitable for recycling)
Total Moderately Harmful Pesticides		N/A	Not determined
POLYCYCLIC AROMATIC HYDROCARBONS (PAH)			
Acenaphthene	<0.5		
Acenaphthylene	<0.5		
Anthracene	<0.5		
Benzo(a)anthracene	<0.5		
Benzo(a)pyrene	<0.5		CT1 - General Solid Waste (suitable for recycling)
Benzo(b,j,k)fluoranthene	<0.5		
Benzo(ghi)perylene	<0.5		
Chrysene	<0.5		
"Dibenzo(a,h)anthracene"	<0.5		
Fluoranthene	<0.5		
Fluorene	<0.5		
"Indeno(1,2,3-cd)pyrene"	<0.5		
Naphthalene	<0.5		
Phenanthrene	<0.5		
Pyrene	<0.5		
Total Positive PAH's	<0.5	N/A	SCC1 - General Solid Waste (suitable for recycling)
POLYCHLORINATED BIPHENYLS (PCB)			
Aroclor 1016	-		
Aroclor 1221	-		
Aroclor 1232	-		
Aroclor 1242	-		
Aroclor 1248	-		
Aroclor 1254	-		
Aroclor 1260	-		
Aroclor 1262	-		
Aroclor 1268	-		
Total Positive PCB's	<0.1	N/A	SCC1 - General Solid Waste (suitable for recycling)
NITRATED COMPOUNDS - EXPLOSIVES			
"2,4-Dinitrotoluene"			Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
OTHER VOLATILE ORGANIC COMPOUNDS (VOC)			
Carbon tetrachloride	-		Not determined
Chlorobenzene	-		Not determined
Chloroform	-		Not determined
"1,2-Dichlorobenzene"	-		Not determined
"1,4-Dichlorobenzene"	-		Not determined
"1,2-Dichloroethane"	-		Not determined
"1,1-Dichloroethylene"	-		Not determined
Dichloromethane	-		Not determined
Styrene (vinyl benzene)	-		Not determined
"1,1,1,2-Tetrachloroethane"	-		Not determined
"1,1,2,2-Tetrachloroethane"	-		Not determined
Tetrachloroethylene	-		Not determined
"1,1,1-Trichloroethane"	-		Not determined
"1,1,2-Trichloroethane"	-		Not determined
Trichloroethylene	-		Not determined
Vinyl chloride	-		Not determined
OTHER SEMI-VOLATILE ORGANIC COMPOUNDS (SVOC)			
Chlorpyrifos			Not determined
Nitrobenzene			Not determined
Phenol (non-halogenated)			Not determined
"2,4,5-Trichlorophenol"			Not determined
"2,4,6-Trichlorophenol"			Not determined
OTHER CONTAMINANTS			
Methyl ethyl ketone			Not determined
Tebuconazole			Not determined
Plasticiser compounds			Not determined
Cresol (total)			Not determined
ASBESTOS_DETECTION			
Asbestos Detection			

DETAILED SUMMARY

Waste Classification Guidelines Part 1: Classifying Waste (EPA, Nov. 2014)

Abbreviations: ND - Not Determined (Analyte not tested)
SCC - Specific Contaminant Concentration
TCLP - Toxicity Characteristics Leaching Procedure

Limitation of liability: This document and the the limited analysis undertaken should not be construed as a site contamination report. It does not meet the NSW EPA requirements in relation to a contamination assessment for the proposed land use. The findings presented are based on a.) the sample submitted to SESL by the client or their agent, or b.) site conditions that existed at the time of sampling by SESL field personnel. In the case of sampling by SESL, conclusions are based on the investigation of conditions at specific locations, chosen to be representative as possible under the given circumstances. SESL has used a degree of care, skill and diligence normally exercised by environmental consultants in similar circumstances and locality. No other warranty expressed or implied is made or intended. Section 143 of the Protection of the Environment Operations Act 1997 states that if waste is transported to a place that cannot lawfully be used as a waste facility for that waste, then the transporter and owner of the waste are each guilty of an offence. The transporter and owner of the waste have duty to ensure that the waste is disposed of in an appropriate manner. SESL accepts no liability whatsoever for the unlawful disposal of any waste from any site. Subject to payment of all fees due, the client alone shall have a licence to use this document. This document may not be reproduced except in full.

Consultant:

Andrew Jacovides

Authorised Signatory:

All analyses performed by a NATA accredited sub-contracting laboratory.

SESL AUSTRALIA
Environment & Soil Sciences

Solid Waste Assessment & Classification

Sample Drop Off: 16 Chilvers Road, Thornleigh NSW 2120
Tel: 1300 30 40 80
Fax: 1300 64 46 89
Mailing Address: PO Box 357, Pennant Hills NSW 1715
Em: info@sesl.com.au
Web: www.sesl.com.au

Tests are performed under a quality system certified as complying with ISO 9001: 2008. Results and conclusions assume that sampling is representative. This document shall not be reproduced except in full.

Batch N°: 50296 **Sample N°: 15** **Date Received: 1/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Job N°:
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and Contamination - The Bends**
SESL Quote N°:
Sample Name: **BH5 700 - 800**
Sample Type: **Soil**
Test Type: **BWC_EXT, ASS1**

REPORT SUMMARY

Material Type: ○ Soil ○ Other

The results of laboratory testing conducted on this material indicate the presence of a range of contaminants commonly encountered in the natural and urban areas. This assessment was conducted to provide a waste classification for off-site disposal, based on the *Waste Classification Guidelines Part 1: Classifying Waste* (NSW EPA November 2014). Comparison of the laboratory analysis results with the criteria, indicates the material is considered to be within the General Solid Waste classification and as a result of this process, it can be disposed of as per Schedule 1 Part 3 of the Protection of the Environment Operations Act 1997.

EC (dS/m): pH (in H_2O): -

CONTAMINANT		SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
METALS AND METALLOIDS				
Arsenic	(As)	<5	-	CT1 - General Solid Waste (suitable for recycling)
Beryllium	(Be)	-		Not determined
Cadmium	(Cd)	<1		CT1 - General Solid Waste (suitable for recycling)
Chromium VI	(CrVI)	-		Not determined
Total Chromium	(Cr)	8		
Copper	(Cu)	11	N/A	Suitable for recycling
Fluoride	(F)	-		Not determined
Lead	(Pb)	24		CT1 - General Solid Waste (suitable for recycling)
Mercury	(Hg)	<0.1		CT1 - General Solid Waste (suitable for recycling)
Molybdenum	(Mo)	-		Not determined
Nickel	(Ni)	4		CT1 - General Solid Waste (suitable for recycling)
Selenium	(Se)	-		Not determined
Silver	(Ag)	-		Not determined
Zinc	(Zn)	80	N/A	Suitable for recycling
BTEX (MONO AROMATIC HYDROCARBONS)				
Benzene		<0.2		CT1 - General Solid Waste (suitable for recycling)
Toluene		<0.5		CT1 - General Solid Waste (suitable for recycling)
Ethylbenzene		<0.5		CT1 - General Solid Waste (suitable for recycling)
meta & para-Xylene		<0.5		
ortho-Xylene		<0.5		
Xylenes (total)		<0.5		CT1 - General Solid Waste (suitable for recycling)
TOTAL PETROLEUM HYDROCARBONS (TPH)				
C6 - C9		<10	N/A	SCC1 - General Solid Waste (suitable for recycling)
C10 - C14		<50		
C15 - C28		<100		
C29 - C36		<100		
C10-C36 Total TPH		<100	N/A	SCC1 - General Solid Waste (suitable for recycling)
CYANIDES				
Cyanide (amenable)				Not determined
Cyanide (Total)				Not determined
PHENOXY ACID HERBICIDES				
2,4-D	(2,4-Dichlorophenoxy-acetic acid)			Not determined
Fluroxypyr				Not determined
Picloram				Not determined
Triclopyr				Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
SCHEDULED CHEMICALS - ORGANOCHLORINE PESTICIDES (OCP)			
Aldrin	<0.05		
"Benzene, hexachloro"	<0.05		
"Benzene, pentachloronitro"	-		
alpha - BHC	<0.05		
beta - BHC	<0.05		
gamma - BHC (Lindane)	<0.05		
delta - BHC	<0.05		
a - Chlordane	<0.05		
g - Chlordane	<0.05		
DDT, DDD & DDE	<0.2		
Dieldrin	<0.05		
Endrin	<0.05		
Endrin aldehyde	<0.05		
Endosulfan I	<0.05	-	CT1 - General Solid Waste (suitable for recycling)
Endosulfan II	<0.05	-	CT1 - General Solid Waste (suitable for recycling)
Heptachlor	<0.05		
Heptachlor epoxide	<0.05		
Hexachlorophene	-		
Isodrin	-		
Pentachlorobenzene	-		
Pentachlorophenol	-		
"1,2,4,5-tetrachlorobenzene"	-		
"2,3,4,6-tetrachlorophenol"	-		
"1,2,4-trichlorobenzene"	-		
"2,4,5-Trichlorophenoxy acetic acid, salts and esters"	-		
Total Positive Scheduled Chemicals	<0.2	N/A	SCC1 - General Solid Waste (suitable for recycling)
Total Moderately Harmful Pesticides		N/A	Not determined
POLYCYCLIC AROMATIC HYDROCARBONS (PAH)			
Acenaphthene	<0.5		
Acenaphthylene	<0.5		
Anthracene	<0.5		
Benzo(a)anthracene	<0.5		
Benzo(a)pyrene	<0.5		CT1 - General Solid Waste (suitable for recycling)
Benzo(b,j,k)fluoranthene	<0.5		
Benzo(ghi)perylene	<0.5		
Chrysene	<0.5		
"Dibenzo(a,h)anthracene"	<0.5		
Fluoranthene	<0.5		
Fluorene	<0.5		
"Indeno(1,2,3-cd)pyrene"	<0.5		
Naphthalene	<0.5		
Phenanthrene	<0.5		
Pyrene	<0.5		
Total Positive PAH's	<0.5	N/A	SCC1 - General Solid Waste (suitable for recycling)
POLYCHLORINATED BIPHENYLS (PCB)			
Aroclor 1016	-		
Aroclor 1221	-		
Aroclor 1232	-		
Aroclor 1242	-		
Aroclor 1248	-		
Aroclor 1254	-		
Aroclor 1260	-		
Aroclor 1262	-		
Aroclor 1268	-		
Total Positive PCB's	<0.1	N/A	SCC1 - General Solid Waste (suitable for recycling)
NITRATED COMPOUNDS - EXPLOSIVES			
"2,4-Dinitrotoluene"			Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
OTHER VOLATILE ORGANIC COMPOUNDS (VOC)			
Carbon tetrachloride	-		Not determined
Chlorobenzene	-		Not determined
Chloroform	-		Not determined
"1,2-Dichlorobenzene"	-		Not determined
"1,4-Dichlorobenzene"	-		Not determined
"1,2-Dichloroethane"	-		Not determined
"1,1-Dichloroethylene"	-		Not determined
Dichloromethane	-		Not determined
Styrene (vinyl benzene)	-		Not determined
"1,1,1,2-Tetrachloroethane"	-		Not determined
"1,1,2,2-Tetrachloroethane"	-		Not determined
Tetrachloroethylene	-		Not determined
"1,1,1-Trichloroethane"	-		Not determined
"1,1,2-Trichloroethane"	-		Not determined
Trichloroethylene	-		Not determined
Vinyl chloride	-		Not determined
OTHER SEMI-VOLATILE ORGANIC COMPOUNDS (SVOC)			
Chlorpyrifos			Not determined
Nitrobenzene			Not determined
Phenol (non-halogenated)			Not determined
"2,4,5-Trichlorophenol"			Not determined
"2,4,6-Trichlorophenol"			Not determined
OTHER CONTAMINANTS			
Methyl ethyl ketone			Not determined
Tebuconazole			Not determined
Plasticiser compounds			Not determined
Cresol (total)			Not determined
ASBESTOS_DETECTION			
Asbestos Detection			

DETAILED SUMMARY

Waste Classification Guidelines Part 1: Classifying Waste (EPA, Nov. 2014)

Abbreviations: ND - Not Determined (Analyte not tested)
SCC - Specific Contaminant Concentration
TCLP - Toxicity Characteristics Leaching Procedure

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Consultant:

Andrew Jacovides

Authorised Signatory:

All analyses performed by a NATA accredited sub-contracting laboratory.

SESL AUSTRALIA
Environment & Soil Sciences

Solid Waste Assessment & Classification

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Batch N°: 50296 **Sample N°: 16** **Date Received: 1/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Job N°:
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and Contamination - The Bends**
SESL Quote N°:
Sample Name: **BH6 0 - 200**
Sample Type: **Soil**
Test Type: **BWC_EXT, ASS1**

REPORT SUMMARY

Material Type: ○ Soil ○ Other

The results of laboratory testing conducted on this material indicate the presence of a range of contaminants commonly encountered in the natural and urban areas. This assessment was conducted to provide a waste classification for off-site disposal, based on the *Waste Classification Guidelines Part 1: Classifying Waste* (NSW EPA November 2014). Comparison of the laboratory analysis results with the criteria, indicates the material is considered to be within the General Solid Waste classification and as a result of this process, it can be disposed of as per Schedule 1 Part 3 of the Protection of the Environment Operations Act 1997.

EC (dS/m): pH (in H_2O): -

CONTAMINANT		SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
METALS AND METALLOIDS				
Arsenic	(As)	<5	-	CT1 - General Solid Waste (suitable for recycling)
Beryllium	(Be)	-		Not determined
Cadmium	(Cd)	<1		CT1 - General Solid Waste (suitable for recycling)
Chromium VI	(CrVI)	-		Not determined
Total Chromium	(Cr)	4		
Copper	(Cu)	<5	N/A	Suitable for recycling
Fluoride	(F)	-		Not determined
Lead	(Pb)	9		CT1 - General Solid Waste (suitable for recycling)
Mercury	(Hg)	<0.1		CT1 - General Solid Waste (suitable for recycling)
Molybdenum	(Mo)	-		Not determined
Nickel	(Ni)	<2		CT1 - General Solid Waste (suitable for recycling)
Selenium	(Se)	-		Not determined
Silver	(Ag)	-		Not determined
Zinc	(Zn)	30	N/A	Suitable for recycling
BTEX (MONO AROMATIC HYDROCARBONS)				
Benzene		<0.2		CT1 - General Solid Waste (suitable for recycling)
Toluene		<0.5		CT1 - General Solid Waste (suitable for recycling)
Ethylbenzene		<0.5		CT1 - General Solid Waste (suitable for recycling)
meta & para-Xylene		<0.5		
ortho-Xylene		<0.5		
Xylenes (total)		<0.5		CT1 - General Solid Waste (suitable for recycling)
TOTAL PETROLEUM HYDROCARBONS (TPH)				
C6 - C9		<10	N/A	SCC1 - General Solid Waste (suitable for recycling)
C10 - C14		<50		
C15 - C28		<100		
C29 - C36		<100		
C10-C36 Total TPH		<100	N/A	SCC1 - General Solid Waste (suitable for recycling)
CYANIDES				
Cyanide (amenable)				Not determined
Cyanide (Total)				Not determined
PHENOXY ACID HERBICIDES				
2,4-D	(2,4-Dichlorophenoxy-acetic acid)			Not determined
Fluroxypyr				Not determined
Picloram				Not determined
Triclopyr				Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
SCHEDULED CHEMICALS - ORGANOCHLORINE PESTICIDES (OCP)			
Aldrin	<0.05		
"Benzene, hexachloro"	<0.05		
"Benzene, pentachloronitro"	-		
alpha - BHC	<0.05		
beta - BHC	<0.05		
gamma - BHC (Lindane)	<0.05		
delta - BHC	<0.05		
a - Chlordane	<0.05		
g - Chlordane	<0.05		
DDT, DDD & DDE	<0.2		
Dieldrin	<0.05		
Endrin	<0.05		
Endrin aldehyde	<0.05		
Endosulfan I	<0.05	-	CT1 - General Solid Waste (suitable for recycling)
Endosulfan II	<0.05	-	CT1 - General Solid Waste (suitable for recycling)
Heptachlor	<0.05		
Heptachlor epoxide	<0.05		
Hexachlorophene	-		
Isodrin	-		
Pentachlorobenzene	-		
Pentachlorophenol	-		
"1,2,4,5-tetrachlorobenzene"	-		
"2,3,4,6-tetrachlorophenol"	-		
"1,2,4-trichlorobenzene"	-		
"2,4,5-Trichlorophenoxy acetic acid, salts and esters"	-		
Total Positive Scheduled Chemicals	<0.2	N/A	SCC1 - General Solid Waste (suitable for recycling)
Total Moderately Harmful Pesticides		N/A	Not determined
POLYCYCLIC AROMATIC HYDROCARBONS (PAH)			
Acenaphthene	<0.5		
Acenaphthylene	<0.5		
Anthracene	<0.5		
Benzo(a)anthracene	<0.5		
Benzo(a)pyrene	<0.5		CT1 - General Solid Waste (suitable for recycling)
Benzo(b,j,k)fluoranthene	<0.5		
Benzo(ghi)perylene	<0.5		
Chrysene	<0.5		
"Dibenzo(a,h)anthracene"	<0.5		
Fluoranthene	<0.5		
Fluorene	<0.5		
"Indeno(1,2,3-cd)pyrene"	<0.5		
Naphthalene	<0.5		
Phenanthrene	<0.5		
Pyrene	<0.5		
Total Positive PAH's	<0.5	N/A	SCC1 - General Solid Waste (suitable for recycling)
POLYCHLORINATED BIPHENYLS (PCB)			
Aroclor 1016	-		
Aroclor 1221	-		
Aroclor 1232	-		
Aroclor 1242	-		
Aroclor 1248	-		
Aroclor 1254	-		
Aroclor 1260	-		
Aroclor 1262	-		
Aroclor 1268	-		
Total Positive PCB's	<0.1	N/A	SCC1 - General Solid Waste (suitable for recycling)
NITRATED COMPOUNDS - EXPLOSIVES			
"2,4-Dinitrotoluene"			Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
OTHER VOLATILE ORGANIC COMPOUNDS (VOC)			
Carbon tetrachloride	-		Not determined
Chlorobenzene	-		Not determined
Chloroform	-		Not determined
"1,2-Dichlorobenzene"	-		Not determined
"1,4-Dichlorobenzene"	-		Not determined
"1,2-Dichloroethane"	-		Not determined
"1,1-Dichloroethylene"	-		Not determined
Dichloromethane	-		Not determined
Styrene (vinyl benzene)	-		Not determined
"1,1,1,2-Tetrachloroethane"	-		Not determined
"1,1,2,2-Tetrachloroethane"	-		Not determined
Tetrachloroethylene	-		Not determined
"1,1,1-Trichloroethane"	-		Not determined
"1,1,2-Trichloroethane"	-		Not determined
Trichloroethylene	-		Not determined
Vinyl chloride	-		Not determined
OTHER SEMI-VOLATILE ORGANIC COMPOUNDS (SVOC)			
Chlorpyrifos			Not determined
Nitrobenzene			Not determined
Phenol (non-halogenated)			Not determined
"2,4,5-Trichlorophenol"			Not determined
"2,4,6-Trichlorophenol"			Not determined
OTHER CONTAMINANTS			
Methyl ethyl ketone			Not determined
Tebuconazole			Not determined
Plasticiser compounds			Not determined
Cresol (total)			Not determined
ASBESTOS_DETECTION			
Asbestos Detection			

DETAILED SUMMARY

Waste Classification Guidelines Part 1: Classifying Waste (EPA, Nov. 2014)

Abbreviations: ND - Not Determined (Analyte not tested)
SCC - Specific Contaminant Concentration
TCLP - Toxicity Characteristics Leaching Procedure

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Consultant:

Andrew Jacovides

Authorised Signatory:

All analyses performed by a NATA accredited sub-contracting laboratory.

SESL AUSTRALIA
Environment & Soil Sciences

Solid Waste Assessment & Classification

Sample Drop Off: 16 Chilvers Road, Thornleigh NSW 2120
Mailing Address: PO Box 357, Pennant Hills NSW 1715
Tel: 1300 30 40 80
Fax: 1300 64 46 89
Em: info@sesl.com.au
Web: www.sesl.com.au

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Batch N°: 50296 **Sample N°: 17** **Date Received: 1/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Job N°:
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and Contamination - The Bends**
SESL Quote N°:
Sample Name: **BH6 300 - 400**
Sample Type: **Soil**
Test Type: **BWC_EXT, sPOCAS_ALS**

REPORT SUMMARY

Material Type: ○ Soil ○ Other

The results of laboratory testing conducted on this material indicate the presence of a range of contaminants commonly encountered in the natural and urban areas. This assessment was conducted to provide a waste classification for off-site disposal, based on the *Waste Classification Guidelines Part 1: Classifying Waste* (NSW EPA November 2014). Comparison of the laboratory analysis results with the criteria, indicates the material is considered to be within the General Solid Waste classification and as a result of this process, it can be disposed of as per Schedule 1 Part 3 of the Protection of the Environment Operations Act 1997.

EC (dS/m): pH (in H_2O): -

CONTAMINANT		SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
METALS AND METALLOIDS				
Arsenic	(As)	<5	-	CT1 - General Solid Waste (suitable for recycling)
Beryllium	(Be)	-		Not determined
Cadmium	(Cd)	<1		CT1 - General Solid Waste (suitable for recycling)
Chromium VI	(CrVI)	-		Not determined
Total Chromium	(Cr)	5		
Copper	(Cu)	<5	N/A	Suitable for recycling
Fluoride	(F)	-		Not determined
Lead	(Pb)	12		CT1 - General Solid Waste (suitable for recycling)
Mercury	(Hg)	<0.1		CT1 - General Solid Waste (suitable for recycling)
Molybdenum	(Mo)	-		Not determined
Nickel	(Ni)	2		CT1 - General Solid Waste (suitable for recycling)
Selenium	(Se)	-		Not determined
Silver	(Ag)	-		Not determined
Zinc	(Zn)	41	N/A	Suitable for recycling
BTEX (MONO AROMATIC HYDROCARBONS)				
Benzene		<0.2		CT1 - General Solid Waste (suitable for recycling)
Toluene		<0.5		CT1 - General Solid Waste (suitable for recycling)
Ethylbenzene		<0.5		CT1 - General Solid Waste (suitable for recycling)
meta & para-Xylene		<0.5		
ortho-Xylene		<0.5		
Xylenes (total)		<0.5		CT1 - General Solid Waste (suitable for recycling)
TOTAL PETROLEUM HYDROCARBONS (TPH)				
C6 - C9		<10	N/A	SCC1 - General Solid Waste (suitable for recycling)
C10 - C14		<50		
C15 - C28		<100		
C29 - C36		<100		
C10-C36 Total TPH		<100	N/A	SCC1 - General Solid Waste (suitable for recycling)
CYANIDES				
Cyanide (amenable)				Not determined
Cyanide (Total)				Not determined
PHENOXY ACID HERBICIDES				
2,4-D	(2,4-Dichlorophenoxy-acetic acid)			Not determined
Fluroxypyr				Not determined
Picloram				Not determined
Triclopyr				Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
SCHEDULED CHEMICALS - ORGANOCHLORINE PESTICIDES (OCP)			
Aldrin	<0.05		
"Benzene, hexachloro"	<0.05		
"Benzene, pentachloronitro"	-		
alpha - BHC	<0.05		
beta - BHC	<0.05		
gamma - BHC (Lindane)	<0.05		
delta - BHC	<0.05		
a - Chlordane	<0.05		
g - Chlordane	<0.05		
DDT, DDD & DDE	<0.2		
Dieldrin	<0.05		
Endrin	<0.05		
Endrin aldehyde	<0.05		
Endosulfan I	<0.05	-	CT1 - General Solid Waste (suitable for recycling)
Endosulfan II	<0.05	-	CT1 - General Solid Waste (suitable for recycling)
Heptachlor	<0.05		
Heptachlor epoxide	<0.05		
Hexachlorophene	-		
Isodrin	-		
Pentachlorobenzene	-		
Pentachlorophenol	-		
"1,2,4,5-tetrachlorobenzene"	-		
"2,3,4,6-tetrachlorophenol"	-		
"1,2,4-trichlorobenzene"	-		
"2,4,5-Trichlorophenoxy acetic acid, salts and esters"	-		
Total Positive Scheduled Chemicals	<0.2	N/A	SCC1 - General Solid Waste (suitable for recycling)
Total Moderately Harmful Pesticides		N/A	Not determined
POLYCYCLIC AROMATIC HYDROCARBONS (PAH)			
Acenaphthene	<0.5		
Acenaphthylene	<0.5		
Anthracene	<0.5		
Benzo(a)anthracene	<0.5		
Benzo(a)pyrene	<0.5		CT1 - General Solid Waste (suitable for recycling)
Benzo(b,j,k)fluoranthene	<0.5		
Benzo(ghi)perylene	<0.5		
Chrysene	<0.5		
"Dibenzo(a,h)anthracene"	<0.5		
Fluoranthene	<0.5		
Fluorene	<0.5		
"Indeno(1,2,3-cd)pyrene"	<0.5		
Naphthalene	<0.5		
Phenanthrene	<0.5		
Pyrene	<0.5		
Total Positive PAH's	<0.5	N/A	SCC1 - General Solid Waste (suitable for recycling)
POLYCHLORINATED BIPHENYLS (PCB)			
Aroclor 1016	-		
Aroclor 1221	-		
Aroclor 1232	-		
Aroclor 1242	-		
Aroclor 1248	-		
Aroclor 1254	-		
Aroclor 1260	-		
Aroclor 1262	-		
Aroclor 1268	-		
Total Positive PCB's	<0.1	N/A	SCC1 - General Solid Waste (suitable for recycling)
NITRATED COMPOUNDS - EXPLOSIVES			
"2,4-Dinitrotoluene"			Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
OTHER VOLATILE ORGANIC COMPOUNDS (VOC)			
Carbon tetrachloride	-		Not determined
Chlorobenzene	-		Not determined
Chloroform	-		Not determined
"1,2-Dichlorobenzene"	-		Not determined
"1,4-Dichlorobenzene"	-		Not determined
"1,2-Dichloroethane"	-		Not determined
"1,1-Dichloroethylene"	-		Not determined
Dichloromethane	-		Not determined
Styrene (vinyl benzene)	-		Not determined
"1,1,1,2-Tetrachloroethane"	-		Not determined
"1,1,2,2-Tetrachloroethane"	-		Not determined
Tetrachloroethylene	-		Not determined
"1,1,1-Trichloroethane"	-		Not determined
"1,1,2-Trichloroethane"	-		Not determined
Trichloroethylene	-		Not determined
Vinyl chloride	-		Not determined
OTHER SEMI-VOLATILE ORGANIC COMPOUNDS (SVOC)			
Chlorpyrifos			Not determined
Nitrobenzene			Not determined
Phenol (non-halogenated)			Not determined
"2,4,5-Trichlorophenol"			Not determined
"2,4,6-Trichlorophenol"			Not determined
OTHER CONTAMINANTS			
Methyl ethyl ketone			Not determined
Tebuconazole			Not determined
Plasticiser compounds			Not determined
Cresol (total)			Not determined
ASBESTOS_DETECTION			
Asbestos Detection			

DETAILED SUMMARY

Waste Classification Guidelines Part 1: Classifying Waste (EPA, Nov. 2014)

Abbreviations: ND - Not Determined (Analyte not tested)
SCC - Specific Contaminant Concentration
TCLP - Toxicity Characteristics Leaching Procedure

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Consultant:

Andrew Jacovides

Authorised Signatory:

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Solid Waste Assessment & Classification

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Batch N°: 50296 **Sample N°: 18** **Date Received: 1/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Job N°:
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and Contamination - The Bends**
SESL Quote N°:
Sample Name: **BH6 550 - 700**
Sample Type: **Soil**
Test Type: **BWC_EXT, ASS1**

REPORT SUMMARY

Material Type: ○ Soil ○ Other

The results of laboratory testing conducted on this material indicate the presence of a range of contaminants commonly encountered in the natural and urban areas. This assessment was conducted to provide a waste classification for off-site disposal, based on the *Waste Classification Guidelines Part 1: Classifying Waste* (NSW EPA November 2014). Comparison of the laboratory analysis results with the criteria, indicates the material is considered to be within the General Solid Waste classification and as a result of this process, it can be disposed of as per Schedule 1 Part 3 of the Protection of the Environment Operations Act 1997.

EC (dS/m): pH (in H_2O): -

CONTAMINANT		SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
METALS AND METALLOIDS				
Arsenic	(As)	<5	-	CT1 - General Solid Waste (suitable for recycling)
Beryllium	(Be)	-		Not determined
Cadmium	(Cd)	<1		CT1 - General Solid Waste (suitable for recycling)
Chromium VI	(CrVI)	-		Not determined
Total Chromium	(Cr)	12		
Copper	(Cu)	16	N/A	Suitable for recycling
Fluoride	(F)	-		Not determined
Lead	(Pb)	46		CT1 - General Solid Waste (suitable for recycling)
Mercury	(Hg)	<0.1		CT1 - General Solid Waste (suitable for recycling)
Molybdenum	(Mo)	-		Not determined
Nickel	(Ni)	5		CT1 - General Solid Waste (suitable for recycling)
Selenium	(Se)	-		Not determined
Silver	(Ag)	-		Not determined
Zinc	(Zn)	111	N/A	Suitable for recycling
BTEX (MONO AROMATIC HYDROCARBONS)				
Benzene		<0.2		CT1 - General Solid Waste (suitable for recycling)
Toluene		<0.5		CT1 - General Solid Waste (suitable for recycling)
Ethylbenzene		<0.5		CT1 - General Solid Waste (suitable for recycling)
meta & para-Xylene		<0.5		
ortho-Xylene		<0.5		
Xylenes (total)		<0.5		CT1 - General Solid Waste (suitable for recycling)
TOTAL PETROLEUM HYDROCARBONS (TPH)				
C6 - C9		<10	N/A	SCC1 - General Solid Waste (suitable for recycling)
C10 - C14		<50		
C15 - C28		<100		
C29 - C36		<100		
C10-C36 Total TPH		<100	N/A	SCC1 - General Solid Waste (suitable for recycling)
CYANIDES				
Cyanide (amenable)				Not determined
Cyanide (Total)				Not determined
PHENOXY ACID HERBICIDES				
2,4-D	(2,4-Dichlorophenoxy-acetic acid)			Not determined
Fluroxypyr				Not determined
Picloram				Not determined
Triclopyr				Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
SCHEDULED CHEMICALS - ORGANOCHLORINE PESTICIDES (OCP)			
Aldrin	<0.05		
"Benzene, hexachloro"	<0.05		
"Benzene, pentachloronitro"	-		
alpha - BHC	<0.05		
beta - BHC	<0.05		
gamma - BHC (Lindane)	<0.05		
delta - BHC	<0.05		
a - Chlordane	<0.05		
g - Chlordane	<0.05		
DDT, DDD & DDE	<0.2		
Dieldrin	<0.05		
Endrin	<0.05		
Endrin aldehyde	<0.05		
Endosulfan I	<0.05	-	CT1 - General Solid Waste (suitable for recycling)
Endosulfan II	<0.05	-	CT1 - General Solid Waste (suitable for recycling)
Heptachlor	<0.05		
Heptachlor epoxide	<0.05		
Hexachlorophene	-		
Isodrin	-		
Pentachlorobenzene	-		
Pentachlorophenol	-		
"1,2,4,5-tetrachlorobenzene"	-		
"2,3,4,6-tetrachlorophenol"	-		
"1,2,4-trichlorobenzene"	-		
"2,4,5-Trichlorophenoxy acetic acid, salts and esters"	-		
Total Positive Scheduled Chemicals	<0.2	N/A	SCC1 - General Solid Waste (suitable for recycling)
Total Moderately Harmful Pesticides		N/A	Not determined
POLYCYCLIC AROMATIC HYDROCARBONS (PAH)			
Acenaphthene	<0.5		
Acenaphthylene	<0.5		
Anthracene	<0.5		
Benzo(a)anthracene	<0.5		
Benzo(a)pyrene	<0.5		CT1 - General Solid Waste (suitable for recycling)
Benzo(b,j,k)fluoranthene	<0.5		
Benzo(ghi)perylene	<0.5		
Chrysene	<0.5		
"Dibenzo(a,h)anthracene"	<0.5		
Fluoranthene	<0.5		
Fluorene	<0.5		
"Indeno(1,2,3-cd)pyrene"	<0.5		
Naphthalene	<0.5		
Phenanthrene	<0.5		
Pyrene	<0.5		
Total Positive PAH's	<0.5	N/A	SCC1 - General Solid Waste (suitable for recycling)
POLYCHLORINATED BIPHENYLS (PCB)			
Aroclor 1016	-		
Aroclor 1221	-		
Aroclor 1232	-		
Aroclor 1242	-		
Aroclor 1248	-		
Aroclor 1254	-		
Aroclor 1260	-		
Aroclor 1262	-		
Aroclor 1268	-		
Total Positive PCB's	<0.1	N/A	SCC1 - General Solid Waste (suitable for recycling)
NITRATED COMPOUNDS - EXPLOSIVES			
"2,4-Dinitrotoluene"			Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
OTHER VOLATILE ORGANIC COMPOUNDS (VOC)			
Carbon tetrachloride	-		Not determined
Chlorobenzene	-		Not determined
Chloroform	-		Not determined
"1,2-Dichlorobenzene"	-		Not determined
"1,4-Dichlorobenzene"	-		Not determined
"1,2-Dichloroethane"	-		Not determined
"1,1-Dichloroethylene"	-		Not determined
Dichloromethane	-		Not determined
Styrene (vinyl benzene)	-		Not determined
"1,1,1,2-Tetrachloroethane"	-		Not determined
"1,1,2,2-Tetrachloroethane"	-		Not determined
Tetrachloroethylene	-		Not determined
"1,1,1-Trichloroethane"	-		Not determined
"1,1,2-Trichloroethane"	-		Not determined
Trichloroethylene	-		Not determined
Vinyl chloride	-		Not determined
OTHER SEMI-VOLATILE ORGANIC COMPOUNDS (SVOC)			
Chlorpyrifos			Not determined
Nitrobenzene			Not determined
Phenol (non-halogenated)			Not determined
"2,4,5-Trichlorophenol"			Not determined
"2,4,6-Trichlorophenol"			Not determined
OTHER CONTAMINANTS			
Methyl ethyl ketone			Not determined
Tebuconazole			Not determined
Plasticiser compounds			Not determined
Cresol (total)			Not determined
ASBESTOS_DETECTION			
Asbestos Detection			

DETAILED SUMMARY

Waste Classification Guidelines Part 1: Classifying Waste (EPA, Nov. 2014)

Abbreviations: ND - Not Determined (Analyte not tested)
SCC - Specific Contaminant Concentration
TCLP - Toxicity Characteristics Leaching Procedure

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Batch N°: 50296 **Sample N°: 19** **Date Received: 1/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Job N°:
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and Contamination - The Bends**
SESL Quote N°:
Sample Name: **BH7 0 - 200**
Sample Type: **Soil**
Test Type: **BWC_EXT, ASS1**

REPORT SUMMARY

Material Type: ○ Soil ○ Other

The results of laboratory testing conducted on this material indicate the presence of a range of contaminants commonly encountered in the natural and urban areas. This assessment was conducted to provide a waste classification for off-site disposal, based on the *Waste Classification Guidelines Part 1: Classifying Waste* (NSW EPA November 2014). Comparison of the laboratory analysis results with the criteria, indicates the material is considered to be within the General Solid Waste classification and as a result of this process, it can be disposed of as per Schedule 1 Part 3 of the Protection of the Environment Operations Act 1997.

EC (dS/m): pH (in H_2O): -

CONTAMINANT		SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
METALS AND METALLOIDS				
Arsenic	(As)	<5	-	CT1 - General Solid Waste (suitable for recycling)
Beryllium	(Be)	-		Not determined
Cadmium	(Cd)	<1		CT1 - General Solid Waste (suitable for recycling)
Chromium VI	(CrVI)	-		Not determined
Total Chromium	(Cr)	4		
Copper	(Cu)	<5	N/A	Suitable for recycling
Fluoride	(F)	-		Not determined
Lead	(Pb)	11		CT1 - General Solid Waste (suitable for recycling)
Mercury	(Hg)	<0.1		CT1 - General Solid Waste (suitable for recycling)
Molybdenum	(Mo)	-		Not determined
Nickel	(Ni)	<2		CT1 - General Solid Waste (suitable for recycling)
Selenium	(Se)	-		Not determined
Silver	(Ag)	-		Not determined
Zinc	(Zn)	32	N/A	Suitable for recycling
BTEX (MONO AROMATIC HYDROCARBONS)				
Benzene		<0.2		CT1 - General Solid Waste (suitable for recycling)
Toluene		<0.5		CT1 - General Solid Waste (suitable for recycling)
Ethylbenzene		<0.5		CT1 - General Solid Waste (suitable for recycling)
meta & para-Xylene		<0.5		
ortho-Xylene		<0.5		
Xylenes (total)		<0.5		CT1 - General Solid Waste (suitable for recycling)
TOTAL PETROLEUM HYDROCARBONS (TPH)				
C6 - C9		<10	N/A	SCC1 - General Solid Waste (suitable for recycling)
C10 - C14		<50		
C15 - C28		<100		
C29 - C36		<100		
C10-C36 Total TPH		<100	N/A	SCC1 - General Solid Waste (suitable for recycling)
CYANIDES				
Cyanide (amenable)				Not determined
Cyanide (Total)				Not determined
PHENOXY ACID HERBICIDES				
2,4-D	(2,4-Dichlorophenoxy-acetic acid)			Not determined
Fluroxypyr				Not determined
Picloram				Not determined
Triclopyr				Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
SCHEDULED CHEMICALS - ORGANOCHLORINE PESTICIDES (OCP)			
Aldrin	<0.05		
"Benzene, hexachloro"	<0.05		
"Benzene, pentachloronitro"	-		
alpha - BHC	<0.05		
beta - BHC	<0.05		
gamma - BHC (Lindane)	<0.05		
delta - BHC	<0.05		
a - Chlordane	<0.05		
g - Chlordane	<0.05		
DDT, DDD & DDE	<0.2		
Dieldrin	<0.05		
Endrin	<0.05		
Endrin aldehyde	<0.05		
Endosulfan I	<0.05	-	CT1 - General Solid Waste (suitable for recycling)
Endosulfan II	<0.05	-	CT1 - General Solid Waste (suitable for recycling)
Heptachlor	<0.05		
Heptachlor epoxide	<0.05		
Hexachlorophene	-		
Isodrin	-		
Pentachlorobenzene	-		
Pentachlorophenol	-		
"1,2,4,5-tetrachlorobenzene"	-		
"2,3,4,6-tetrachlorophenol"	-		
"1,2,4-trichlorobenzene"	-		
"2,4,5-Trichlorophenoxy acetic acid, salts and esters"	-		
Total Positive Scheduled Chemicals	<0.2	N/A	SCC1 - General Solid Waste (suitable for recycling)
Total Moderately Harmful Pesticides		N/A	Not determined
POLYCYCLIC AROMATIC HYDROCARBONS (PAH)			
Acenaphthene	<0.5		
Acenaphthylene	<0.5		
Anthracene	<0.5		
Benzo(a)anthracene	<0.5		
Benzo(a)pyrene	<0.5		CT1 - General Solid Waste (suitable for recycling)
Benzo(b,j,k)fluoranthene	<0.5		
Benzo(ghi)perylene	<0.5		
Chrysene	<0.5		
"Dibenzo(a,h)anthracene"	<0.5		
Fluoranthene	<0.5		
Fluorene	<0.5		
"Indeno(1,2,3-cd)pyrene"	<0.5		
Naphthalene	<0.5		
Phenanthrene	<0.5		
Pyrene	<0.5		
Total Positive PAH's	<0.5	N/A	SCC1 - General Solid Waste (suitable for recycling)
POLYCHLORINATED BIPHENYLS (PCB)			
Aroclor 1016	-		
Aroclor 1221	-		
Aroclor 1232	-		
Aroclor 1242	-		
Aroclor 1248	-		
Aroclor 1254	-		
Aroclor 1260	-		
Aroclor 1262	-		
Aroclor 1268	-		
Total Positive PCB's	<0.1	N/A	SCC1 - General Solid Waste (suitable for recycling)
NITRATED COMPOUNDS - EXPLOSIVES			
"2,4-Dinitrotoluene"			Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
OTHER VOLATILE ORGANIC COMPOUNDS (VOC)			
Carbon tetrachloride	-		Not determined
Chlorobenzene	-		Not determined
Chloroform	-		Not determined
"1,2-Dichlorobenzene"	-		Not determined
"1,4-Dichlorobenzene"	-		Not determined
"1,2-Dichloroethane"	-		Not determined
"1,1-Dichloroethylene"	-		Not determined
Dichloromethane	-		Not determined
Styrene (vinyl benzene)	-		Not determined
"1,1,1,2-Tetrachloroethane"	-		Not determined
"1,1,2,2-Tetrachloroethane"	-		Not determined
Tetrachloroethylene	-		Not determined
"1,1,1-Trichloroethane"	-		Not determined
"1,1,2-Trichloroethane"	-		Not determined
Trichloroethylene	-		Not determined
Vinyl chloride	-		Not determined
OTHER SEMI-VOLATILE ORGANIC COMPOUNDS (SVOC)			
Chlorpyrifos			Not determined
Nitrobenzene			Not determined
Phenol (non-halogenated)			Not determined
"2,4,5-Trichlorophenol"			Not determined
"2,4,6-Trichlorophenol"			Not determined
OTHER CONTAMINANTS			
Methyl ethyl ketone			Not determined
Tebuconazole			Not determined
Plasticiser compounds			Not determined
Cresol (total)			Not determined
ASBESTOS_DETECTION			
Asbestos Detection			

DETAILED SUMMARY

Waste Classification Guidelines Part 1: Classifying Waste (EPA, Nov. 2014)

Abbreviations: ND - Not Determined (Analyte not tested)
SCC - Specific Contaminant Concentration
TCLP - Toxicity Characteristics Leaching Procedure

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Consultant:

Andrew Jacovides

Authorised Signatory:

All analyses performed by a NATA accredited sub-contracting laboratory.

SESL AUSTRALIA
Environment & Soil Sciences

Solid Waste Assessment & Classification

Sample Drop Off: 16 Chilvers Road, Thornleigh NSW 2120
Mailing Address: PO Box 357, Pennant Hills NSW 1715
Tel: 1300 30 40 80
Fax: 1300 64 46 89
Em: info@sesl.com.au
Web: www.sesl.com.au

Tests are performed under a quality system certified as complying with ISO 9001: 2008. Results and conclusions assume that sampling is representative. This document shall not be reproduced except in full.

Batch N°: 50296 **Sample N°: 20** **Date Received: 1/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Job N°:
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and Contamination - The Bends**
SESL Quote N°:
Sample Name: **BH7 400 - 600**
Sample Type: **Soil**
Test Type: **BWC_EXT, sPOCAS_ALS**

REPORT SUMMARY

Material Type: ○ Soil ○ Other

The results of laboratory testing conducted on this material indicate the presence of a range of contaminants commonly encountered in the natural and urban areas. This assessment was conducted to provide a waste classification for off-site disposal, based on the *Waste Classification Guidelines Part 1: Classifying Waste* (NSW EPA November 2014). Comparison of the laboratory analysis results with the criteria, indicates the material is considered to be within the General Solid Waste classification and as a result of this process, it can be disposed of as per Schedule 1 Part 3 of the Protection of the Environment Operations Act 1997.

EC (dS/m): pH (in H_2O): -

CONTAMINANT		SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
METALS AND METALLOIDS				
Arsenic	(As)	<5	-	CT1 - General Solid Waste (suitable for recycling)
Beryllium	(Be)	-		Not determined
Cadmium	(Cd)	<1		CT1 - General Solid Waste (suitable for recycling)
Chromium VI	(CrVI)	-		Not determined
Total Chromium	(Cr)	7		
Copper	(Cu)	7	N/A	Suitable for recycling
Fluoride	(F)	-		Not determined
Lead	(Pb)	28		CT1 - General Solid Waste (suitable for recycling)
Mercury	(Hg)	<0.1		CT1 - General Solid Waste (suitable for recycling)
Molybdenum	(Mo)	-		Not determined
Nickel	(Ni)	3		CT1 - General Solid Waste (suitable for recycling)
Selenium	(Se)	-		Not determined
Silver	(Ag)	-		Not determined
Zinc	(Zn)	49	N/A	Suitable for recycling
BTEX (MONO AROMATIC HYDROCARBONS)				
Benzene		<0.2		CT1 - General Solid Waste (suitable for recycling)
Toluene		<0.5		CT1 - General Solid Waste (suitable for recycling)
Ethylbenzene		<0.5		CT1 - General Solid Waste (suitable for recycling)
meta & para-Xylene		<0.5		
ortho-Xylene		<0.5		
Xylenes (total)		<0.5		CT1 - General Solid Waste (suitable for recycling)
TOTAL PETROLEUM HYDROCARBONS (TPH)				
C6 - C9		<10	N/A	SCC1 - General Solid Waste (suitable for recycling)
C10 - C14		<50		
C15 - C28		<100		
C29 - C36		<100		
C10-C36 Total TPH		<100	N/A	SCC1 - General Solid Waste (suitable for recycling)
CYANIDES				
Cyanide (amenable)				Not determined
Cyanide (Total)				Not determined
PHENOXY ACID HERBICIDES				
2,4-D	(2,4-Dichlorophenoxy-acetic acid)			Not determined
Fluroxypyr				Not determined
Picloram				Not determined
Triclopyr				Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
SCHEDULED CHEMICALS - ORGANOCHLORINE PESTICIDES (OCP)			
Aldrin	<0.05		
"Benzene, hexachloro"	<0.05		
"Benzene, pentachloronitro"	-		
alpha - BHC	<0.05		
beta - BHC	<0.05		
gamma - BHC (Lindane)	<0.05		
delta - BHC	<0.05		
a - Chlordane	<0.05		
g - Chlordane	<0.05		
DDT, DDD & DDE	<0.2		
Dieldrin	<0.05		
Endrin	<0.05		
Endrin aldehyde	<0.05		
Endosulfan I	<0.05	-	CT1 - General Solid Waste (suitable for recycling)
Endosulfan II	<0.05	-	CT1 - General Solid Waste (suitable for recycling)
Heptachlor	<0.05		
Heptachlor epoxide	<0.05		
Hexachlorophene	-		
Isodrin	-		
Pentachlorobenzene	-		
Pentachlorophenol	-		
"1,2,4,5-tetrachlorobenzene"	-		
"2,3,4,6-tetrachlorophenol"	-		
"1,2,4-trichlorobenzene"	-		
"2,4,5-Trichlorophenoxy acetic acid, salts and esters"	-		
Total Positive Scheduled Chemicals	<0.2	N/A	SCC1 - General Solid Waste (suitable for recycling)
Total Moderately Harmful Pesticides		N/A	Not determined
POLYCYCLIC AROMATIC HYDROCARBONS (PAH)			
Acenaphthene	<0.5		
Acenaphthylene	<0.5		
Anthracene	<0.5		
Benzo(a)anthracene	<0.5		
Benzo(a)pyrene	<0.5		CT1 - General Solid Waste (suitable for recycling)
Benzo(b,j,k)fluoranthene	<0.5		
Benzo(ghi)perylene	<0.5		
Chrysene	<0.5		
"Dibenzo(a,h)anthracene"	<0.5		
Fluoranthene	<0.5		
Fluorene	<0.5		
"Indeno(1,2,3-cd)pyrene"	<0.5		
Naphthalene	<0.5		
Phenanthrene	<0.5		
Pyrene	<0.5		
Total Positive PAH's	<0.5	N/A	SCC1 - General Solid Waste (suitable for recycling)
POLYCHLORINATED BIPHENYLS (PCB)			
Aroclor 1016	-		
Aroclor 1221	-		
Aroclor 1232	-		
Aroclor 1242	-		
Aroclor 1248	-		
Aroclor 1254	-		
Aroclor 1260	-		
Aroclor 1262	-		
Aroclor 1268	-		
Total Positive PCB's	<0.1	N/A	SCC1 - General Solid Waste (suitable for recycling)
NITRATED COMPOUNDS - EXPLOSIVES			
"2,4-Dinitrotoluene"			Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
OTHER VOLATILE ORGANIC COMPOUNDS (VOC)			
Carbon tetrachloride	-		Not determined
Chlorobenzene	-		Not determined
Chloroform	-		Not determined
"1,2-Dichlorobenzene"	-		Not determined
"1,4-Dichlorobenzene"	-		Not determined
"1,2-Dichloroethane"	-		Not determined
"1,1-Dichloroethylene"	-		Not determined
Dichloromethane	-		Not determined
Styrene (vinyl benzene)	-		Not determined
"1,1,1,2-Tetrachloroethane"	-		Not determined
"1,1,2,2-Tetrachloroethane"	-		Not determined
Tetrachloroethylene	-		Not determined
"1,1,1-Trichloroethane"	-		Not determined
"1,1,2-Trichloroethane"	-		Not determined
Trichloroethylene	-		Not determined
Vinyl chloride	-		Not determined
OTHER SEMI-VOLATILE ORGANIC COMPOUNDS (SVOC)			
Chlorpyrifos			Not determined
Nitrobenzene			Not determined
Phenol (non-halogenated)			Not determined
"2,4,5-Trichlorophenol"			Not determined
"2,4,6-Trichlorophenol"			Not determined
OTHER CONTAMINANTS			
Methyl ethyl ketone			Not determined
Tebuconazole			Not determined
Plasticiser compounds			Not determined
Cresol (total)			Not determined
ASBESTOS_DETECTION			
Asbestos Detection			

DETAILED SUMMARY

Waste Classification Guidelines Part 1: Classifying Waste (EPA, Nov. 2014)

Abbreviations: ND - Not Determined (Analyte not tested)
SCC - Specific Contaminant Concentration
TCLP - Toxicity Characteristics Leaching Procedure

Limitation of liability: This document and the the limited analysis undertaken should not be construed as a site contamination report. It does not meet the NSW EPA requirements in relation to a contamination assessment for the proposed land use. The findings presented are based on a.) the sample submitted to SESL by the client or their agent, or b.) site conditions that existed at the time of sampling by SESL field personnel. In the case of sampling by SESL, conclusions are based on the investigation of conditions at specific locations, chosen to be representative as possible under the given circumstances. SESL has used a degree of care, skill and diligence normally exercised by environmental consultants in similar circumstances and locality. No other warranty expressed or implied is made or intended. Section 143 of the Protection of the Environment Operations Act 1997 states that if waste is transported to a place that cannot lawfully be used as a waste facility for that waste, then the transporter and owner of the waste are each guilty of an offence. The transporter and owner of the waste have duty to ensure that the waste is disposed of in an appropriate manner. SESL accepts no liability whatsoever for the unlawful disposal of any waste from any site. Subject to payment of all fees due, the client alone shall have a licence to use this document. This document may not be reproduced except in full.

Consultant:

Andrew Jacovides

Authorised Signatory:

All analyses performed by a NATA accredited sub-contracting laboratory.

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Environment & Soil Sciences

Solid Waste Assessment & Classification

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Mailing Address: PO Box 357, Pennant Hills NSW 1715
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Web: www.sesl.com.au

Tests are performed under a quality system certified as complying with ISO 9001: 2008. Results and conclusions assume that sampling is representative. This document shall not be reproduced except in full.

Batch N°: 50296 **Sample N°: 21** **Date Received: 1/11/18** **Report Status: Draft**

Client Name: **Northern Beaches Council**
Client Contact: **Fiona Coe**
Client Job N°:
Client Order N°:
Address:

Project Name: **Wakehurst Parkway Flood Mitigation Acid Sulfate and Contamination - The Bends**
SESL Quote N°:
Sample Name: **BH7 800 - 1000**
Sample Type: **Soil**
Test Type: **BWC_EXT, ASS1**

REPORT SUMMARY

Material Type: ○ Soil ○ Other

The results of laboratory testing conducted on this material indicate the presence of a range of contaminants commonly encountered in the natural and urban areas. This assessment was conducted to provide a waste classification for off-site disposal, based on the *Waste Classification Guidelines Part 1: Classifying Waste* (NSW EPA November 2014). Comparison of the laboratory analysis results with the criteria, indicates the material is considered to be within the General Solid Waste classification and as a result of this process, it can be disposed of as per Schedule 1 Part 3 of the Protection of the Environment Operations Act 1997.

EC (dS/m): pH (in H_2O): -

CONTAMINANT		SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
METALS AND METALLOIDS				
Arsenic	(As)	<5	-	CT1 - General Solid Waste (suitable for recycling)
Beryllium	(Be)	-		Not determined
Cadmium	(Cd)	<1		CT1 - General Solid Waste (suitable for recycling)
Chromium VI	(CrVI)	-		Not determined
Total Chromium	(Cr)	9		
Copper	(Cu)	9	N/A	Suitable for recycling
Fluoride	(F)	-		Not determined
Lead	(Pb)	39		CT1 - General Solid Waste (suitable for recycling)
Mercury	(Hg)	<0.1		CT1 - General Solid Waste (suitable for recycling)
Molybdenum	(Mo)	-		Not determined
Nickel	(Ni)	3		CT1 - General Solid Waste (suitable for recycling)
Selenium	(Se)	-		Not determined
Silver	(Ag)	-		Not determined
Zinc	(Zn)	54	N/A	Suitable for recycling
BTEX (MONO AROMATIC HYDROCARBONS)				
Benzene		<0.2		CT1 - General Solid Waste (suitable for recycling)
Toluene		<0.5		CT1 - General Solid Waste (suitable for recycling)
Ethylbenzene		<0.5		CT1 - General Solid Waste (suitable for recycling)
meta & para-Xylene		<0.5		
ortho-Xylene		<0.5		
Xylenes (total)		<0.5		CT1 - General Solid Waste (suitable for recycling)
TOTAL PETROLEUM HYDROCARBONS (TPH)				
C6 - C9		<10	N/A	SCC1 - General Solid Waste (suitable for recycling)
C10 - C14		<50		
C15 - C28		<100		
C29 - C36		<100		
C10-C36 Total TPH		<100	N/A	SCC1 - General Solid Waste (suitable for recycling)
CYANIDES				
Cyanide (amenable)				Not determined
Cyanide (Total)				Not determined
PHENOXY ACID HERBICIDES				
2,4-D	(2,4-Dichlorophenoxy-acetic acid)			Not determined
Fluroxypyr				Not determined
Picloram				Not determined
Triclopyr				Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
SCHEDULED CHEMICALS - ORGANOCHLORINE PESTICIDES (OCP)			
Aldrin	<0.05		
"Benzene, hexachloro"	<0.05		
"Benzene, pentachloronitro"	-		
alpha - BHC	<0.05		
beta - BHC	<0.05		
gamma - BHC (Lindane)	<0.05		
delta - BHC	<0.05		
a - Chlordane	<0.05		
g - Chlordane	<0.05		
DDT, DDD & DDE	<0.2		
Dieldrin	<0.05		
Endrin	<0.05		
Endrin aldehyde	<0.05		
Endosulfan I	<0.05	-	CT1 - General Solid Waste (suitable for recycling)
Endosulfan II	<0.05	-	CT1 - General Solid Waste (suitable for recycling)
Heptachlor	<0.05		
Heptachlor epoxide	<0.05		
Hexachlorophene	-		
Isodrin	-		
Pentachlorobenzene	-		
Pentachlorophenol	-		
"1,2,4,5-tetrachlorobenzene"	-		
"2,3,4,6-tetrachlorophenol"	-		
"1,2,4-trichlorobenzene"	-		
"2,4,5-Trichlorophenoxy acetic acid, salts and esters"	-		
Total Positive Scheduled Chemicals	<0.2	N/A	SCC1 - General Solid Waste (suitable for recycling)
Total Moderately Harmful Pesticides		N/A	Not determined
POLYCYCLIC AROMATIC HYDROCARBONS (PAH)			
Acenaphthene	<0.5		
Acenaphthylene	<0.5		
Anthracene	<0.5		
Benzo(a)anthracene	<0.5		
Benzo(a)pyrene	<0.5		CT1 - General Solid Waste (suitable for recycling)
Benzo(b,j,k)fluoranthene	0.5		
Benzo(ghi)perylene	<0.5		
Chrysene	<0.5		
"Dibenzo(a,h)anthracene"	<0.5		
Fluoranthene	1.2		
Fluorene	<0.5		
"Indeno(1,2,3-cd)pyrene"	<0.5		
Naphthalene	<0.5		
Phenanthrene	1		
Pyrene	1.1		
Total Positive PAH's	3.8	N/A	SCC1 - General Solid Waste (suitable for recycling)
POLYCHLORINATED BIPHENYLS (PCB)			
Aroclor 1016	-		
Aroclor 1221	-		
Aroclor 1232	-		
Aroclor 1242	-		
Aroclor 1248	-		
Aroclor 1254	-		
Aroclor 1260	-		
Aroclor 1262	-		
Aroclor 1268	-		
Total Positive PCB's	<0.1	N/A	SCC1 - General Solid Waste (suitable for recycling)
NITRATED COMPOUNDS - EXPLOSIVES			
"2,4-Dinitrotoluene"			Not determined

CONTAMINANT	SCC: (mg/kg)	TCLP: (mg/L)	CLASSIFICATION
OTHER VOLATILE ORGANIC COMPOUNDS (VOC)			
Carbon tetrachloride	-		Not determined
Chlorobenzene	-		Not determined
Chloroform	-		Not determined
"1,2-Dichlorobenzene"	-		Not determined
"1,4-Dichlorobenzene"	-		Not determined
"1,2-Dichloroethane"	-		Not determined
"1,1-Dichloroethylene"	-		Not determined
Dichloromethane	-		Not determined
Styrene (vinyl benzene)	-		Not determined
"1,1,1,2-Tetrachloroethane"	-		Not determined
"1,1,2,2-Tetrachloroethane"	-		Not determined
Tetrachloroethylene	-		Not determined
"1,1,1-Trichloroethane"	-		Not determined
"1,1,2-Trichloroethane"	-		Not determined
Trichloroethylene	-		Not determined
Vinyl chloride	-		Not determined
OTHER SEMI-VOLATILE ORGANIC COMPOUNDS (SVOC)			
Chlorpyrifos			Not determined
Nitrobenzene			Not determined
Phenol (non-halogenated)			Not determined
"2,4,5-Trichlorophenol"			Not determined
"2,4,6-Trichlorophenol"			Not determined
OTHER CONTAMINANTS			
Methyl ethyl ketone			Not determined
Tebuconazole			Not determined
Plasticiser compounds			Not determined
Cresol (total)			Not determined
ASBESTOS_DETECTION			
Asbestos Detection			

DETAILED SUMMARY

Waste Classification Guidelines Part 1: Classifying Waste (EPA, Nov. 2014)

Abbreviations: ND - Not Determined (Analyte not tested)
SCC - Specific Contaminant Concentration
TCLP - Toxicity Characteristics Leaching Procedure

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Consultant:

Andrew Jacovides

Authorised Signatory:

All analyses performed by a NATA accredited sub-contracting laboratory.

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Environment & Soil Sciences

Appendix D



Photo 1.	The wet dark brown boggy material covered by vegetation at the proposed location of Culvert 2. 3/10/2018



Photo 2.	Close up of the material at the proposed location of Culvert 1. 3/10/18



Photo 3.	Road base fill above the clayey sand/ sandy clay at Culvert 5. 3/10/2018

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ACT Level 4, 15 Moore St, Canberra ACT 2601
VIC Level 1, 21 Shields St, Flemington VIC 3031
QLD Level 10, 15 Green Square Cl, Fortitude Valley QLD 4006



Photo 4.	Profile of the material augered at BH1. 31/10/2018



Photo 5.	Profile of the material at BH5. 31/10/2018



Photo 6.	Photo of the creek from the bank at BH4. 31/10/2018

ABN 70 106 810 708
T 1300 30 40 80
F 1300 64 46 89
E info@sesl.com.au
W sesl.com.au

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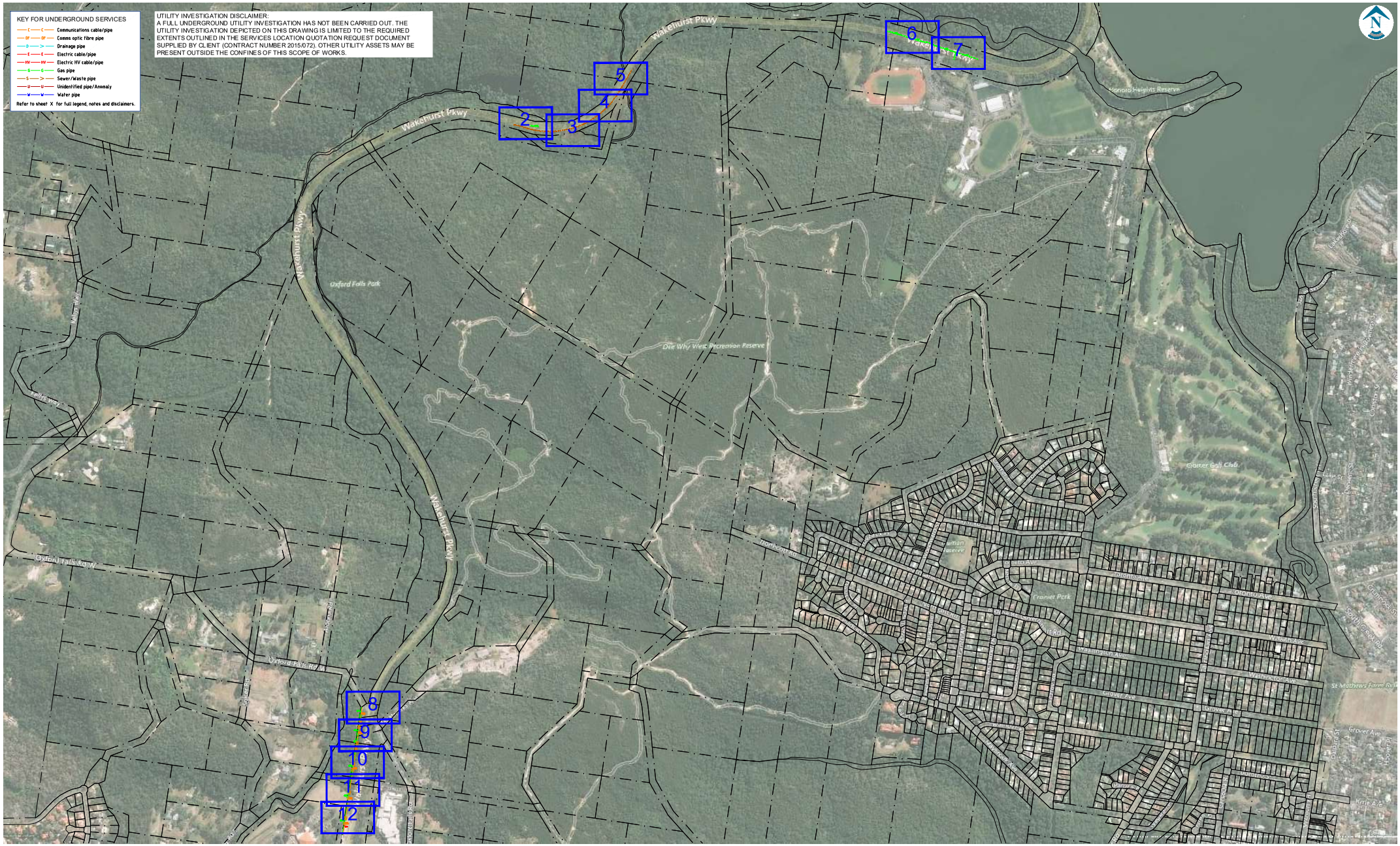
ACT Level 4, 15 Moore St, Canberra ACT 2601
VIC Level 1, 21 Shields St, Flemington VIC 3031
QLD Level 10, 15 Green Square Cl, Fortitude Valley QLD 4006

APPENDIX H - Services Locating Plans



REV	REVISION DESCRIPTION	DATE	DRN	CHK

LandSurveys
HEAD OFFICE:
19 Brennan Way,
Belmont, WA 6104
T (08) 9477 4477
F (08) 9477 4499
admin@landsurveys.net.au www.landsurveys.net.au

Utility MAPPING
Suite 206A, 20 Lexington Drive
Bella Vista
NSW 2153
Ph: 1300 62 77 46
Mail: sydney@utilitymapping.com.au
Web: www.utilitymapping.com.au

SMWP

UNDERGROUND UTILITY SURVEY

SERVICES LOCATION NEAR
WAKEHURST PARKWAY, NSW
SMWP CONTRACT #2015-072

LOCATED:	IW	CHECKED:	IW	DATE:	07/02/19
SURVEYED:	AG(LS)	SCALE AT A1:	NTS	DATUM:	AHD
DRAWN:	AMM	DBYD REF:		GRID:	MGA-56

STATE/YEAR	JOB No	DRG TYPE	DRG No	REV
NSW18	0284	US	01	R0

SHEET 1 OF 13

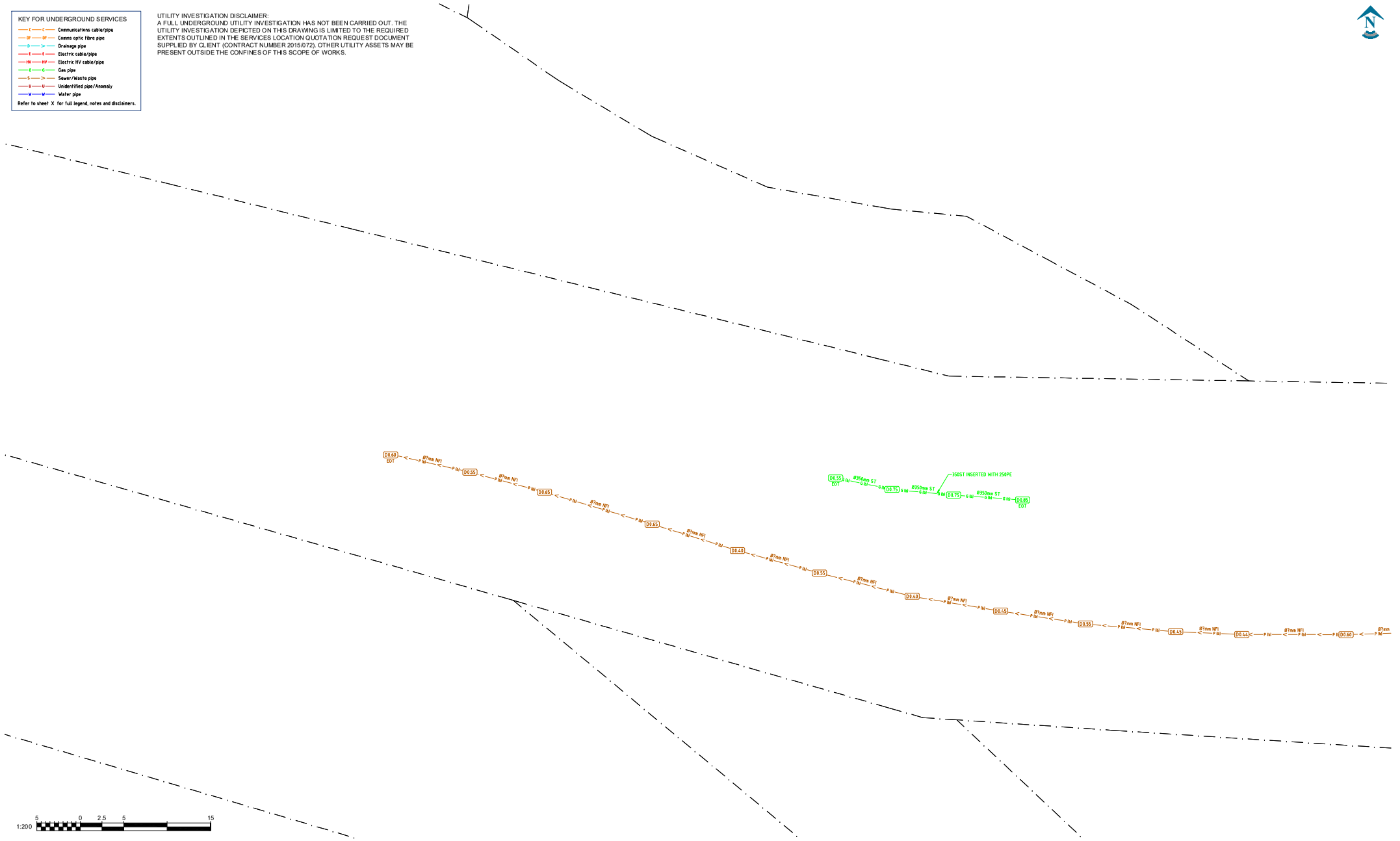
G:\Team Drives\00 Jobs\2018\NSW18-0284 LS Wakehurst Parkway Flood Mitigation\06 Drafting\NSW18-0284-US-01 R0.dwg CAD

KEY FOR UNDERGROUND SERVICES

- C — C — Communications cable/pipe
- OF — OF — Comms optic fibre pipe
- D — D — Drainage pipe
- E — E — Electric cable/pipe
- HV — HV — Electric HV cable/pipe
- G — G — Gas pipe
- S — S — Sewer/Waste pipe
- U — U — Unidentified pipe/Anomaly
- W — W — Water pipe

Refer to sheet X for full legend, notes and disclaimers.

UTILITY INVESTIGATION DISCLAIMER:
A FULL UNDERGROUND UTILITY INVESTIGATION HAS NOT BEEN CARRIED OUT. THE UTILITY INVESTIGATION DEPICTED ON THIS DRAWING IS LIMITED TO THE REQUIRED EXTENTS OUTLINED IN THE SERVICES LOCATION QUOTATION REQUEST DOCUMENT SUPPLIED BY CLIENT (CONTRACT NUMBER 2015/072). OTHER UTILITY ASSETS MAY BE PRESENT OUTSIDE THE CONFINES OF THIS SCOPE OF WORKS.



1:200 5 0 2.5 5 15

REV	REVISION DESCRIPTION	DATE	DRN	CHK

Land Surveys
HEAD OFFICE:
19 Brennan Way,
Belmont, WA 6104
T (08) 9477 4477
F (08) 9477 4499
admin@landsurveys.net.au www.landsurveys.net.au

Utility MAPPING
Suite 206A, 20 Lexington Drive
Bella Vista
NSW 2153
Ph: 1300 62 77 46
Mail: sydney@utilitymapping.com.au
Web: www.utilitymapping.com.au

SMWP
UNDERGROUND UTILITY SURVEY
SERVICES LOCATION NEAR
WAKEHURST PARKWAY, NSW
SMWP CONTRACT #2015-072

LOCATED:	IW	CHECKED:	IW	DATE:	07/02/19
SURVEYED:	AG(LS)	SCALE AT A1:	1:200	DATUM:	AHD
DRAWN:	AMM	DBYD REF:		GRID:	MGA-56

STATE/YEAR	JOB No	DRG TYPE	DRG No	REV
NSW18	0284	US	01	R0

SHEET 2 OF 13

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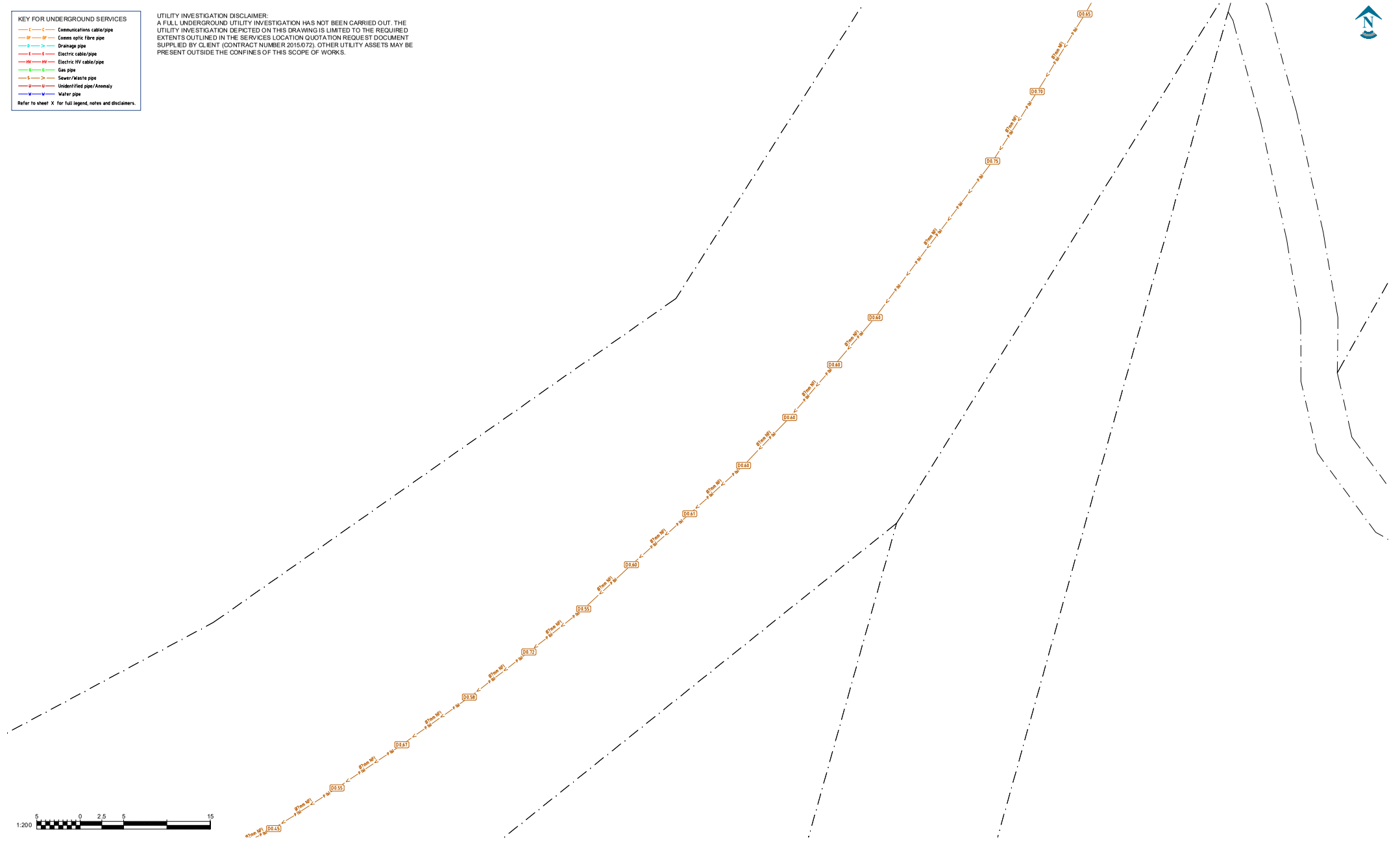

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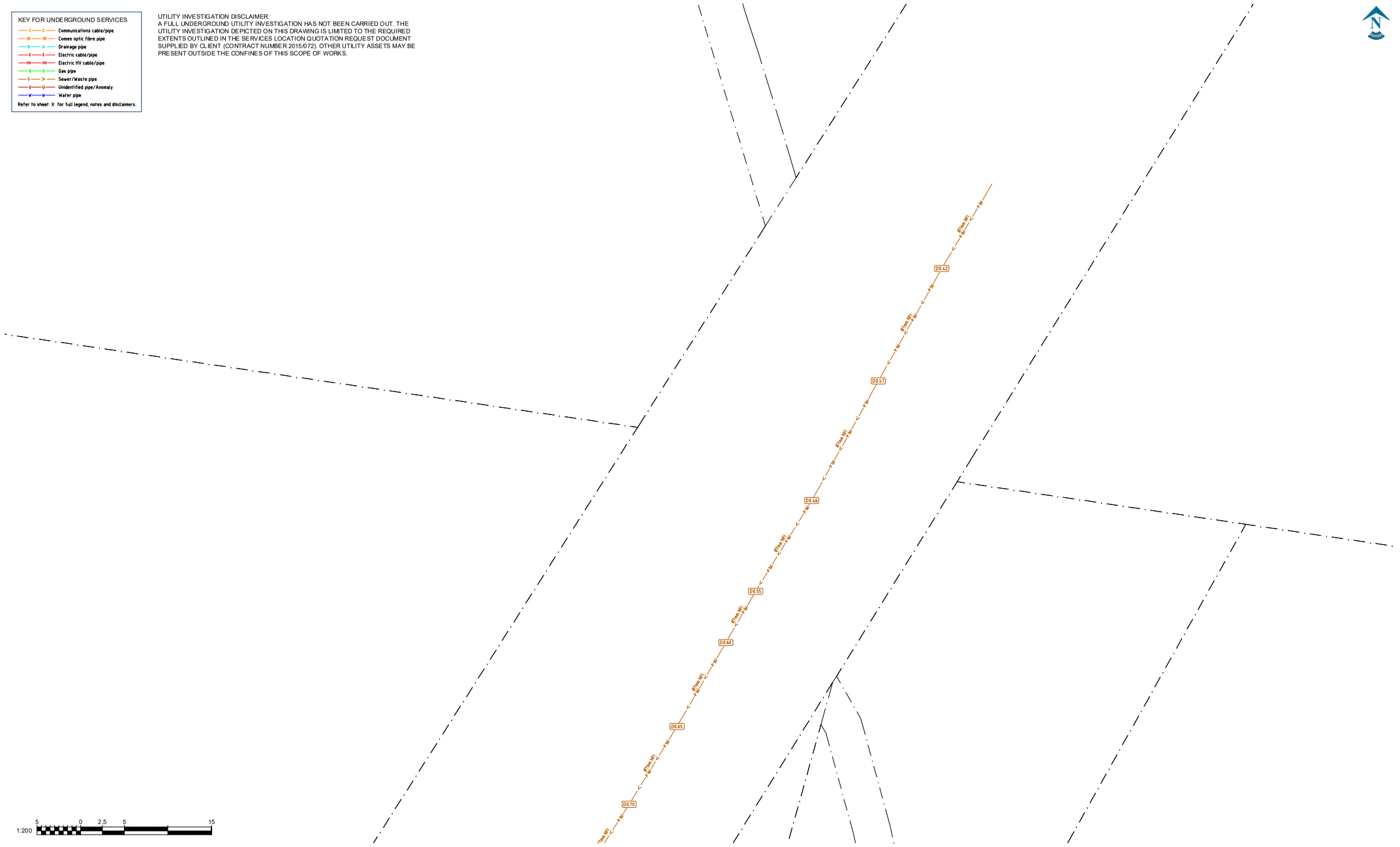

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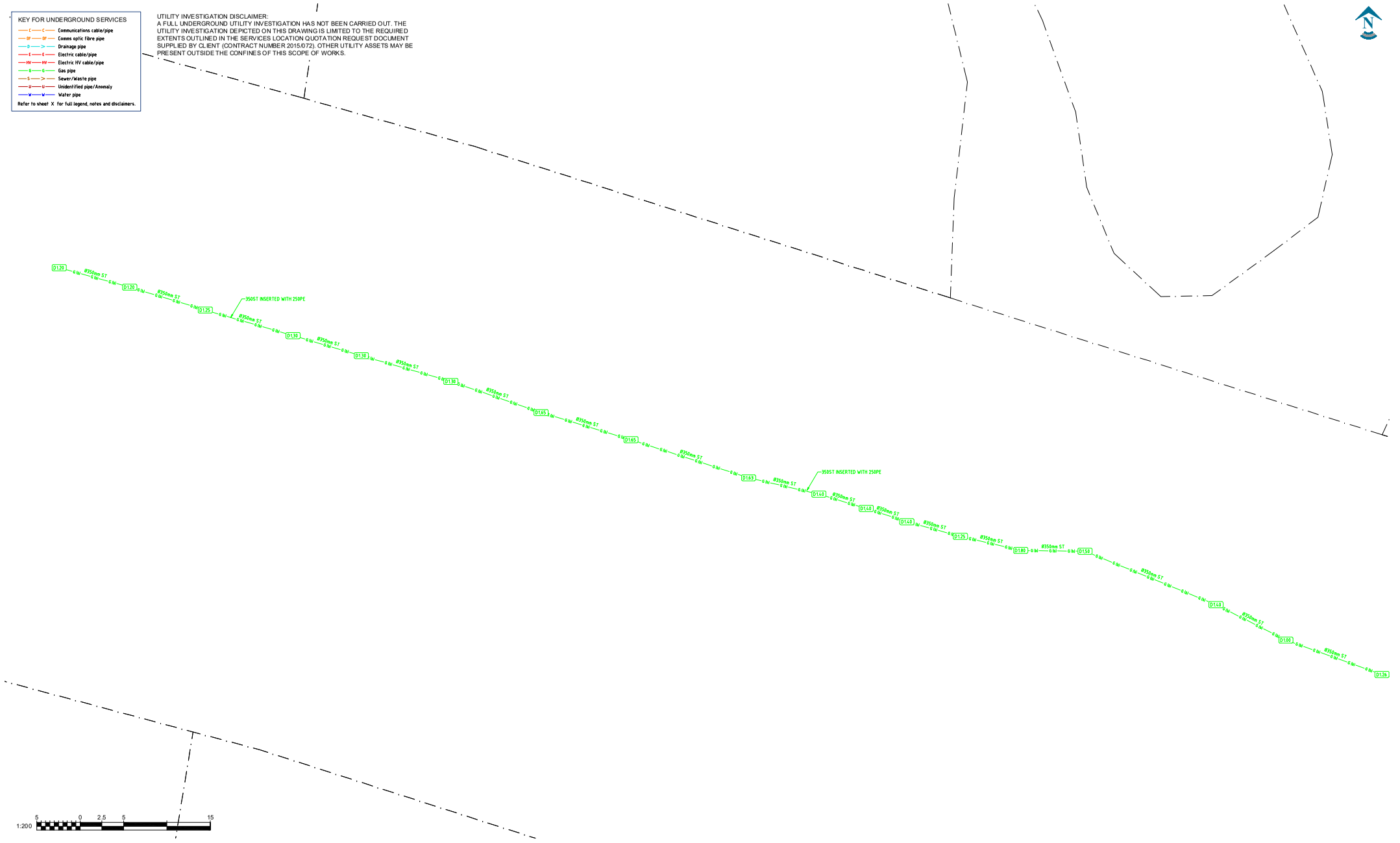

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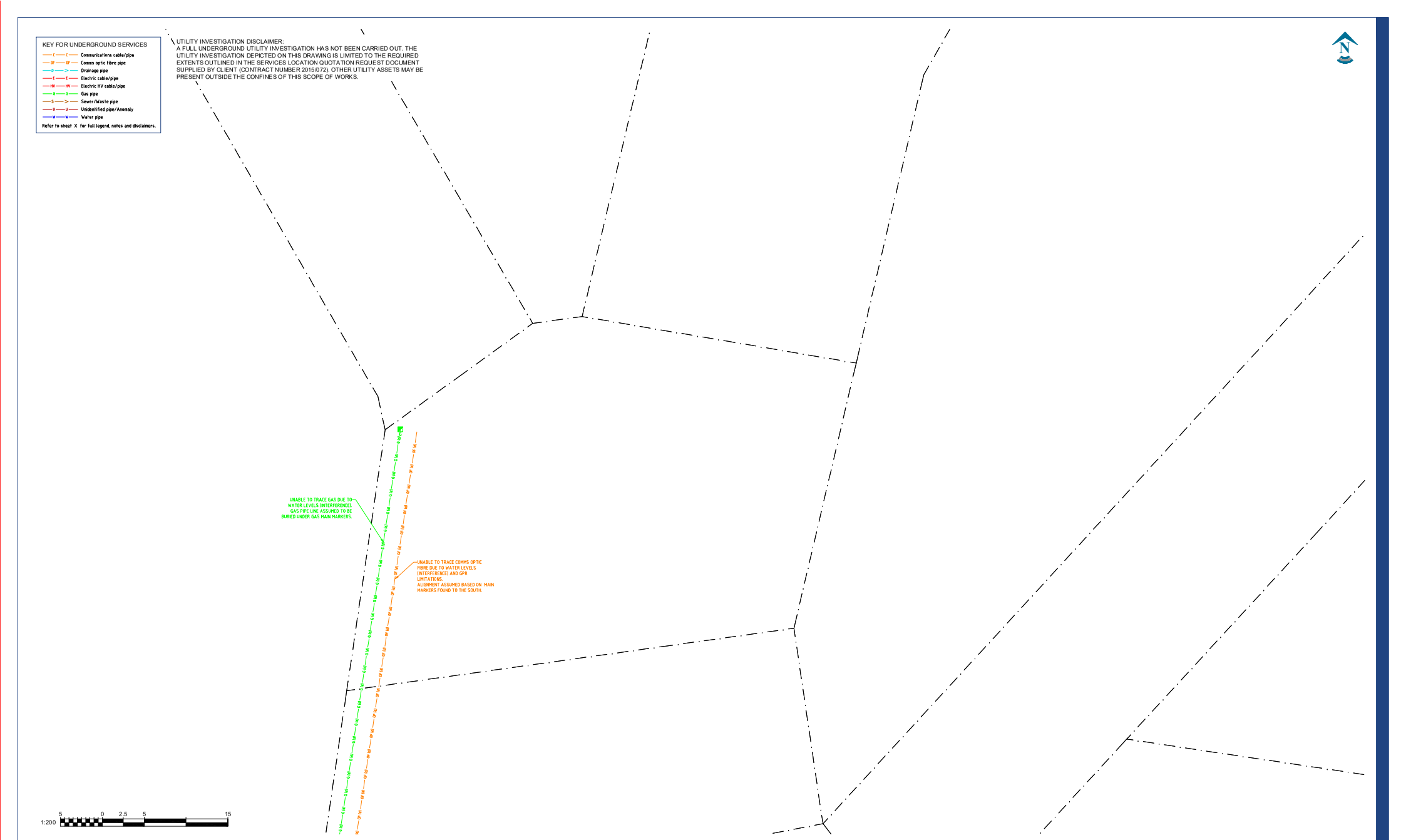

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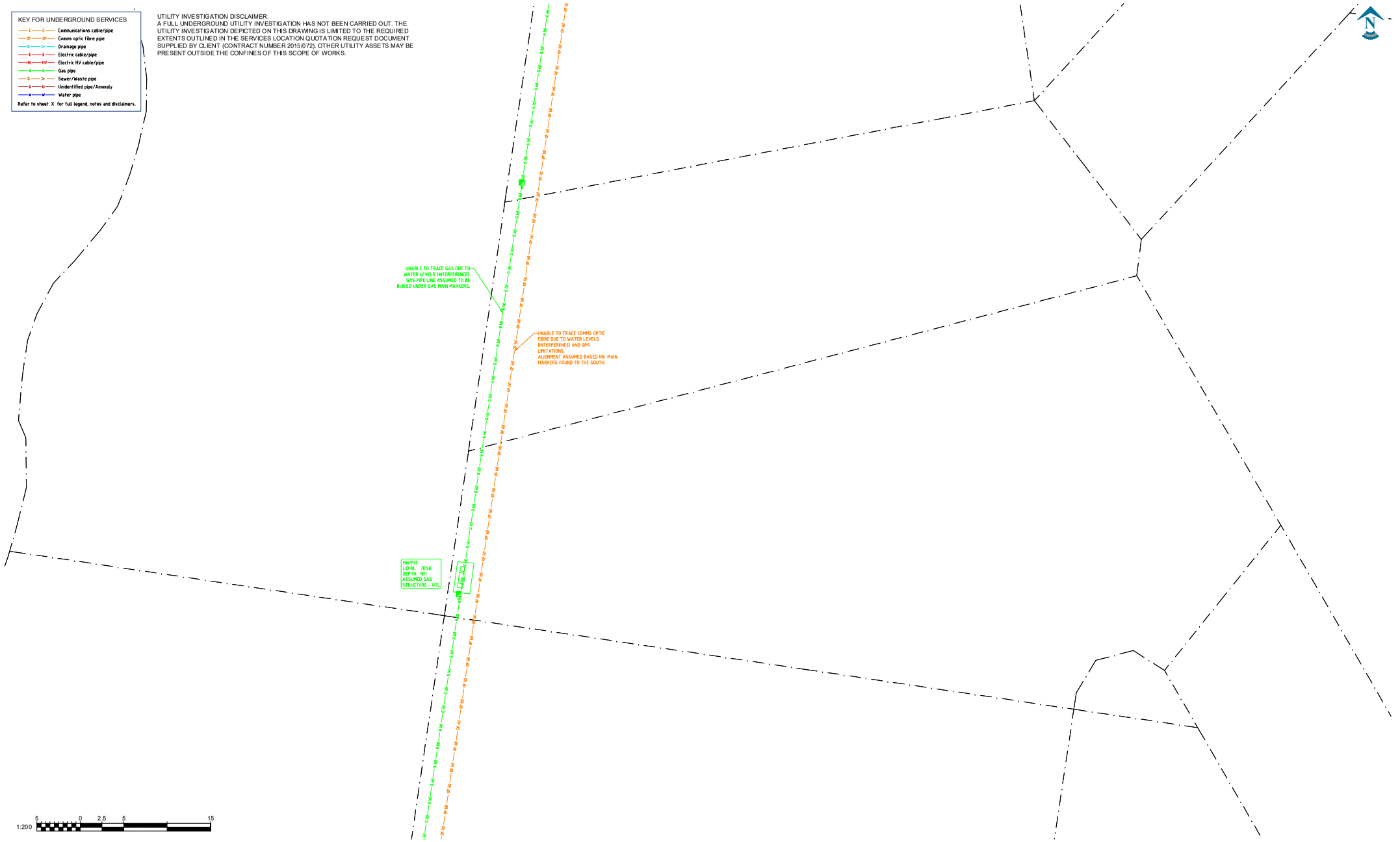

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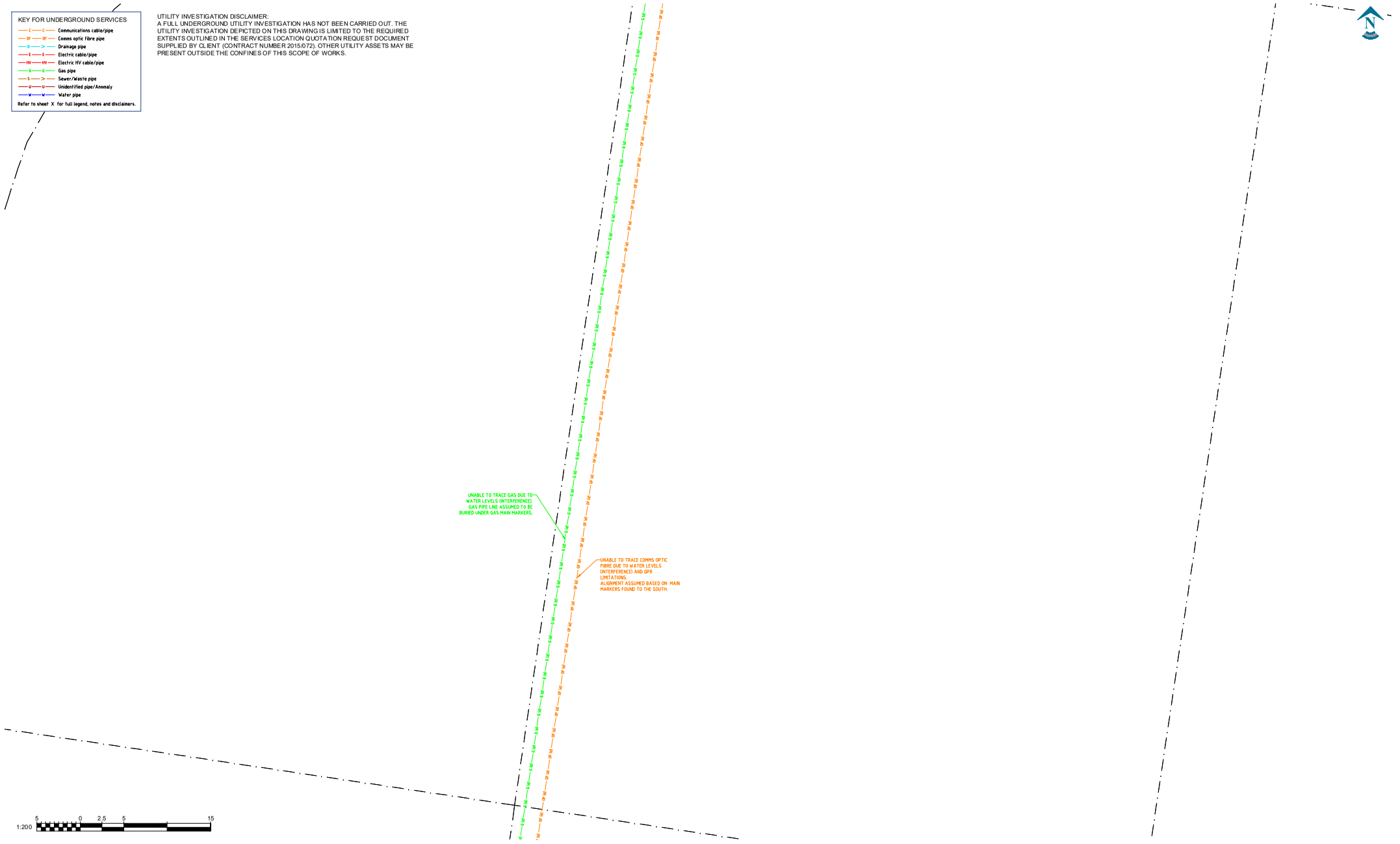

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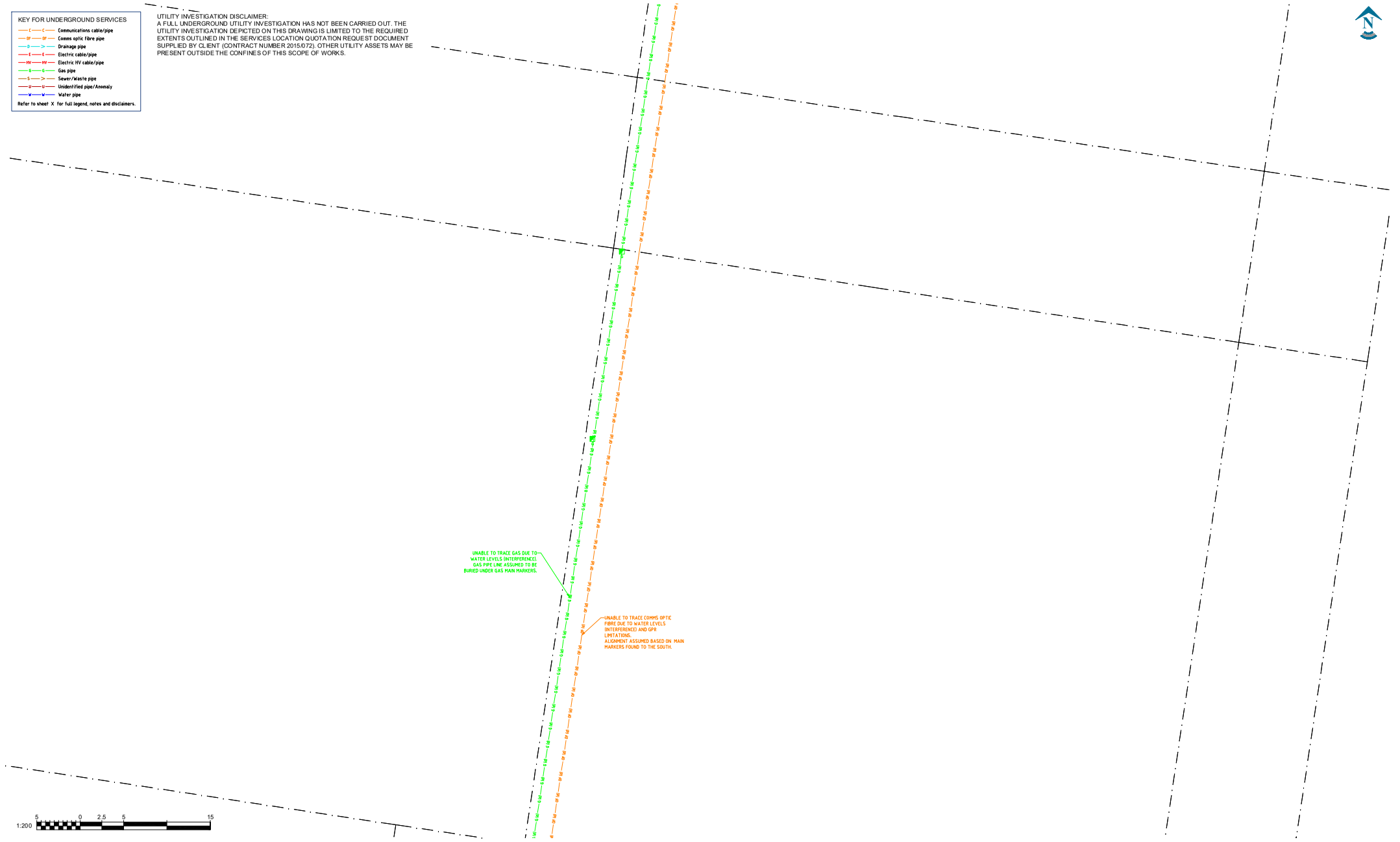

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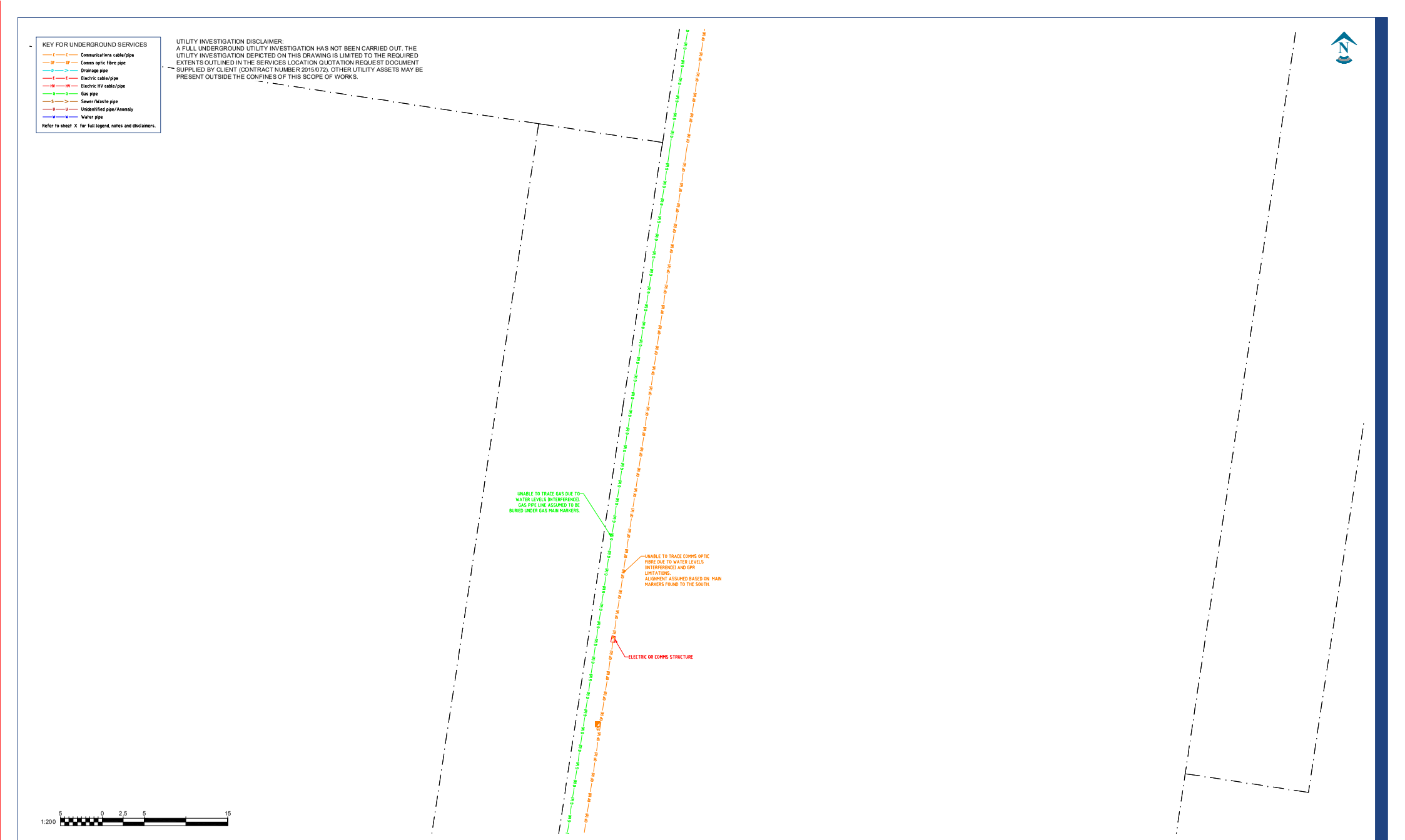

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SUBSURFACE UTILITY INFORMATION (SUI) AS5488 CLASSIFICATION

QUALITY LABELING UTILITY INFORMATION BY A CLASSIFICATION CODE ALLOWS THE USER OF THIS INFORMATION TO UNDERSTAND CLEARLY HOW THE INFORMATION WAS COLLECTED AND THEN PLACE AN APPROPRIATE AMOUNT OF RELIANCE ON IT. PROJECT RISKS RELATED TO UNDERGROUND UTILITIES CAN THEN BE PROPERLY MANAGED.

QUALITY A:

INFORMATION IS THE HIGHEST POSSIBLE LEVEL OF ACCURACY AND IS OBTAINED EXPOSING THE UNDERGROUND UTILITY USING A NON DESTRUCTIVE EXCAVATION (POT HOLING) TECHNIQUE. THE VERTICAL INFORMATION FOR THIS LOCATING METHOD IS TO THE TOP OF THE SHALLOWEST PART OF THE LOCATED SERVICE. THE 3D LOCATION IS RECORDED AS AN X,Y,Z COORDINATE. EXPECTED HORIZONTAL AND VERTICAL ACCURACY IS +/-50mm.

QUALITY B:

INFORMATION IS COLLECTED BY DESIGNATING THE HORIZONTAL AND VERTICAL LOCATION OF UNDERGROUND UTILITIES BY USING ELECTROMAGNETIC PIPE AND CABLE LOCATORS, SONDES OR FLEXI TRACE, GROUND PENETRATING RADAR AND ACOUSTIC PULSE EQUIPMENT. THIS IS THE MOST COMMON FORM OF UTILITY LOCATING AND ALTHOUGH AN X,Y, AND Z AXIS CAN BE ESTABLISHED IT IS NOT ALWAYS ENTIRELY ACCURATE DUE TO DIFFERING ELECTROMAGNETIC FIELDS, SOIL CONDITIONS AND MULTIPLE BANKS OF CABLES AFFECTING THE LOCATING SIGNAL. EXPECTED HORIZONTAL ACCURACY IS +/-300mm, VERTICAL ACCURACY +/-500mm.

QUALITY C:

INFORMATION IS COLLECTED BY CORRELATING THE SURVEY OF VISIBLE UTILITY SURFACE FEATURES SUCH AS MARKER PLATES OR WATER HYDRANTS AND ACQUIRED DIAL BEFORE YOU DIG PLANS TO DRAW A STRING WHICH SHOWS THE APPROXIMATE POSITION OF SERVICES. THIS METHOD DOES NOT USUALLY SHOW MULTIPLE BANKS OF CABLES AND DOES NOT ALWAYS SHOW THREE DIMENSIONAL INFORMATION. EXPECTED HORIZONTAL ACCURACY (SURFACE FEATURES ONLY) IS +/-300mm.

QUALITY D:

INFORMATION IS THE MOST BASIC LEVEL OF UTILITY LOCATIONS USING ONLY INFORMATION BASED ON EXISTING DIAL BEFORE YOU DIG PLANS OR OTHER RECORDS AND BY MEASURING BOUNDARY OFFSETS ETC. THIS METHOD OF UTILITY LOCATION SHOULD ALWAYS BE TREATED AS AN INDICATION OF THE PRESENCE OF A SERVICE ONLY AND SHOULD NOT BE USED FOR DESIGN. TOLERANCE DOES NOT APPLY TO AN INDICATIVE LOCATION THAT IS ATTRIBUTED TO QUALITY LEVEL D.

DETECTION DISCLAIMER:

ELECTROMAGNETIC LOCATING TECHNIQUES AS WELL AS GROUND PENETRATING RADAR HAVE BEEN UTILISED IN THE LOCATION OF UNDERGROUND SERVICES. THESE RESULTS ARE NOT INFALLIBLE AND A NON DESTRUCTIVE DIG PROCESS SHOULD BE CARRIED OUT TO CONFIRM SERVICE IDENTIFICATION, POSITIONS AND PARTICULARLY HEIGHTS, WHERE THESE ARE CRITICAL. ALTHOUGH ALL REASONABLE EFFORT HAS BEEN MADE IN LOCATING AND MAPPING THE UNDERGROUND SERVICES, THE COMPLETE EXTENTS OF THE THIS UTILITY SURVEY INFORMATION CANNOT BE GUARANTEED.

SURVEY TECHNIQUE DISCLAIMER:

ALL SURVEY INFORMATION COLLECTED BY UTILITY MAPPING SHOWN ON THIS PLAN HAS BEEN SURVEYED USING GNSS AND TPS SURVEY METHODS. EXPECTED MINIMUM ACCURACY OF GNSS SURVEY DATA IS +/-50mm. ACCURACY IS SUBJECT TO VARIATION DEPENDANT ON SITE CONDITIONS AND SURVEY CONTROL NETWORK SOURCES. AFOREMENTIONED TOLERANCE PROVIDED SHOULD BE USED AS A GUIDE ONLY AND REVIEWED ON A PROJECT BY PROJECT BASIS.

AERIAL IMAGERY DISCLAIMER:

AERIAL IMAGERY HAS BEEN SUPPLIED UNDER A COMMERCIAL LICENCE AGREEMENT AND IS NOT TO BE REPRODUCED FOR ANY OTHER PURPOSES OTHER THAN THAT INTENDED BY UTILITY MAPPING UNDER ANY CIRCUMSTANCE WITHOUT WRITTEN APPROVAL. FEATURES SHOWN ON IMAGERY ARE INDICATIVE ONLY AND MAY NOT REPRESENT THE TRUE AND FINAL POSITION OF FEATURES ON SITE.

KEY FOR UNDERGROUND SERVICES

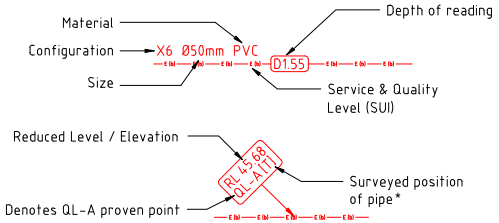
- Air line
- Chemical cable/pipe
- Communications cable/pipe
- Comms optic fibre pipe
- Drainage pipe
- Electric earth cable/pipe
- Electric cable/pipe
- Electric direct buried cable
- Electric HV cable/pipe
- Fuel pipe
- Gas pipe
- Irrigation pipe
- Chilled water pipe
- Heated water pipe
- Oil pipe
- Rail counter cable/pipe
- Sewer/Waste pipe
- Sewer pressure main pipe
- Traffic cable/pipe
- Unidentified pipe/Anomaly
- Water pipe
- Underground storage tank
- Multi user duct
- Empty duct
- Overhead service
- Survey Boundary
- Cable/Pipe group or duct
- Trench scar

- Air pit centre
- Air valve
- Chemical pit centre
- Chemical valve
- Comms main marker
- Comms pillar
- Comms pole
- Comms pit centre
- Drainage connection
- Drainage down pipe
- Drainage pump
- Drainage pit centre
- Electric dome
- Electric earth cover
- Electric earth spike
- Electric junction box
- Electric light
- Electric light pole
- Electric main marker
- Electric power pole
- Electric pit centre
- Electric sign centre
- Fuel access point
- Fuel pit centre
- Fuel valve
- Gas bottle
- Gas meter
- Gas main marker
- Gas pit centre
- Gas test point
- Gas valve
- Irrigation pit centre
- Irrigation sprinkler
- Irrigation valve
- Mechanical chilled water valve
- Mechanical hot water valve
- Mechanical pit centre
- Oil pit centre
- Oil valve
- Rail junction box
- Rail light
- Rail pit centre
- Rail signal control box
- Rail traffic signal
- Sewer main marker
- Sewer connection
- Sewer flush point
- Sewer inspection opening
- Sewer inspection shaft
- Sewer pit centre
- Sewer pipe vent
- Sewer valve
- Traffic camera
- Traffic pit centre
- Traffic signal light
- Traffic sensor
- Unknown main marker
- Unknown pit centre
- Unknown valve
- Water bore
- Water connection
- Water fire hose
- Water hydrant
- Water meter
- Water main marker
- Water pump
- Water pit centre
- Water tap
- Water valve
- Characteristic change
- Pothole (indicative)
- Miscellaneous pipe riser
- End of trace

CADASTRAL BOUNDARY DISCLAIMER:

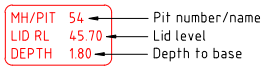
CADASTRAL BOUNDARY HAS BEEN SUPPLIED BY A THIRD PARTY AND ARE INDICATIVE ONLY. UTILITY MAPPING ACCEPTS NO RESPONSIBILITY FOR THE ACCURACY OF THIS INFORMATION.

EXPLANATION OF PIPE ANNOTATION



* Surveyed position of pipe: C = Centre, I = Invert, T = Top, G = Ground Level
Where Ground Level is shown it indicates that no depth has been obtainable.

EXPLANATION OF PIT ANNOTATION



EXPLANATION OF SUBSURFACE UTILITY INFORMATION (SUI AS5488)

- Denotes electric pipe/cable verified to QL-A
- Denotes electric pipe/cable verified to QL-B
  — Verified utility
- Denotes electric pipe/cable verified to QL-C
- Denotes electric pipe/cable verified to QL-D
  — Unverified utility

ABBREVIATIONS FOR UNDERGROUND SERVICES

AC	Asbestos cement	NLA	Not located - route assumed
ALK	Alkathene	NLI	Not located - route plotted from on-site information
BR	Brick		
CI	Cast iron	NLR	Not located - route plotted from records
CICL	Cast iron cement lined		
CONC	Concrete	NLT	Not located - plotted from visible trench scar detail
CU	Copper		
DI	Ductile iron	NVP	No visible pipes
DICL	Ductile iron cement lined	UTF	Unable to find
DIPL	Ductile iron poly lined	UTGA	Unable to gain access
EW	Earthenware	UTL	Unable to lift
FG	Fibreglass	UTR	Unable to rod
GI	Galvanised iron	UTS	Unable to survey
GRP	Glass reinforced plastic	UTT	Unable to trace
MDPE	Medium density polyethylene		
MS	Medium steel	BL	Base level
MSCL	Medium steel cement lined	CL	Cover level
PE	Polyethylene	IL	Invert level (pipe)
PVC	Polyvinyl chloride	NFI	No further information
RC	Reinforced concrete	NS	No signal
SGW	Salt glazed ware	O/H	Overhead
SI	Spun iron		
SPL	Steel poly lined	(R)	Information taken from records
ST	Steel		
VC	Vitrified clay		

NOTES FOR UNDERGROUND SERVICES

1. Pipe sizes which cannot be obtained by visual survey are taken from record drawings/marker plates where available.
2. Cable routes shown as a single line may actually consist of many cables, refer to annotated configuration details.
3. Drainage pipe sizes & invert levels have been determined without man entry into chambers. Every effort has been made to correctly obtain this information, however, accuracy is dependent on visibility from the surface.
5. All annotations depict 'depth to service' UNLESS otherwise stated. Annotations marked 'RL' inidcate the true elevation of service feature.
6. Utility lines located using Electromagnetic Induction (EMI) or similar proving techniques are assumed to have been located to the approximate CENTRE of the service.
7. Utility lines located using Ground Penetrating Radar (GPR) or similar proving techniques are assumed to have been located to the TOP of the service.

REV	REVISION DESCRIPTION	DATE	DRN	CHK

Land Surveys
HEAD OFFICE:
19 Brennan Way,
Belmont, WA 6104
T (08) 9477 4477
F (08) 9477 4499
admin@landsurveys.net.au www.landsurveys.net.au

Utility MAPPING
Suite 206A, 20 Lexington Drive
Bella Vista
NSW 2153
Ph: 1300 62 77 46
Mail: sydney@utilitymapping.com.au
Web: www.utilitymapping.com.au

SMWP
UNDERGROUND UTILITY SURVEY
SERVICES LOCATION NEAR
WAKEHURST PARKWAY, NSW
SMWP CONTRACT #2015-072

LOCATED:	IW	CHECKED:	IW	DATE:	07/02/19
SURVEYED:	AG(LS)	SCALE AT A1:	NTS	DATUM:	AHD
DRAWN:	AMM	DBYD REF:		GRID:	MGA-56

STATE/YEAR	JOB No	DRG TYPE	DRG No	REV
NSW18	0284	US	01	R0

G:\Team Drives\00 Jobs\2018\NSW18-0284 LS Wakehurst Parkway Flood Mitigation\06 Drafting\NSW18-0284-US-01 R0.dwg CAD

APPENDIX I - Flood Model Refinements

Downstream Boundary Condition

Background

The TUFLOW model set received from Cardno (2017) and used in Flood Mitigation Options Assessment (RHDHV, 2018) had a time-varying downstream boundary condition as per **Figure 16**.

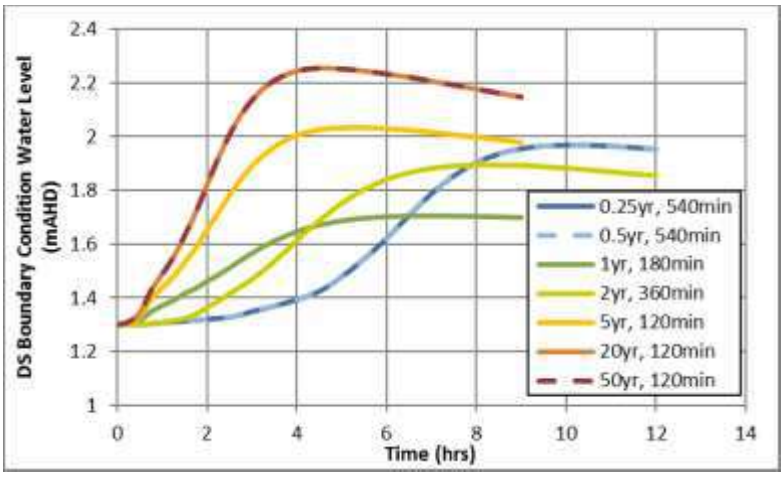


Figure 16: Original downstream boundary condition

The original downstream boundary condition (as per **Figure 16**) was simplified and revised for the following three reasons:

- The methodology used to originally create this boundary condition was uncertain, and re-creation using a larger model (e.g. full Narrabeen Lagoon catchment) was unfeasible for this project.
- Data analysis on historical lagoon levels (1995 to 2018) shows the lagoon has an average tailwater level of 0.53 mAHD just prior to flood events at the MHL Middle Creek Gauge (MHL, Middle Creek Water Level Gauge Frequency Analysis, May 2018.). This is much lower than the initial water level in the original model.
- The peak water level for the 0.25 EY and 0.5EY events is higher than the less frequent events in the model (due to a longer duration of filling in the lagoon), and hence may cause confusion to the public when reviewing results in future.

Downstream Condition Analysis

Water levels of Narrabeen lagoon are governed by the run-off volume accumulating over time and the condition of the outlet from Narrabeen Lagoon to the ocean.

RHDHV created and ranked a daily maximum series for the following two parameters:

- The peak levels of Narrabeen Lagoon (determined by Narrabeen Bridge water level records- Gauge).
- The rate of rise over a 6-hour period, when lagoon levels are greater than 0.53mAHD.

The Narrabeen Bridge peak flood levels greater than 1.1mAHD were analysed to determine their frequency. Note that no filtering was undertaken for events stretching over multiple consecutive days. The results are presented in **Figure 17** and **Table 20**.

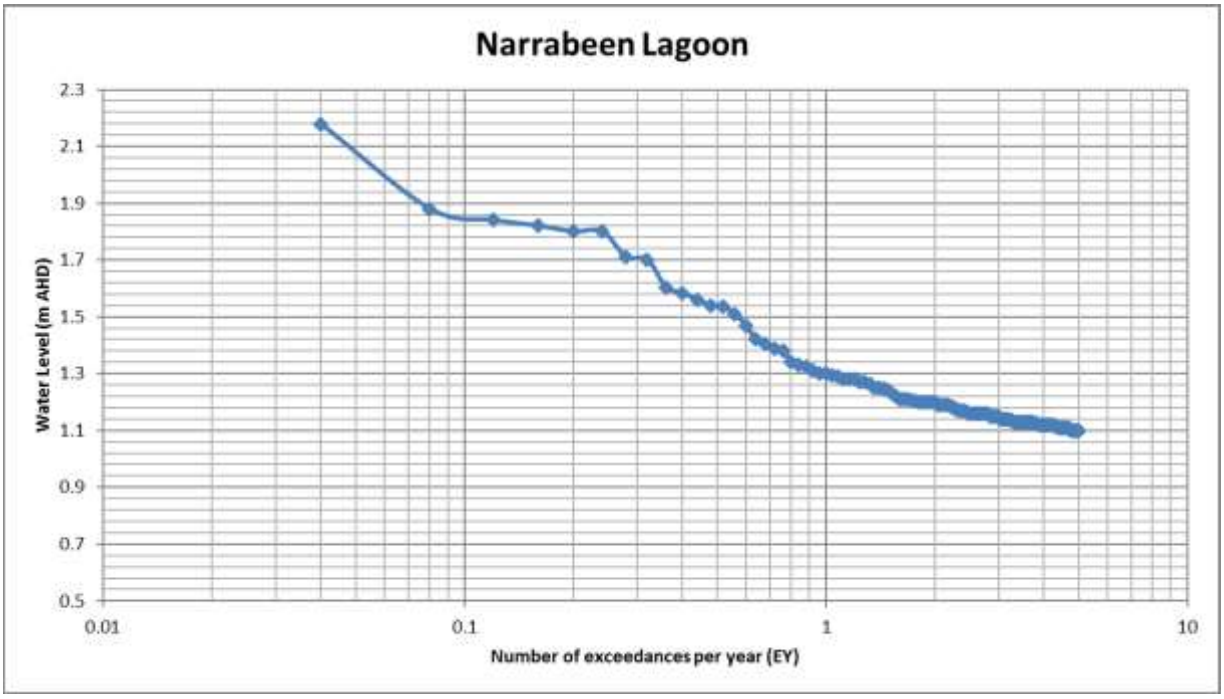


Figure 17: Frequency Analysis for Narrabeen Bridge Peak Flood Levels

Table 20: Results Summary- Frequency Analysis for Narrabeen Bridge Peak Flood Levels

ARI	Flood Frequency (EY)	Narrabeen Lagoon Peak Flood Level (mAHD)	Rate of rise If assume a 6hr event starting at 0.53mAHD (m/hr)
3 months	4	1.12	0.10
4 months	3	1.15	0.10
6 months	2	1.20	0.11
1 year	1	1.30	0.13
2 year	0.5	1.54	0.17

The Narrabeen Bridge daily maximum series for 'Rate of Rise over 6hrs' were analysed to determine their frequency. The results are presented in **Figure 18** and **Table 21**.

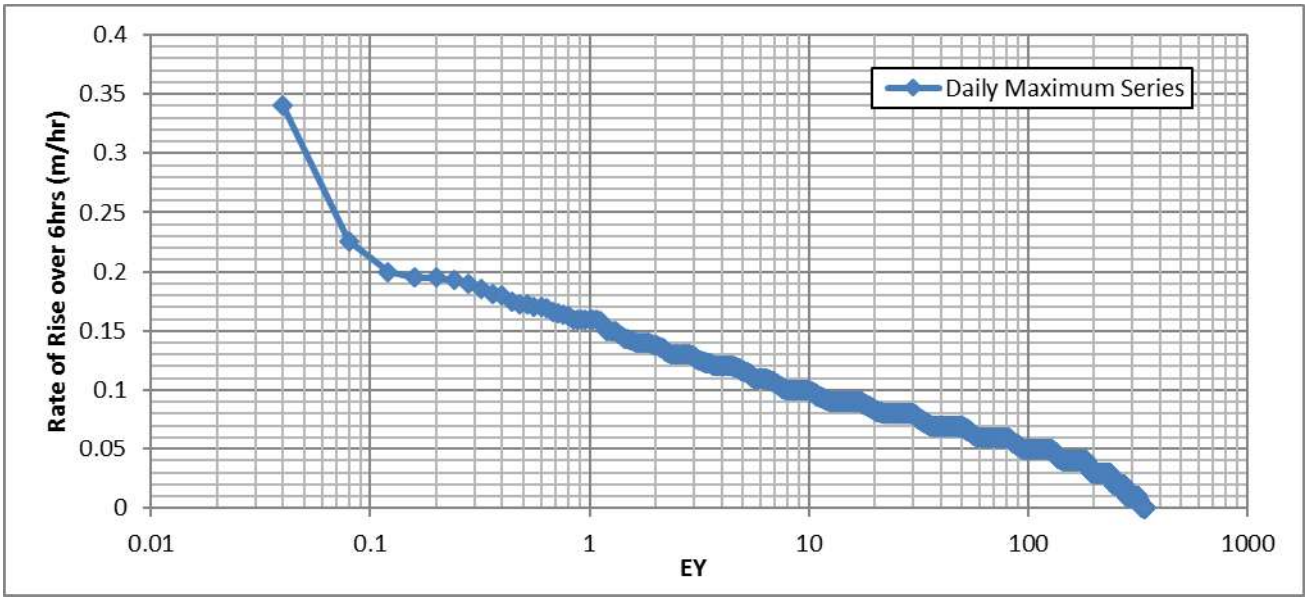


Figure 18: Frequency Analysis for Narrabeen Bridge Rate of Rise (m/hr) over 6hrs using a daily maximum series.

Table 21: Results Summary- Frequency Analysis for Narrabeen Bridge maximum rate of rise over 6hrs

ARI	Flood Frequency (EY)	Rate of rise (m/hr)
3 months	4	0.12
4 months	3	0.13
6 months	2	0.14
1 year	1	0.16
2 year	0.5	0.17

The rate of rise was compared between **Table 20** and **Table 21**, with a variation of 0% (for the 2 year ARI) to 30% (for more frequent ARIs). Based on this comparison, the 6-hour 'ramp-up' period was considered within the right magnitude for hydrograph synthesis (for the purposes of this study).

Hydrograph Synthesis

Hydrograph synthesis was undertaken using the following parameters:

- Initial water level of 0.53mAHD, as per the mean level determined by the MHL (2018).
- Final water level as per **Table 20**.
- Time of increase- 6hrs.
- Water levels plateau once peak reached.

The newly synthesized downstream boundary condition at Narrabeen Lagoon is presented in **Figure 19**.

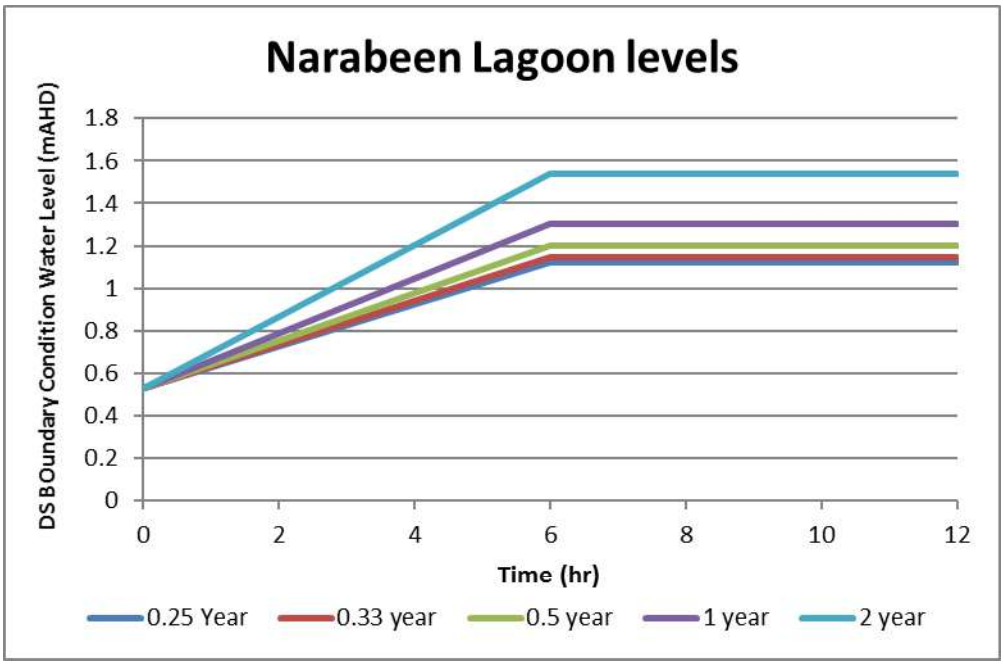


Figure 19: Newly Synthesized DS Boundary Condition at Narrabeen Lagoon

This boundary condition was used in TUFLOW for this study.

Checking of Critical Flood Duration

RHDHV undertook basic analysis to verify if the storm durations used in the original TUFLOW model (Cardno, 2017) where representative of the critical duration (produce peak water levels for a given AEP).

Table 22: Critical duration summary

ARI	Flood Frequency (EY)	Critical Duration in XP-Rafts				Critical Duration in TUFLOW				TUFLOW
		Local Catch't Sports	Middle Creek Outlet	The Bends	Oxford Falls	Local Catch't Sports	Middle Ck Outlet	The Bends	Oxford Falls	Used in Options Study and Cardno (2017)
Durations checked		*0.5hr, 1hr, 1.5hr, 2hr, 3hr, 4.5hr, 6hr*, 9hr, 12hr*				*1.5hr*, 2hr, 3hr, 4.5hr*, 6hr*, 9hr, 12hr**, 24hr****				-
Node checked		NL74	NL76	NL78G	94A	MC_7.1	IC_01	IC_09	MC_2.1	-
3 mon	4	9hr	2hr	2hr	2hr	9hr	9hr	9hr#	2hr	9hr
6 mon	2	9hr	2hr	2hr	2hr	9hr	9hr	9hr	2hr	9hr
1 year	1	9hr	2hr	2hr	1.5hr	9hr	9hr	9hr	2hr	3hr
2 year	0.5	6hr	6hr	2hr	1.5hr	9hr	9hr	9hr	2hr	6hr

*1.5hr, 4.5hr and 6hr for 1 year and 2 year ARI only
** 12hr for 3mon to 6mon ARI only
*** 24hr for 3mon ARI only
# Note that outside of levee in creek, the 9hr is critical, but 12hr delivers more flooding to the road at point RW_08. Depending on the protection mechanism (e.g. south levee vs sediment removal, either may be critical in the mitigated option cases).

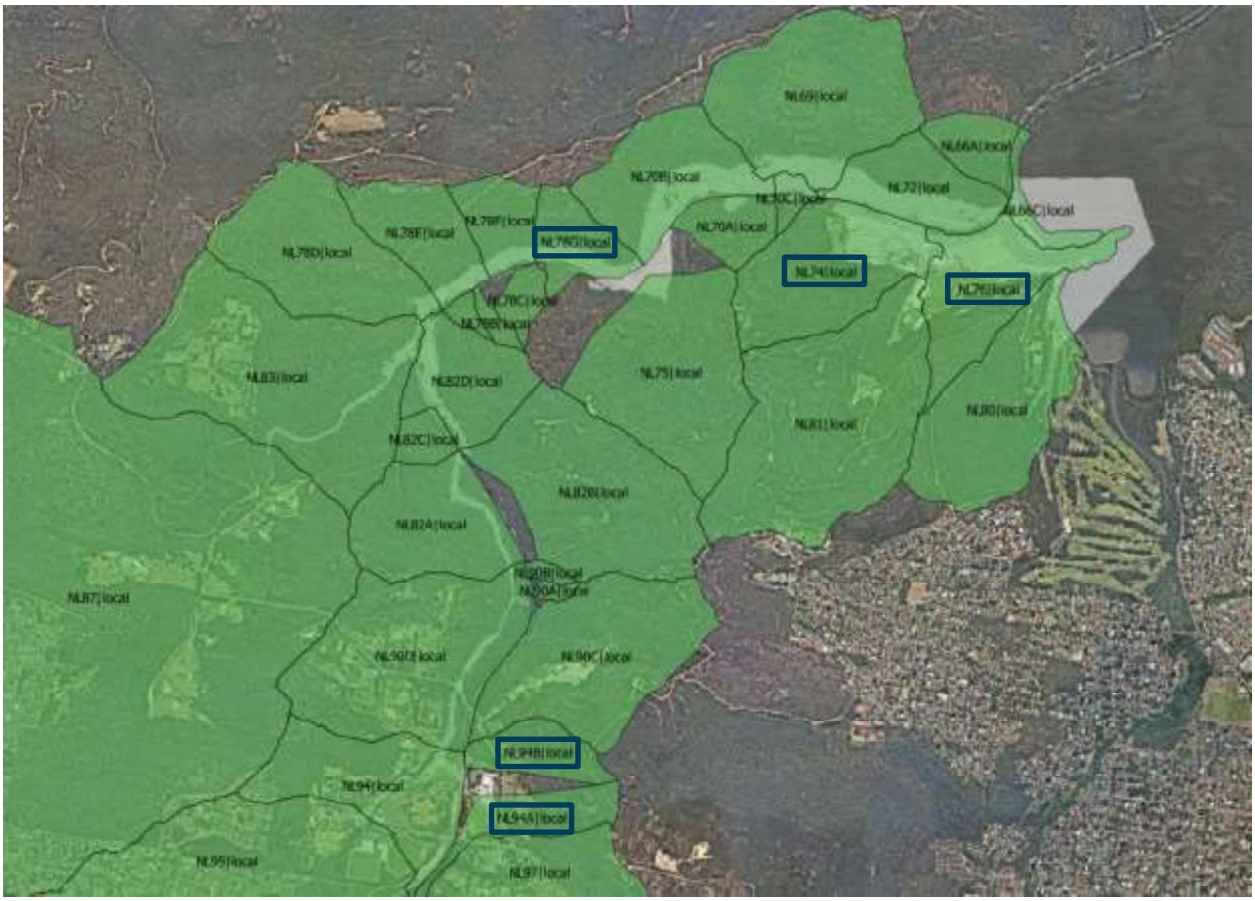
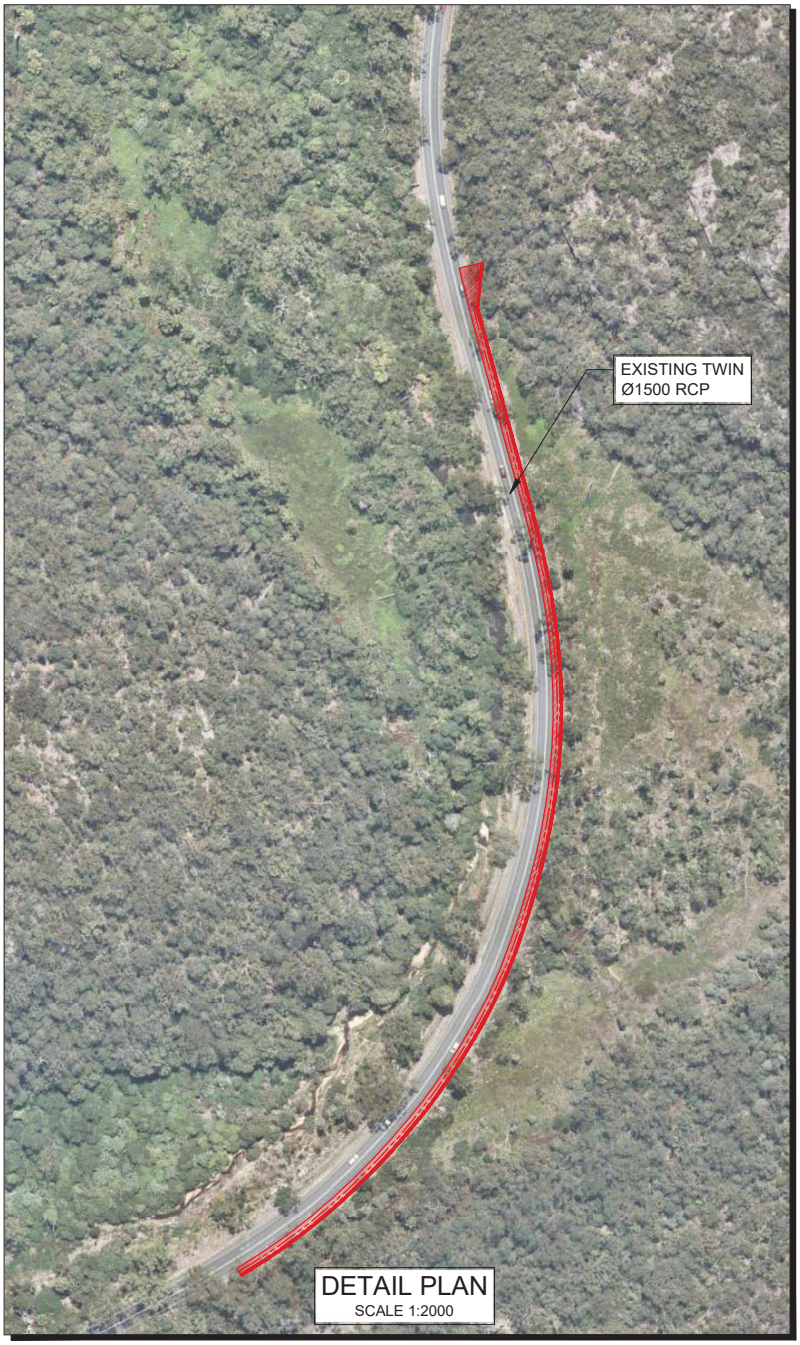
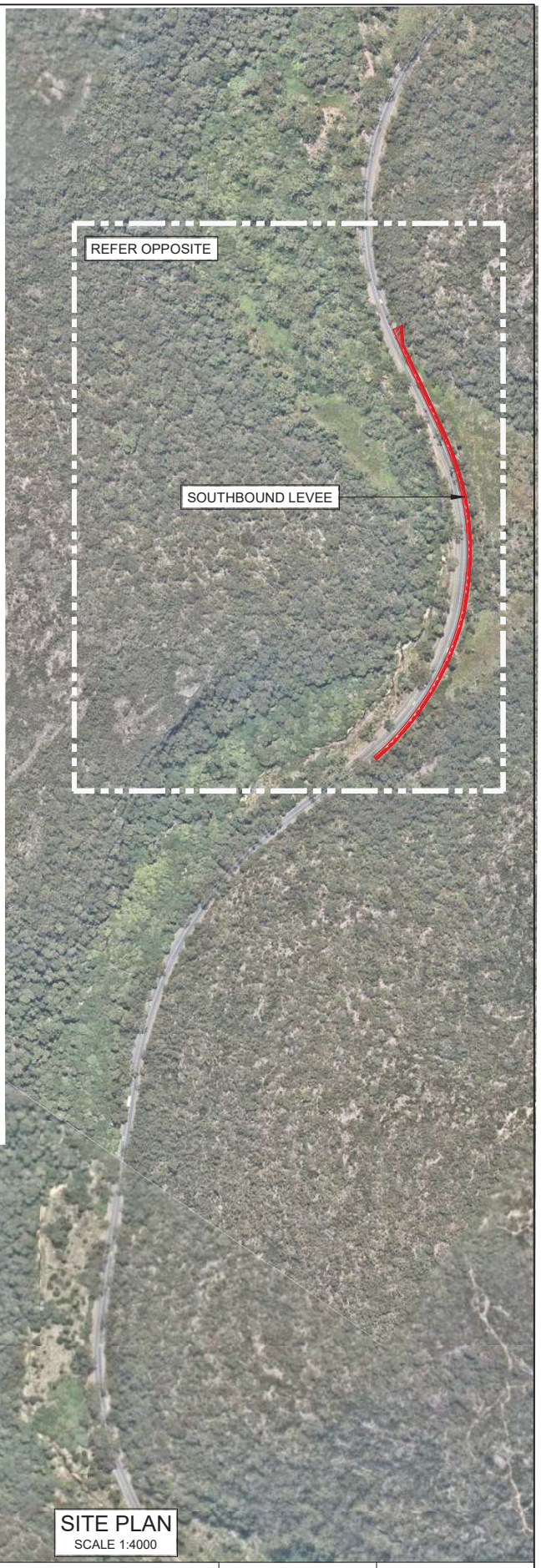


Figure 20: Location of nodes for critical duration checks

APPENDIX J – Concept Design Plans



DETAIL PLAN
SCALE 1:2000



SITE PLAN
SCALE 1:4000

LEGEND

PROPOSED LEVEE BARRIER (SOUTHBOUND)

Title: Option B1 - New Levee

Figure: B1

Rev: 1

Project: Wakehurst Parkway - Option Feasibility (The Bends)

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0 20 40 60 80 100m
SCALE 1:2000 AT ORIGINAL SIZE

0 40 80 120 160 200m
SCALE 1:4000 AT ORIGINAL SIZE

File ID: RHDHV\PA1943\Cad\Figure B.dwg

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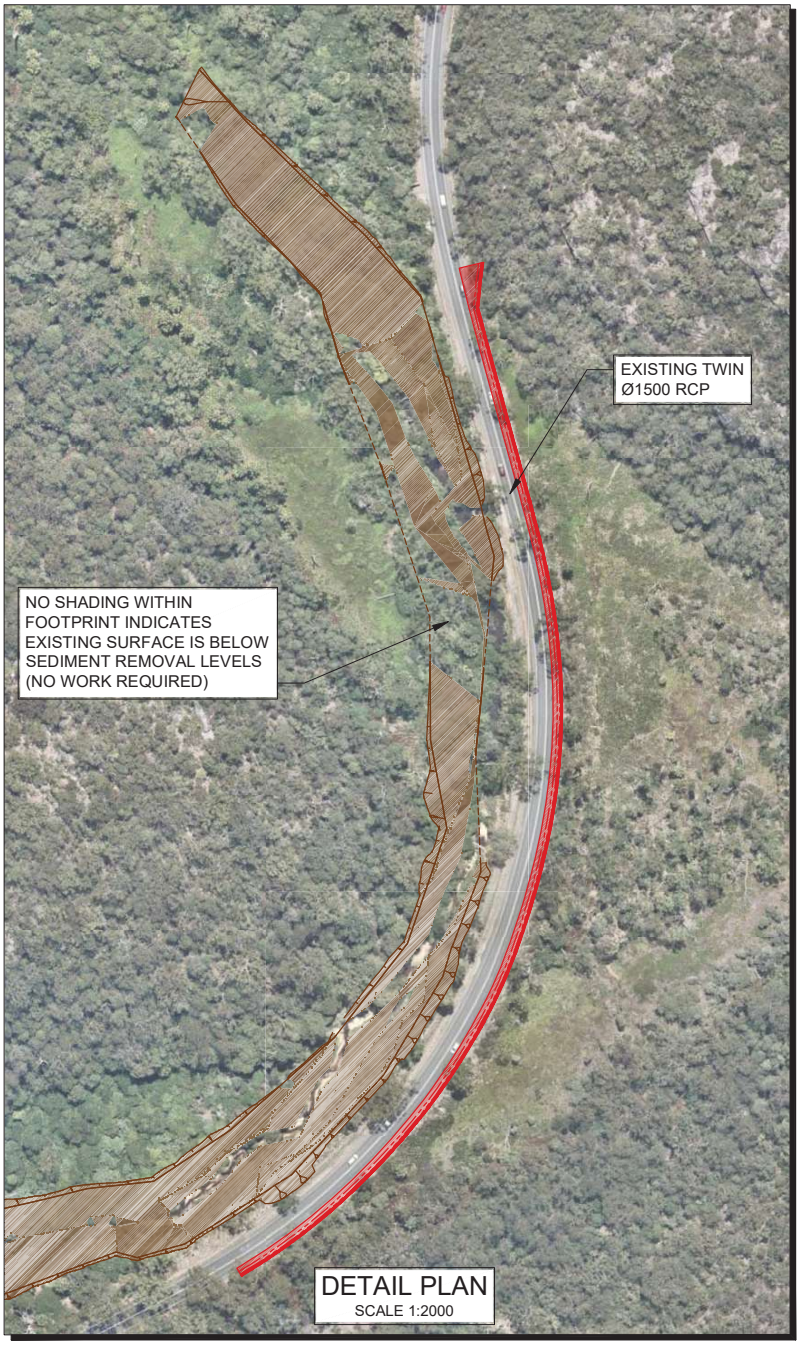

DETAIL PLAN
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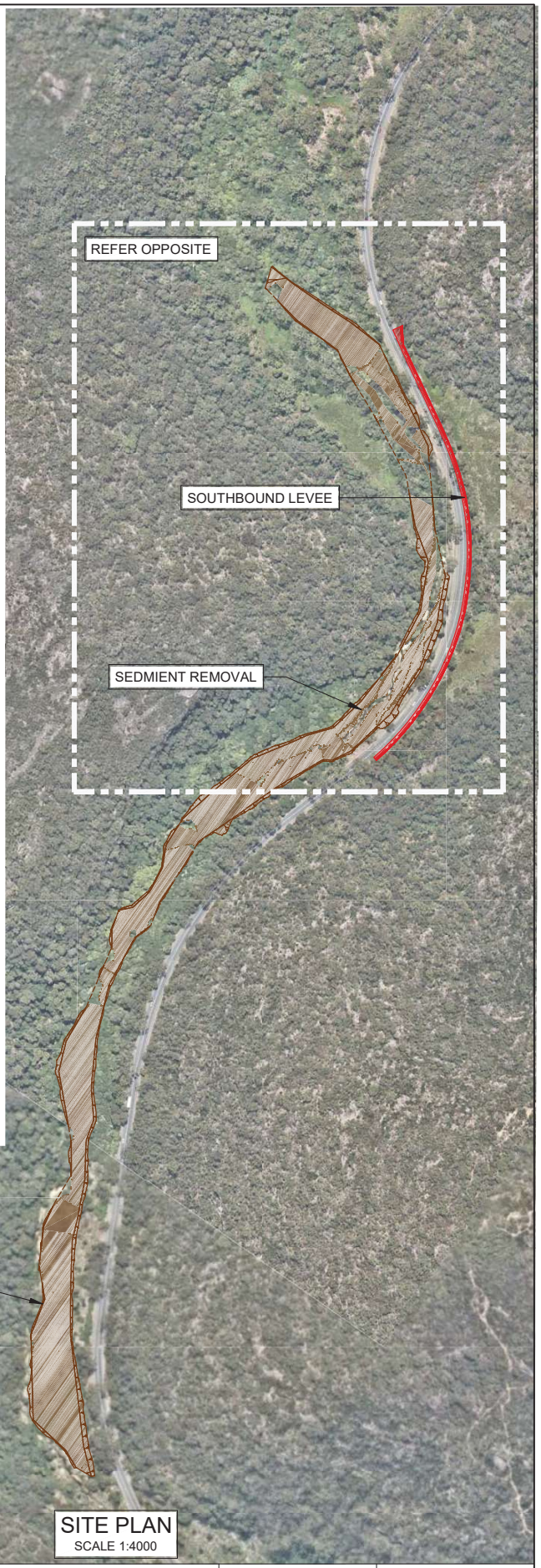

SEDIMENT REMOVAL EXCAVATED DEPTH AS
PER "20190213_Sediment_Cut_021" WITH 1V in
2H TO EXISTING SURFACE
EXCAVATED VOLUME 28,200m³

SITE PLAN
SCALE 1:4000

LEGEND

PROPOSED LEVEE BARRIER (SOUTHBOUND)

OVERBANK SEDIMENT REMOVAL

Title: Option B2 - New Levee, Sediment Removal

Figure: B2

Rev: 1

Project: Wakehurst Parkway - Option Feasibility (The Bends)

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0 20 40 60 80 100m
SCALE 1:2000 AT ORIGINAL SIZE

0 40 80 120 160 200m
SCALE 1:4000 AT ORIGINAL SIZE

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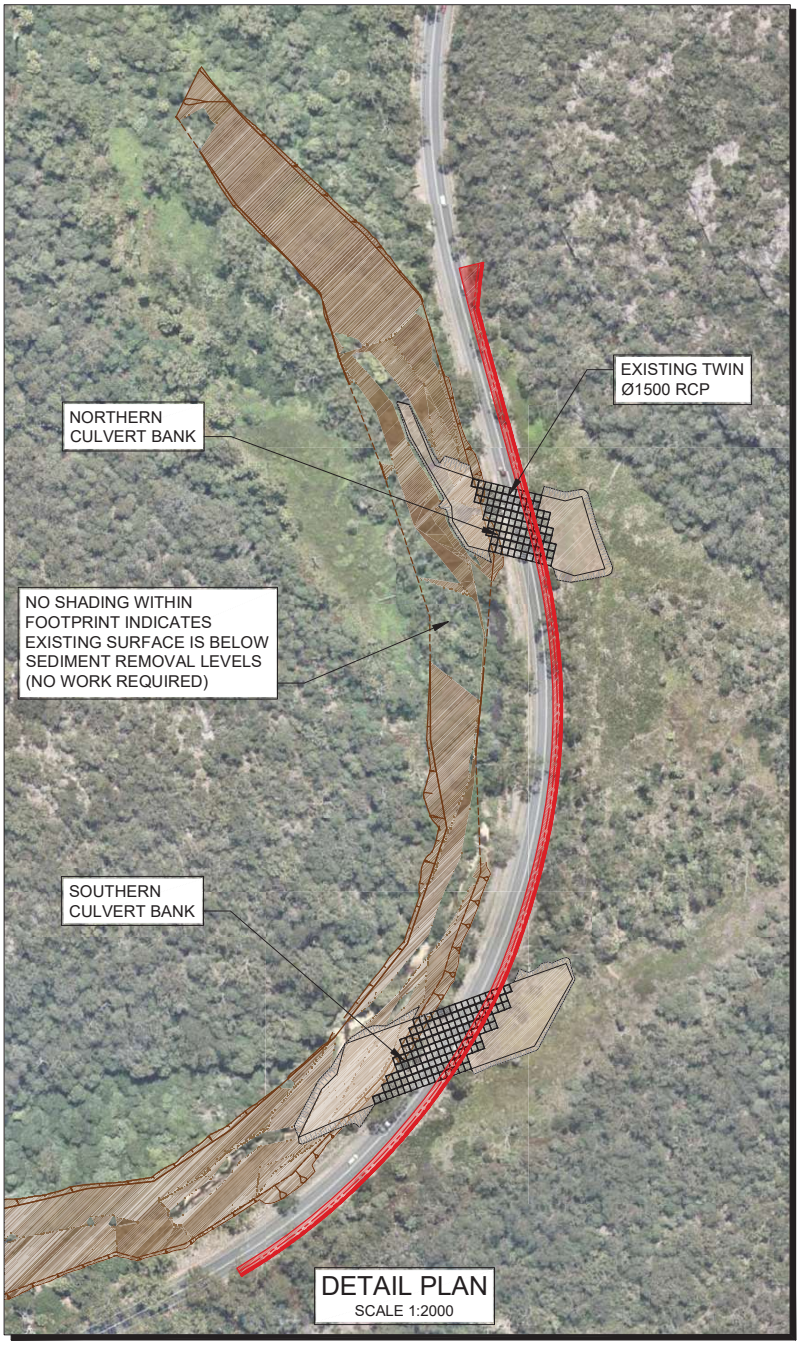

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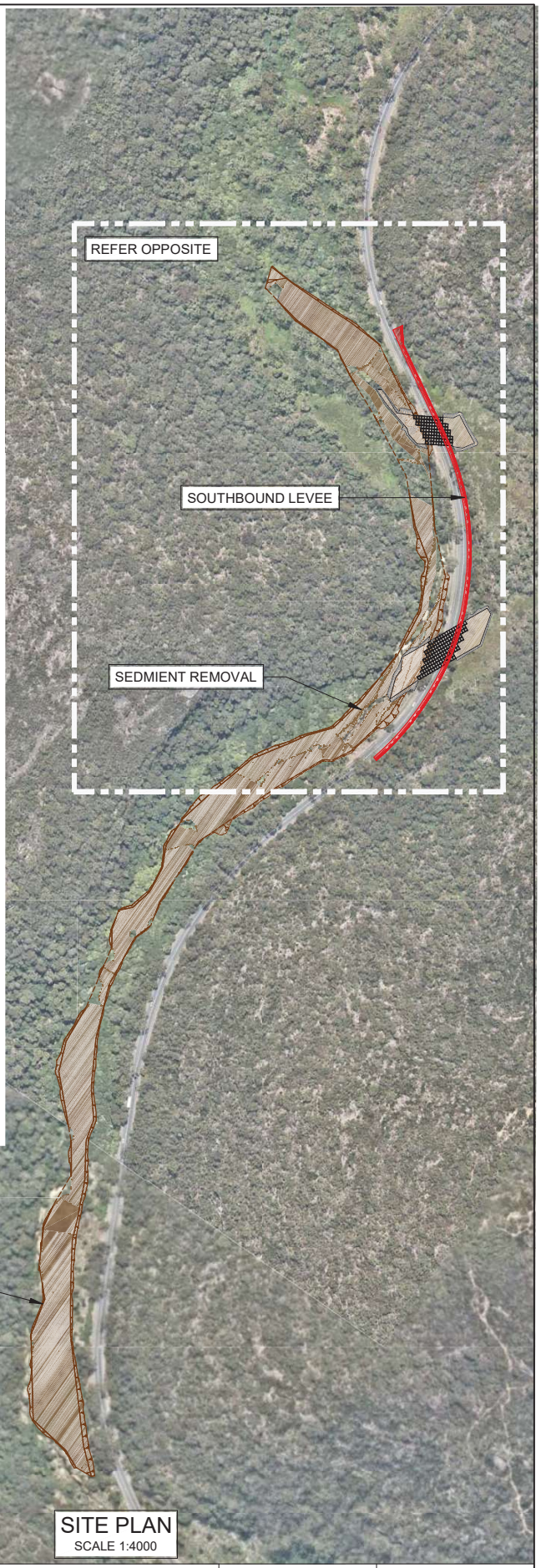

SEDIMENT REMOVAL EXCAVATED DEPTH AS PER "20190213_Sediment_Cut_021" WITH 1V in 2H TO EXISTING SURFACE
EXCAVATED VOLUME 28,200m³

SITE PLAN
SCALE 1:4000

LEGEND

- PROPOSED LEVEE BARRIER (SOUTHBOUND)
- OVERBANK SEDIMENT REMOVAL
- CULVERTS UNDER ROAD (RCBC and LINK)
- PIPES UNDER ROAD

Title: Option B3 - New Levee, Sediment Removal, Culverts

Figure: B3

Rev: 1

Project: Wakehurst Parkway - Option Feasibility (The Bends)

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0 20 40 60 80 100m
SCALE 1:2000 AT ORIGINAL SIZE

0 40 80 120 160 200m
SCALE 1:4000 AT ORIGINAL SIZE

File ID: RHDHV\PA1943\Cad\Figure B.dwg

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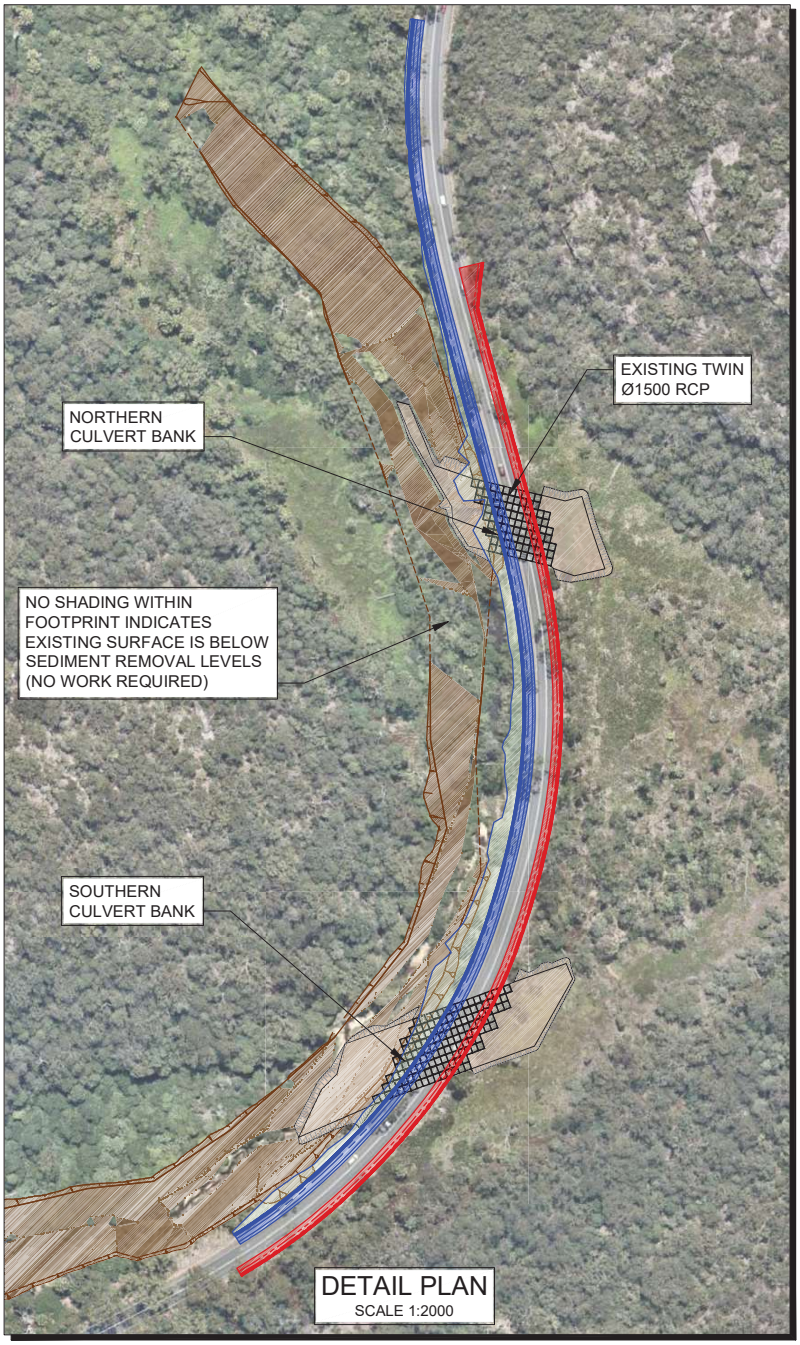

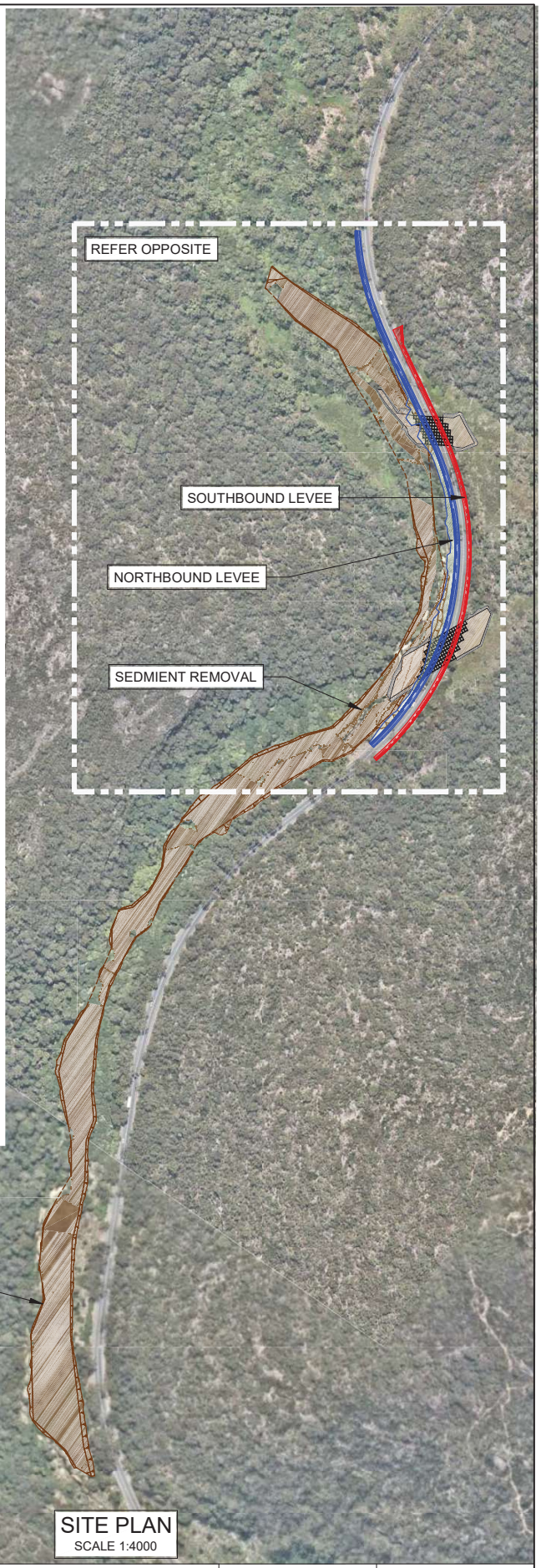

SEDIMENT REMOVAL EXCAVATED DEPTH AS PER "20190213_Sediment_Cut_021" WITH 1V in 2H TO EXISTING SURFACE
EXCAVATED VOLUME 28,200m³

LEGEND

- PROPOSED LEVEE BARRIER (SOUTHBOUND)
- PROPOSED LEVEE BARRIER (NORTHBOUND)
- OVERBANK SEDIMENT REMOVAL
- CULVERTS UNDER ROAD (RCBC and LINK)
- PIPES UNDER ROAD

Title: Option B4 - New Levee's, Sediment Removal, Culverts

Figure: B4

Rev: 1

Project: Wakehurst Parkway - Option Feasibility (The Bends)

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SCALE 1:2000 AT ORIGINAL SIZE

0 40 80 120 160 200m
SCALE 1:4000 AT ORIGINAL SIZE

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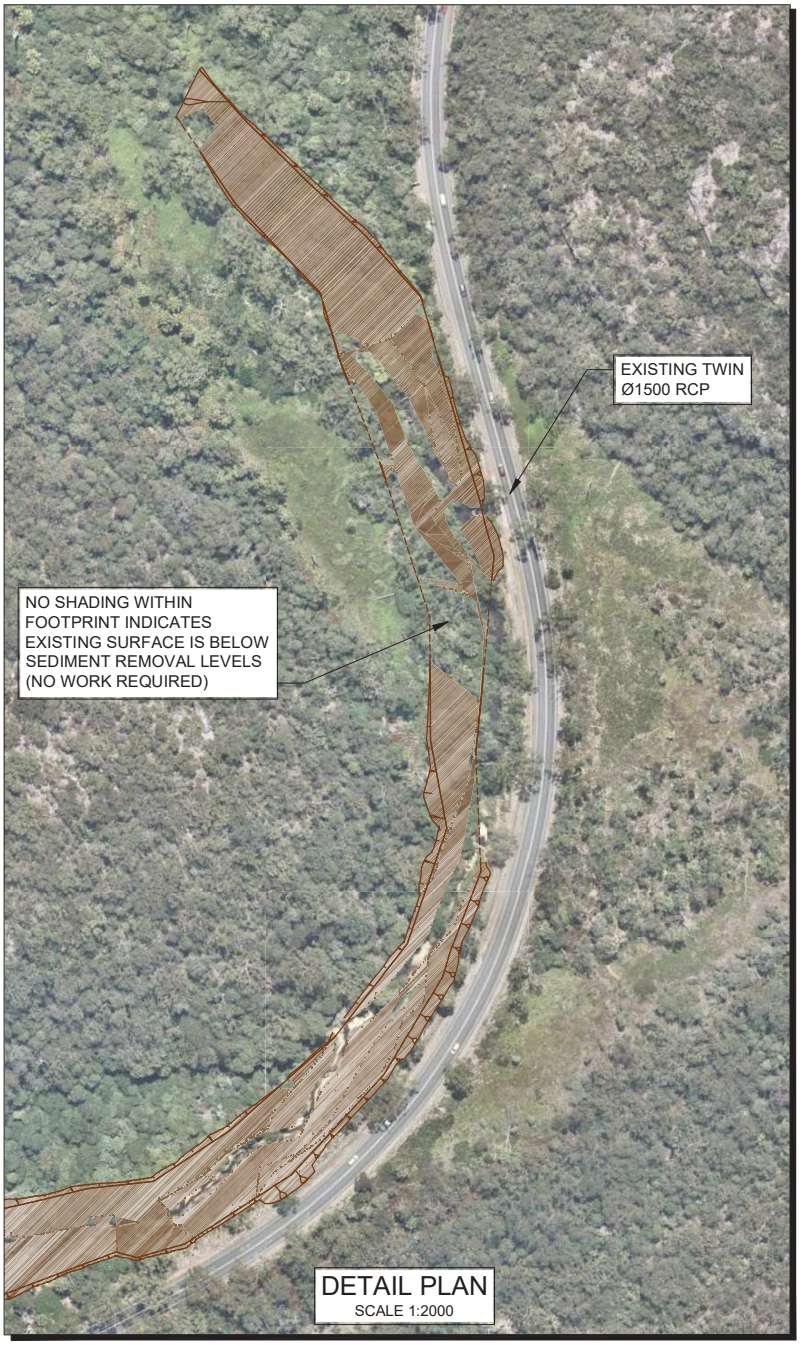

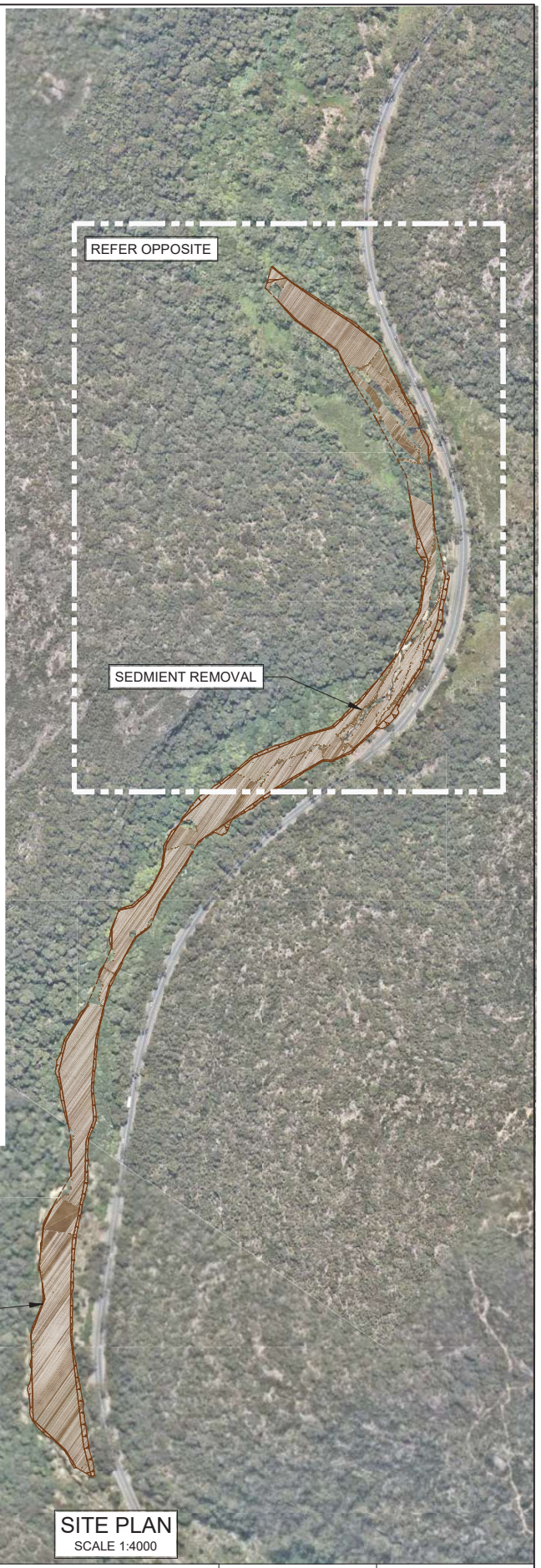

SEDIMENT REMOVAL EXCAVATED DEPTH AS PER "20190213_Sediment_Cut_021" WITH 1V in 2H TO EXISTING SURFACE
EXCAVATED VOLUME 28,200m³

LEGEND

OVERBANK SEDIMENT REMOVAL

Title: Option B5 - Sediment Removal

Figure: B5

Rev: 1

Project: Wakehurst Parkway - Option Feasibility (The Bends)

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SCALE 1:2000 AT ORIGINAL SIZE

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SCALE 1:4000 AT ORIGINAL SIZE

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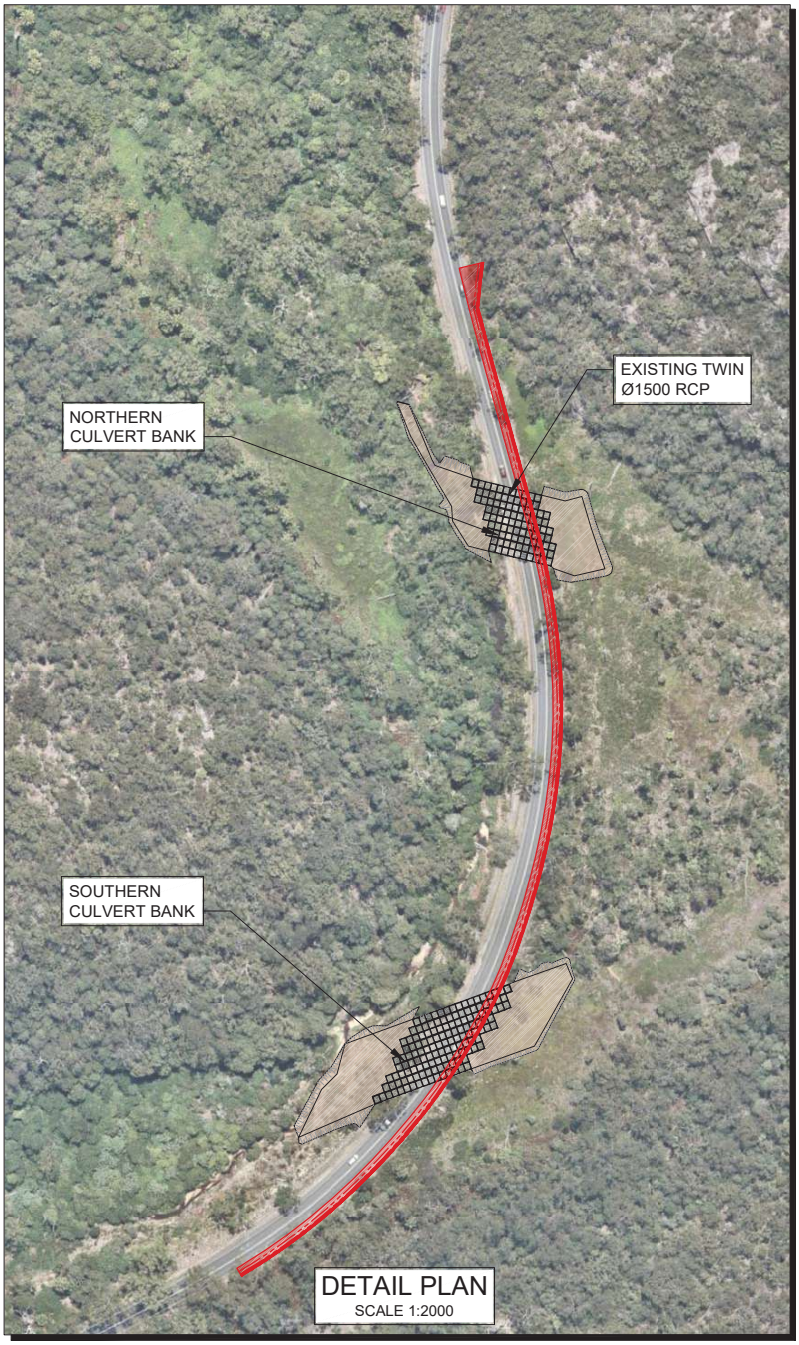
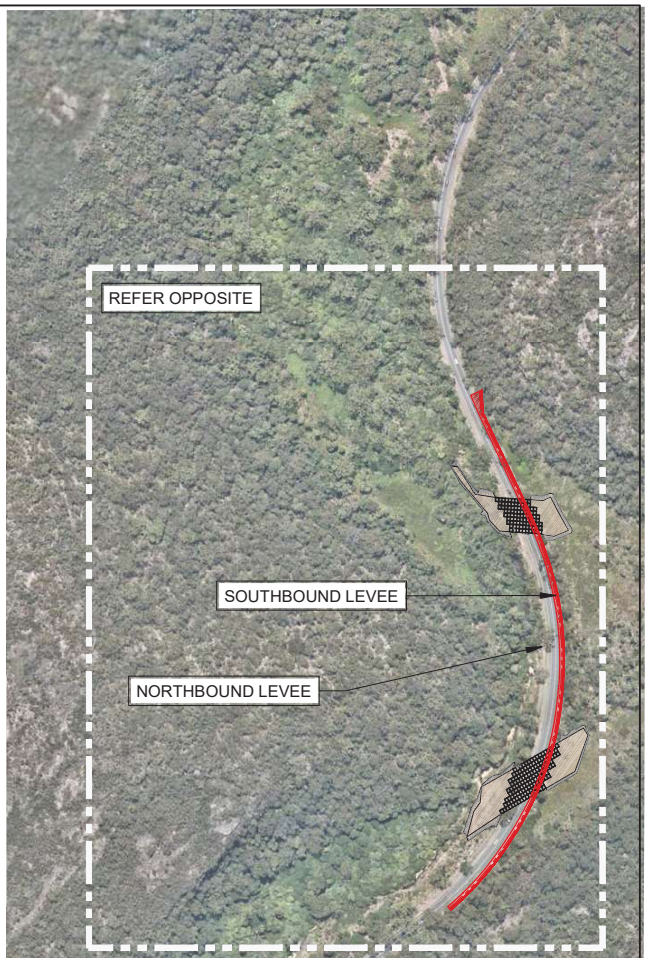


DETAIL PLAN
SCALE 1:2000





SITE PLAN
SCALE 1:4000

LEGEND

- PROPOSED LEVEE BARRIER (SOUTHBOUND)
- PROPOSED LEVEE BARRIER (NORTHBOUND)
- OVERBANK SEDIMENT REMOVAL
- CULVERTS UNDER ROAD (RCBC and LINK)
- PIPES UNDER ROAD

Title: Option B7 - New Levee, Culverts

Figure: B7

Rev: 1

Project: Wakehurst Parkway - Option Feasibility (The Bends)

DISCLAIMER: WHILE ALL RESPONSIBLE CARE HAS BEEN TAKEN TO ENSURE THE INFORMATION CONTAINED ON THIS MAP IS UP TO DATE AND ACCURATE, THIS MAP CONTAINS DATA FROM A NUMBER OF SOURCES - NO WARRANTY IS GIVEN THAT THE INFORMATION CONTAINED ON THIS IS FREE FROM ERROR OR OMISSION. ANY RELIANCE PLACED ON SUCH INFORMATION SHALL BE AT THE SOLE RISK OF THE USER. PLEASE VERIFY THE ACCURACY OF ALL INFORMATION PRIOR TO USING IT. THIS MAP IS NOT A DESIGN DOCUMENT.

0 20 40 60 80 100m
SCALE 1:2000 AT ORIGINAL SIZE

0 40 80 120 160 200m
SCALE 1:4000 AT ORIGINAL SIZE

File ID: RHDHV\PA1943\Cad\Figure B.dwg

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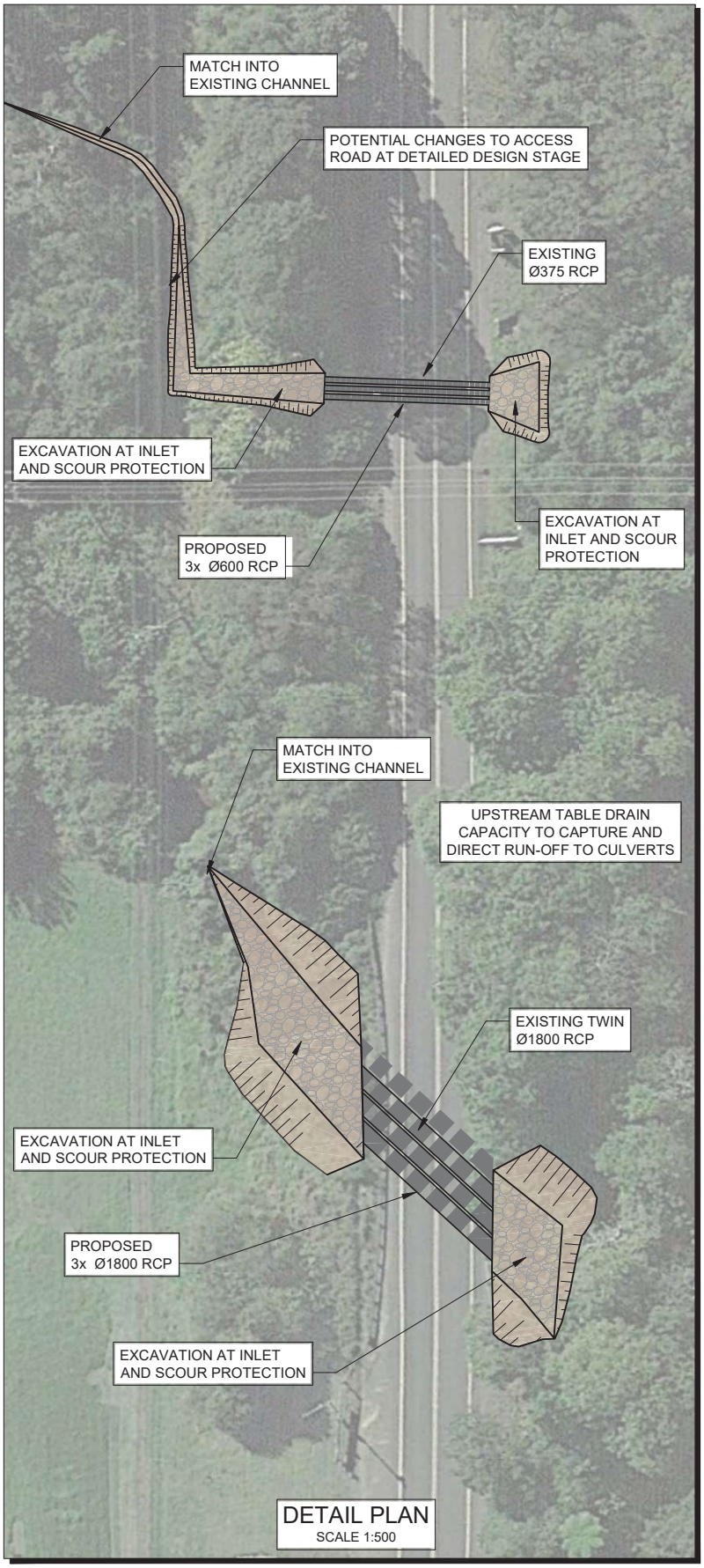

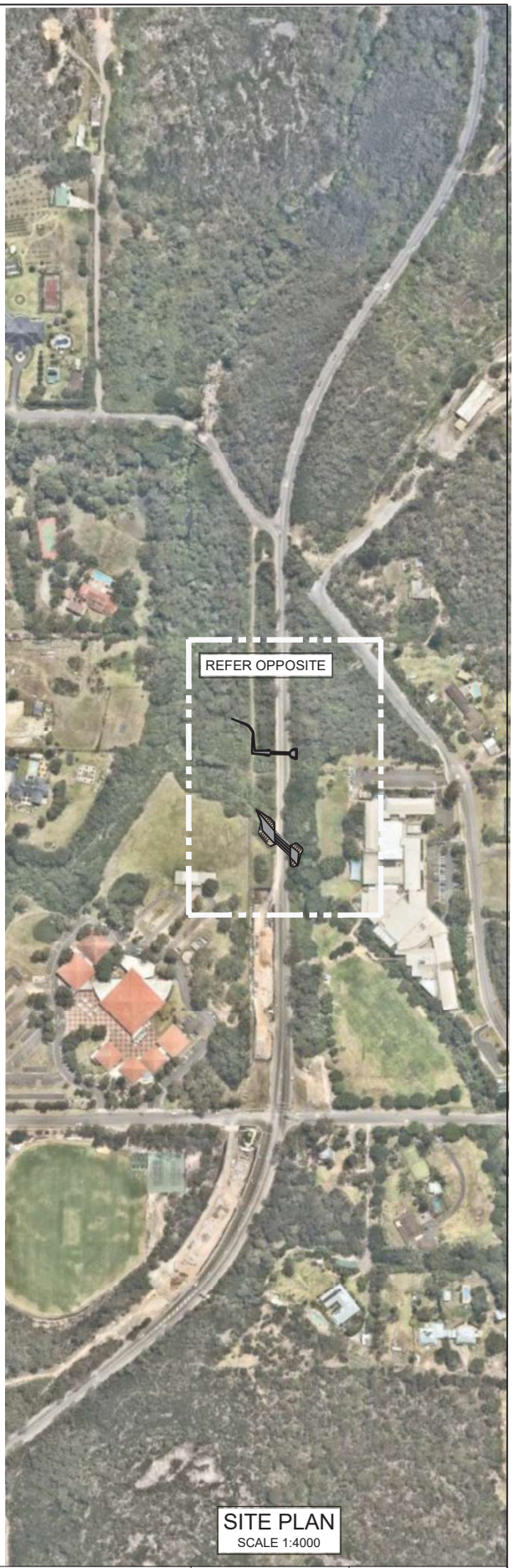

Title: Option O1 - Culvert Capacity Increase

Figure: O1

Rev: 1

Project: Wakehurst Parkway - Option Feasibility (Oxford Falls)

DISCLAIMER: WHILE ALL RESPONSIBLE CARE HAS BEEN TAKEN TO ENSURE THE INFORMATION CONTAINED ON THIS MAP IS UP TO DATE AND ACCURATE, THIS MAP CONTAINS DATA FROM A NUMBER OF SOURCES - NO WARRANTY IS GIVEN THAT THE INFORMATION CONTAINED ON THIS IS FREE FROM ERROR OR OMISSION. ANY RELIANCE PLACED ON SUCH INFORMATION SHALL BE AT THE SOLE RISK OF THE USER. PLEASE VERIFY THE ACCURACY OF ALL INFORMATION PRIOR TO USING IT. THIS MAP IS NOT A DESIGN DOCUMENT.

0 5 10 15 20 25m
SCALE 1:500 AT ORIGINAL SIZE

0 40 80 120 160 200m
SCALE 1:4000 AT ORIGINAL SIZE

File ID: RHDHV\PA1943\Cad\Figure O.dwg

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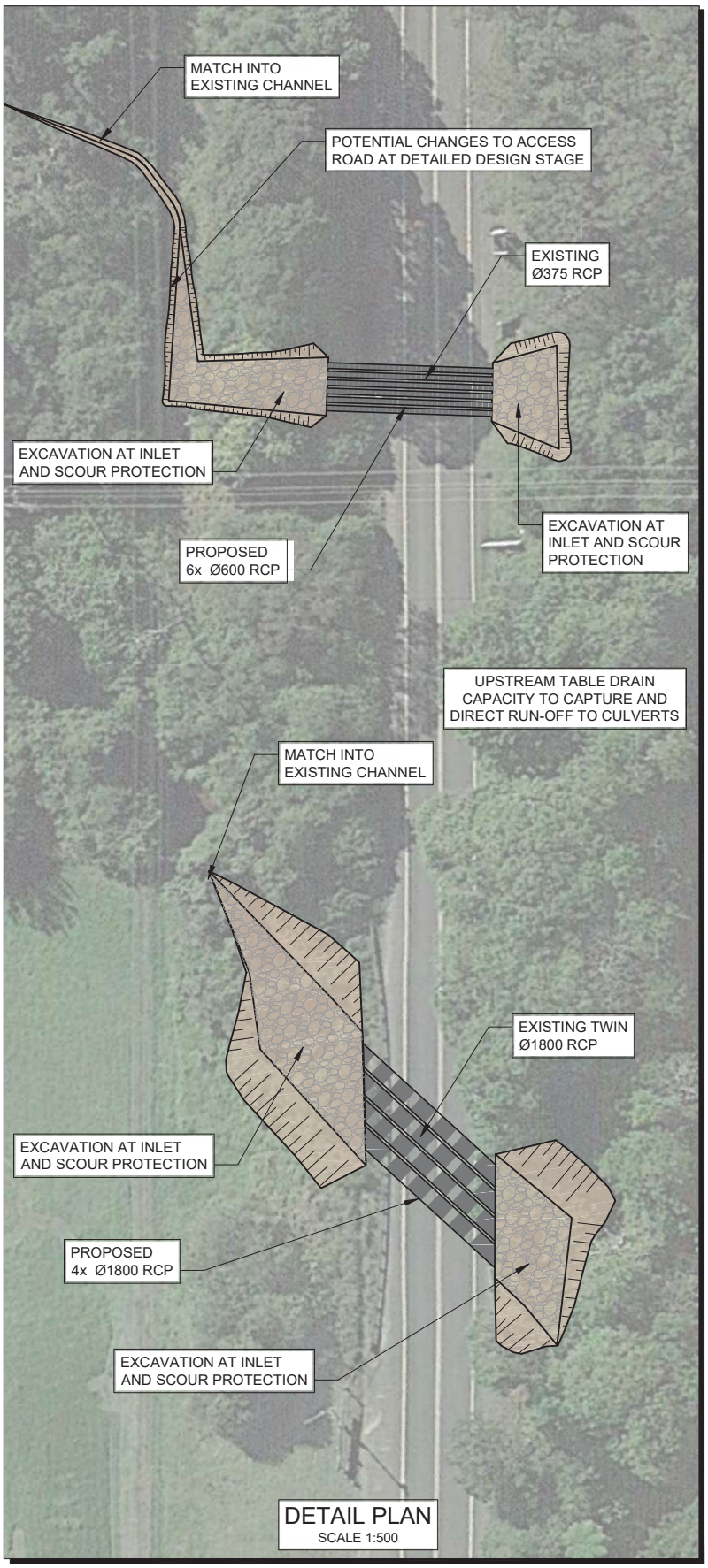
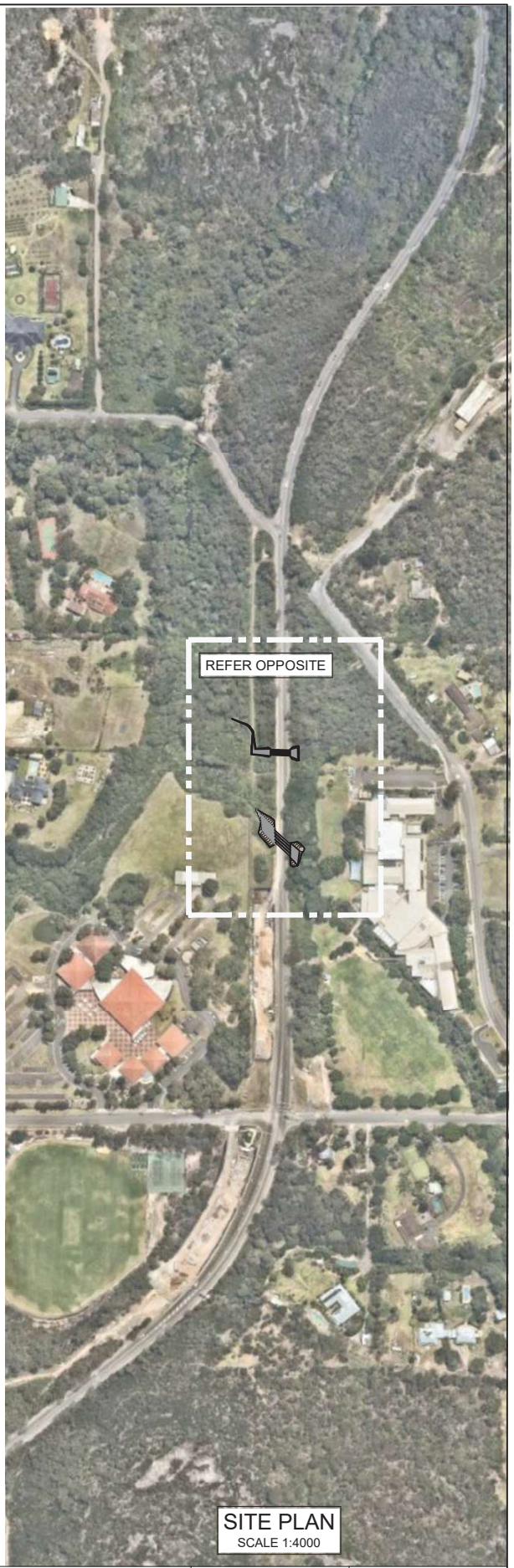


DETAIL PLAN
SCALE 1:500



SITE PLAN
SCALE 1:4000

Title: Option O2 - Culvert Capacity Increase (2 Year Immunity)

Figure: O2

Rev: 1

Project: Wakehurst Parkway - Option Feasibility (Oxford Falls)

DISCLAIMER: WHILE ALL RESPONSIBLE CARE HAS BEEN TAKEN TO ENSURE THE INFORMATION CONTAINED ON THIS MAP IS UP TO DATE AND ACCURATE, THIS MAP CONTAINS DATA FROM A NUMBER OF SOURCES - NO WARRANTY IS GIVEN THAT THE INFORMATION CONTAINED ON THIS IS FREE FROM ERROR OR OMISSION. ANY RELIANCE PLACED ON SUCH INFORMATION SHALL BE AT THE SOLE RISK OF THE USER. PLEASE VERIFY THE ACCURACY OF ALL INFORMATION PRIOR TO USING IT. THIS MAP IS NOT A DESIGN DOCUMENT.

0 5 10 15 20 25m
SCALE 1:500 AT ORIGINAL SIZE

0 40 80 120 160 200m
SCALE 1:4000 AT ORIGINAL SIZE

File ID: RHDHV\PA1943\Cad\Figure O.dwg

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Title: Option S1 - Bunds and Localised Low Point Drainage

Figure: S1

Rev: 1

Project: Wakehurst Parkway - Option Feasibility (Sports Centre)

DISCLAIMER: WHILE ALL RESPONSIBLE CARE HAS BEEN TAKEN TO ENSURE THE INFORMATION CONTAINED ON THIS MAP IS UP TO DATE AND ACCURATE, THIS MAP CONTAINS DATA FROM A NUMBER OF SOURCES - NO WARRANTY IS GIVEN THAT THE INFORMATION CONTAINED ON THIS IS FREE FROM ERROR OR OMISSION. ANY RELIANCE PLACED ON SUCH INFORMATION SHALL BE AT THE SOLE RISK OF THE USER. PLEASE VERIFY THE ACCURACY OF ALL INFORMATION PRIOR TO USING IT. THIS MAP IS NOT A DESIGN DOCUMENT.

0 10 20 30 40 50m
SCALE 1:1000 AT ORIGINAL SIZE

0 40 80 120 160 200m
SCALE 1:4000 AT ORIGINAL SIZE

File ID: RHDHV\PA1943\Cad\Figure S.dwg

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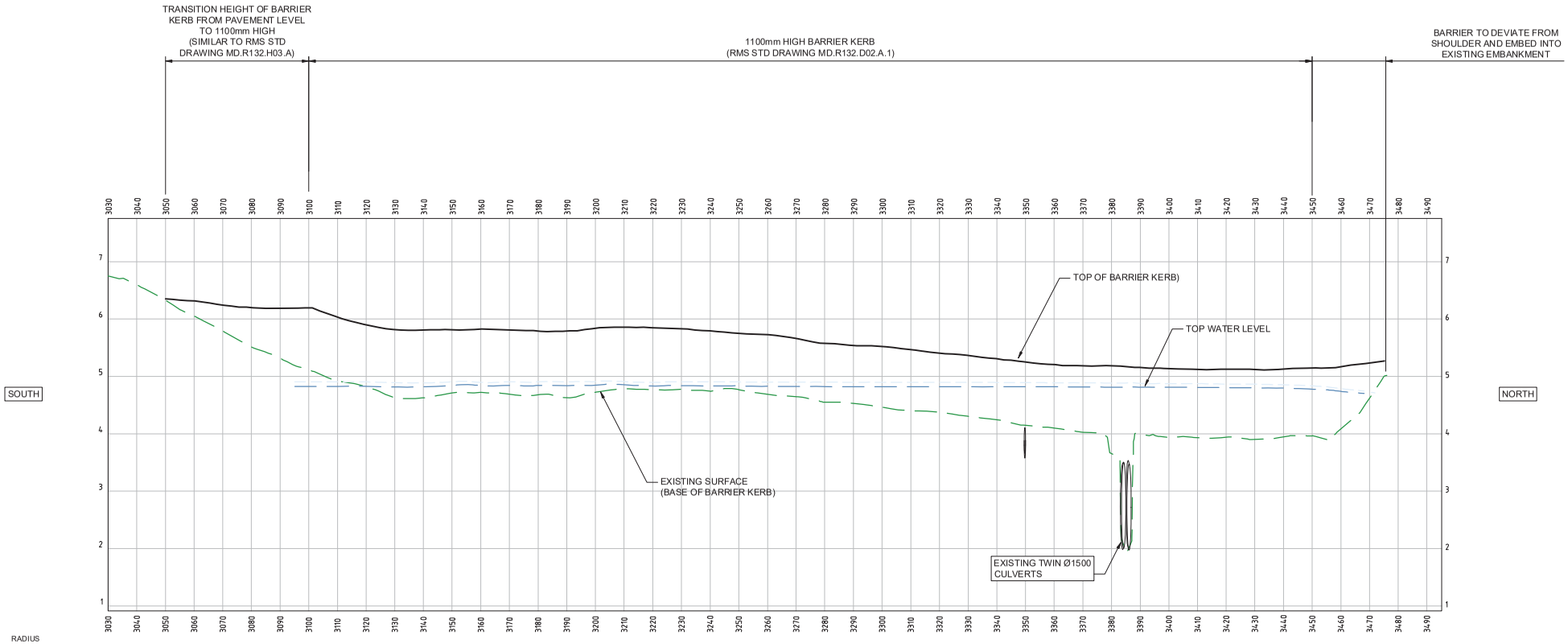

RADIUS

DATUM R.L. 0

TOP OF BARRIER (1100mm HIGH)	6.31	6.20	6.20	5.90	5.81	5.82	5.79	5.84	5.85	5.79	5.73	5.57	5.52	5.40	5.31	5.21	5.18	5.14	5.13	5.13	5.17
TOP WATER LEVEL (TWL)			4.83	4.83	4.82	4.84	4.84	4.84	4.83	4.83	4.83	4.82	4.82	4.82	4.82	4.82	4.81	4.81	4.80	4.80	4.74
EXISTING SURFACE	6.05	5.51	5.11	4.82	4.63	4.72	4.68	4.72	4.77	4.74	4.69	4.55	4.46	4.37	4.24	4.10	3.65	3.94	3.94	3.94	4.08
CHAINAGE	3060.00	3080.00	3100.00	3120.00	3140.00	3160.00	3180.00	3200.00	3220.00	3240.00	3260.00	3280.00	3300.00	3320.00	3340.00	3360.00	3380.00	3400.00	3420.00	3440.00	3460.00

SOUTHBOUND LEVEE (BARRIER KERB)

SCALE 1: 750H
1:37.5V

Title:	Southbound Levee Longitudinal Section	Figure: D1	Rev: 1
Project:	Wakehurst Parkway - Option Analysis (The Bends)		

DISCLAIMER: WHILE ALL RESPONSIBLE CARE HAS BEEN TAKEN TO ENSURE THE INFORMATION CONTAINED ON THIS MAP IS UP TO DATE AND ACCURATE, THIS MAP CONTAINS DATA FROM A NUMBER OF SOURCES - NO WARRANTY IS GIVEN THAT THE INFORMATION CONTAINED ON THIS IS FREE FROM ERROR OR OMISSION. ANY RELIANCE PLACED ON SUCH INFORMATION SHALL BE AT THE SOLE RISK OF THE USER. PLEASE VERIFY THE ACCURACY OF ALL INFORMATION PRIOR TO USING IT. THIS MAP IS NOT A DESIGN DOCUMENT.

0 7.5 15 22.5 30 37.5
SCALE 1:750 AT ORIGINAL SIZE

0 0.35 0.7 1.05 1.4 1.75m
SCALE 1:37.5 AT ORIGINAL SIZE

File ID: RHDHV\PA1943\Cad\Figure BD.dwg

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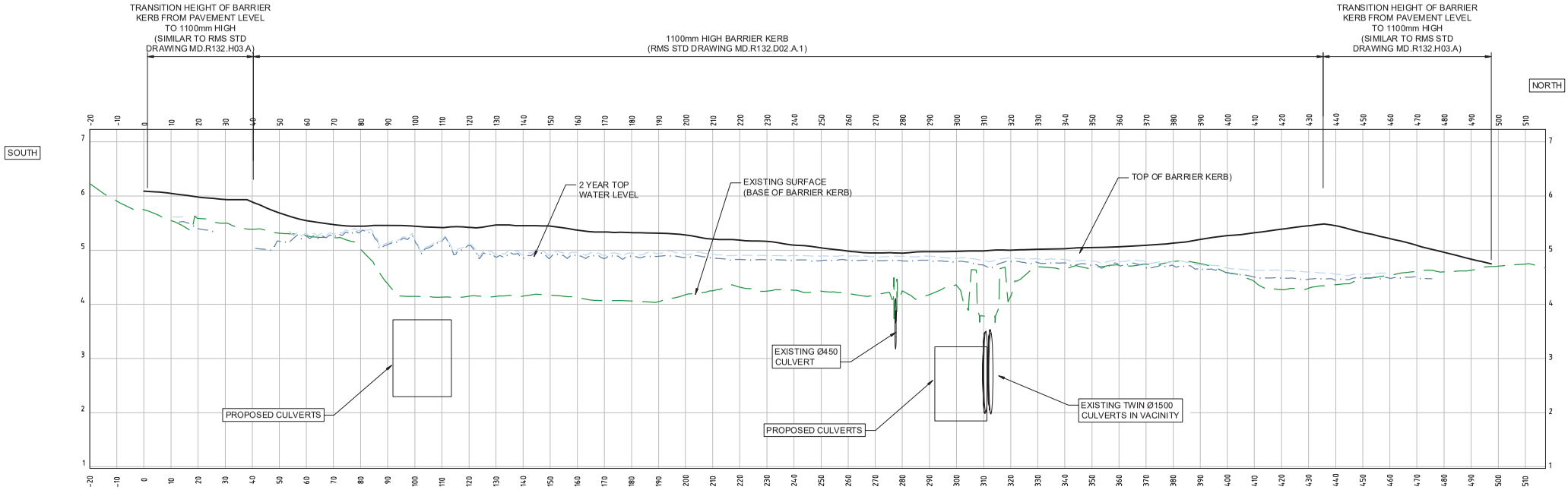

RADIUS

DATUM R.L. 0

TOP OF BARRIER (1100mm HIGH)	6.09	5.98	5.89	5.55	5.45	5.44	5.42	5.45	5.37	5.33	5.28	5.19	5.09	4.98	4.95	4.98	5.00	5.03	5.06	5.13	5.27	5.39	5.45	5.21	4.96
TOP WATER LEVEL 2 YEAR		5.40		5.26	5.35	5.18	5.08	4.86	4.91	4.89	4.87	4.83	4.82	4.82	4.81	4.79	4.80	4.77	4.72	4.71	4.59	4.49	4.45	4.48	
EXISTING SURFACE	5.75	5.59	5.39	5.27	5.02	4.15	4.15	4.15	4.13	4.06	4.18	4.32	4.26	4.21	4.25	4.36	4.14	4.65	4.73	4.79	4.58	4.27	4.36	4.54	4.60
CHAINAGE	0.00	20.00	40.00	60.00	80.00	100.00	120.00	140.00	160.00	180.00	200.00	220.00	240.00	260.00	280.00	300.00	320.00	340.00	360.00	380.00	400.00	420.00	440.00	460.00	480.00

NORTHBOUND LEVEE (BARRIER KERB)

SCALE 1 : 750H
1:37.5V

Title:	Northbound Levee Longitudinal Section	Figure: D2	Rev: 1
Project:	Wakehurst Parkway - Option Analysis (The Bends)		

DISCLAIMER: WHILE ALL RESPONSIBLE CARE HAS BEEN TAKEN TO ENSURE THE INFORMATION CONTAINED ON THIS MAP IS UP TO DATE AND ACCURATE, THIS MAP CONTAINS DATA FROM A NUMBER OF SOURCES - NO WARRANTY IS GIVEN THAT THE INFORMATION CONTAINED ON THIS IS FREE FROM ERROR OR OMISSION. ANY RELIANCE PLACED ON SUCH INFORMATION SHALL BE AT THE SOLE RISK OF THE USER. PLEASE VERIFY THE ACCURACY OF ALL INFORMATION PRIOR TO USING IT. THIS MAP IS NOT A DESIGN DOCUMENT.

0 7.5 15 22.5 30 37.5 — SCALE 1:750 AT ORIGINAL SIZE

0 0.35 0.7 1.05 1.4 1.75m — SCALE 1:37.5 AT ORIGINAL SIZE

File ID: RHDHV\PA1943\Cad\Figure BD.dwg

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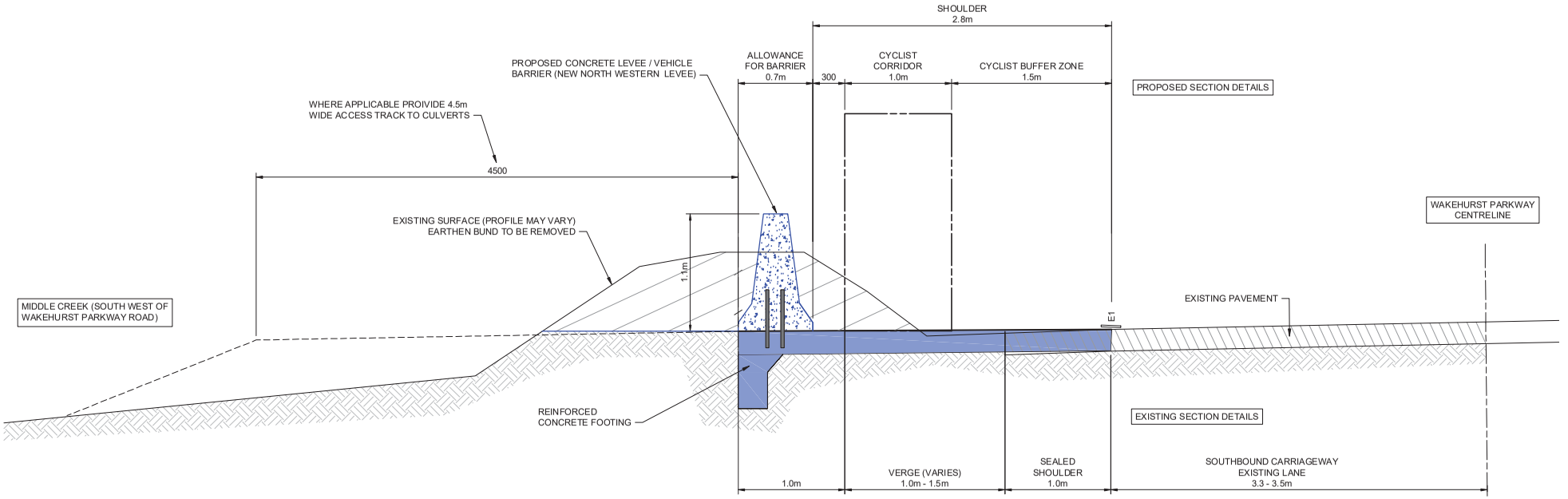

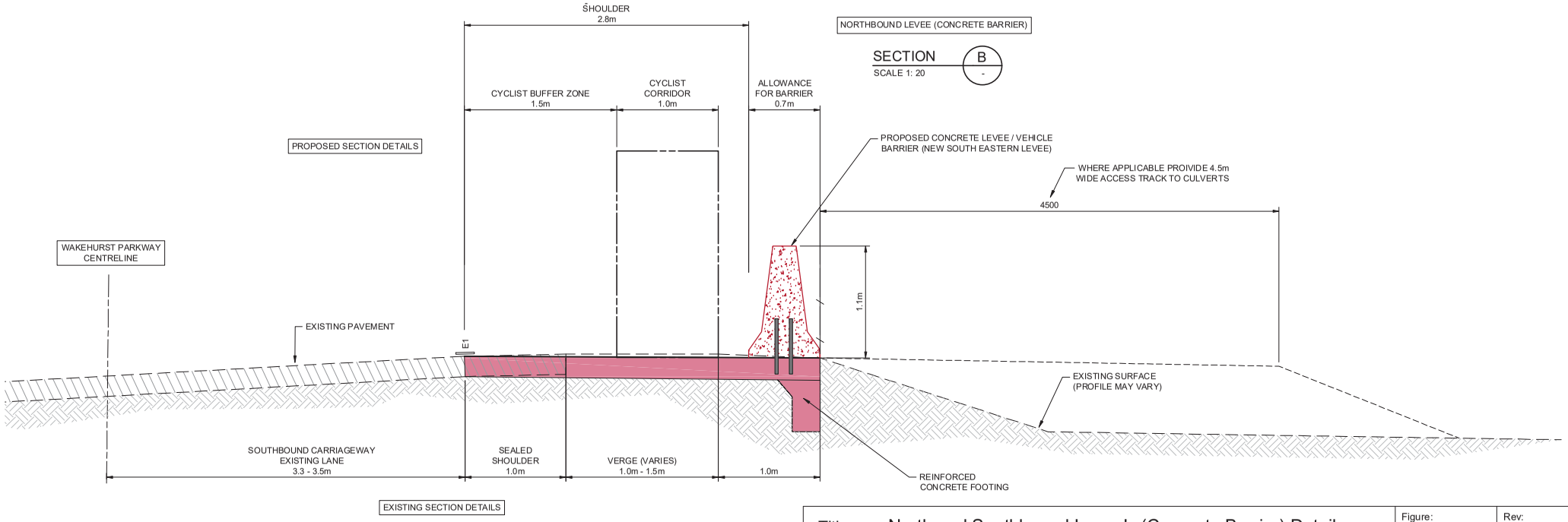

SOUTHBOUND LEVEE (CONCRETE BARRIER)

SECTION A
SCALE 1: 20
-

Title:	North and Southbound Levee's (Concrete Barrier) Details	Figure: D3	Rev: 1
Project:	Wakehurst Parkway - Option Analysis (The Bends)		

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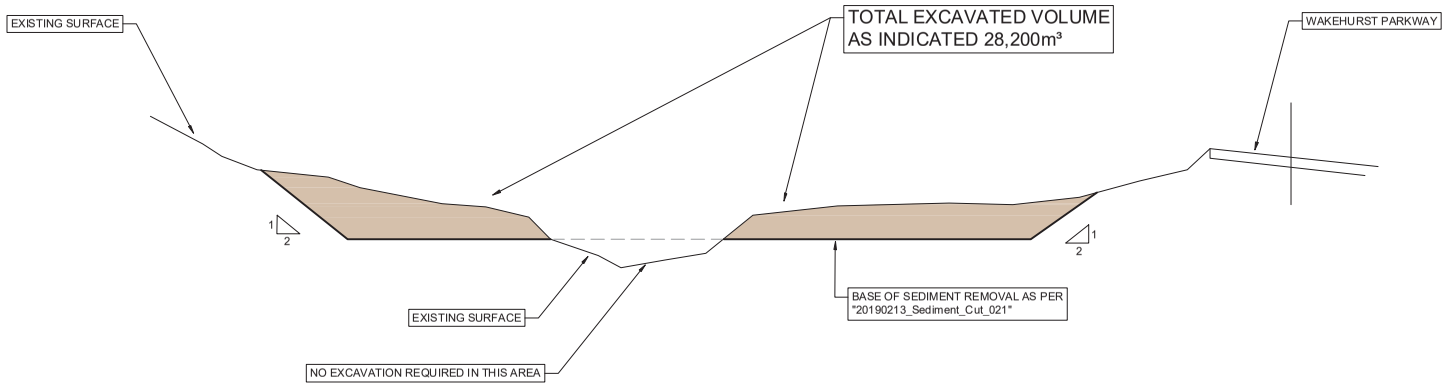
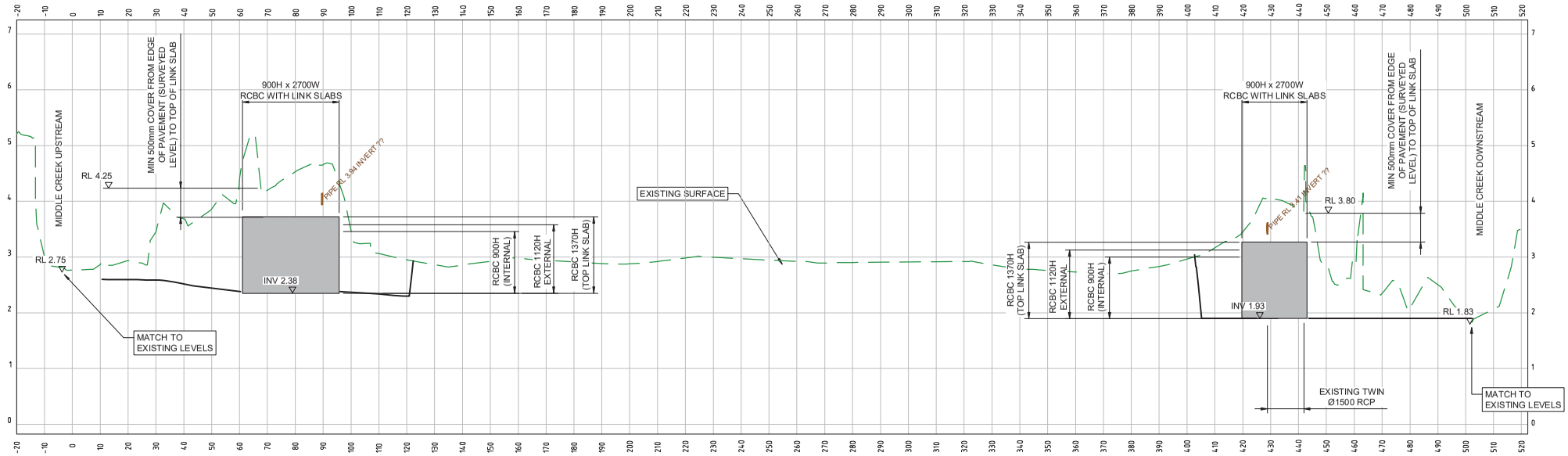


SECTION C
SCALE NTS -

Title: Sediment Removal Detail	Figure: D4	Rev: 1
Project: Wakehurst Parkway - Option Analysis (The Bends)		
DISCLAIMER: WHILE ALL RESPONSIBLE CARE HAS BEEN TAKEN TO ENSURE THE INFORMATION CONTAINED ON THIS MAP IS UP TO DATE AND ACCURATE, THIS MAP CONTAINS DATA FROM A NUMBER OF SOURCES - NO WARRANTY IS GIVEN THAT THE INFORMATION CONTAINED ON THIS IS FREE FROM ERROR OR OMISSION. ANY RELIANCE PLACED ON SUCH INFORMATION SHALL BE AT THE SOLE RISK OF THE USER. PLEASE VERIFY THE ACCURACY OF ALL INFORMATION PRIOR TO USING IT. THIS MAP IS NOT A DESIGN DOCUMENT.	File ID: RHDHV\PA1943\Cad\Figure BD.dwg	Royal HaskoningDHV Enhancing Society Together



RADIUS		-10 R	20 R				50 R		-50 R		-30 R	-30 R				-20 R	-20 R		-15 R	15 R		15 R	50 R	50 R
DATUM R.L -2																								
EXISTING SURFACE	2.77	2.94	3.69	4.38	4.53	3.48	2.95	2.86	2.98	2.91	2.88	2.98	2.97	2.92	2.90	2.91	2.92	2.78	2.73	2.75	2.97	3.45	3.86	2.90	2.08	1.93
CHAINAGE	0.00	20.00	40.00	60.00	80.00	100.00	120.00	140.00	160.00	180.00	200.00	220.00	240.00	260.00	280.00	300.00	320.00	340.00	360.00	380.00	400.00	420.00	440.00	460.00	480.00	500.00

MIDDLE CREEK OVERFLOW ALIGNMENT ACROSS WAKEHURST PARKWAY

SCALE 1: 750H
1:37.5V

Title:	Middle Creek Longitudinal Section	Figure: D5	Rev: 1
Project:	Wakehurst Parkway - Option Analysis (The Bends)		

DISCLAIMER: WHILE ALL RESPONSIBLE CARE HAS BEEN TAKEN TO ENSURE THE INFORMATION CONTAINED ON THIS MAP IS UP TO DATE AND ACCURATE, THIS MAP CONTAINS DATA FROM A NUMBER OF SOURCES - NO WARRANTY IS GIVEN THAT THE INFORMATION CONTAINED ON THIS IS FREE FROM ERROR OR OMISSION. ANY RELIANCE PLACED ON SUCH INFORMATION SHALL BE AT THE SOLE RISK OF THE USER. PLEASE VERIFY THE ACCURACY OF ALL INFORMATION PRIOR TO USING IT. THIS MAP IS NOT A DESIGN DOCUMENT.

0 7.5 15 22.5 30 37.5 — SCALE 1:750 AT ORIGINAL SIZE

0 0.35 0.7 1.05 1.4 1.75m — SCALE 1:37.5 AT ORIGINAL SIZE

File ID: RHDHV\PA1943\Cad\Figure BL.dwg

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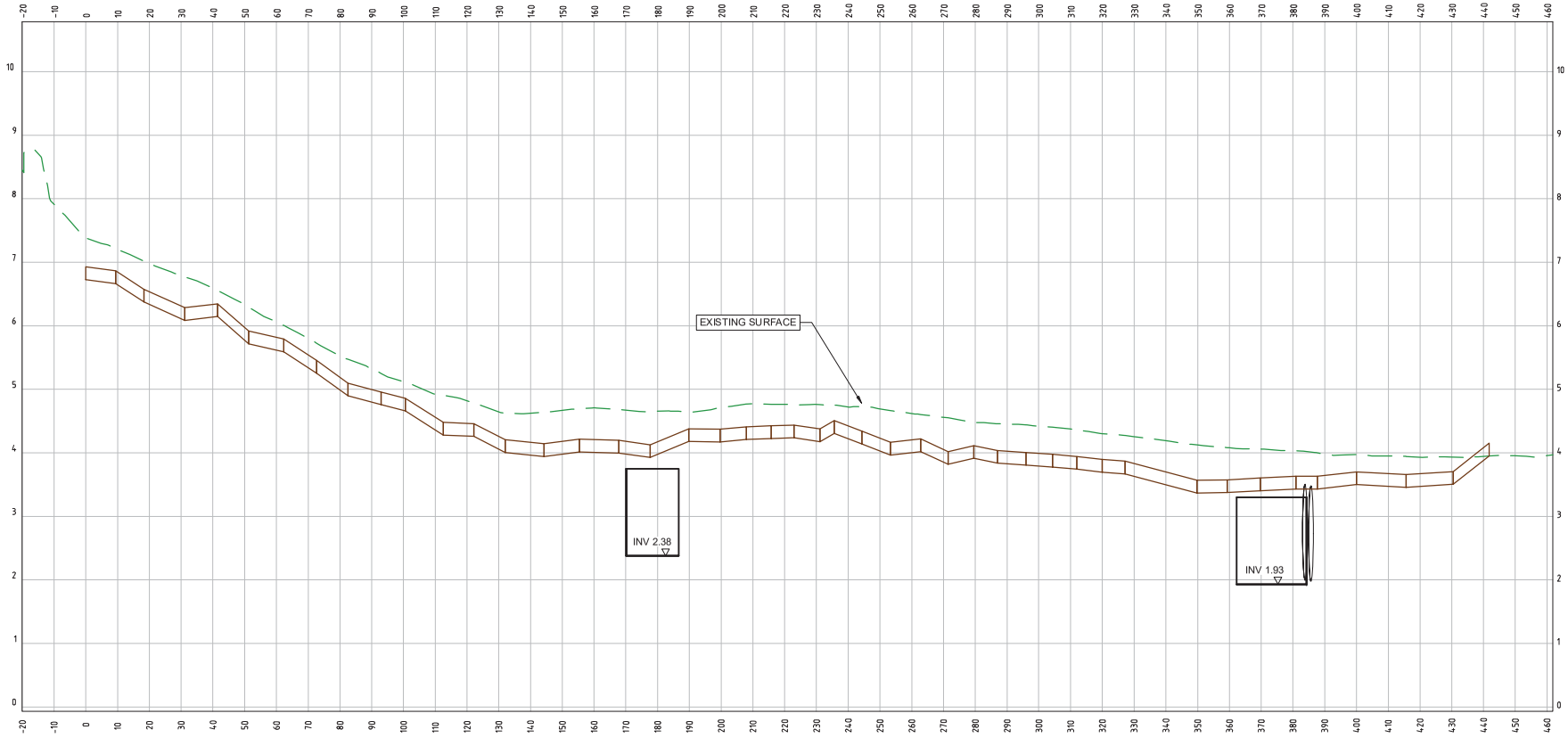

RADIUS

DATUM R.L. -2

SEWER RL iNVERT ??	6.73	6.33	6.14	5.62	4.99	4.67	4.26	3.96	4.01	3.98	4.17	4.23	4.22	4.00	3.91	3.79	3.69	3.50	3.38	3.43	3.50	3.47	3.88
EXISTING SURFACE	7.39	6.98	6.59	6.06	5.52	5.12	4.82	4.62	4.71	4.65	4.71	4.76	4.72	4.62	4.48	4.42	4.30	4.19	4.08	4.03	3.97	3.93	3.95
DEPTH	-0.66	-0.64	-0.46	-0.44	-0.53	-0.45	-0.56	-0.66	-0.70	-0.68	-0.54	-0.53	-0.50	-0.62	-0.57	-0.63	-0.61	-0.69	-0.70	-0.60	-0.47	-0.46	-0.07
CHAINAGE	0.00	20.00	40.00	60.00	80.00	100.00	120.00	140.00	160.00	180.00	200.00	220.00	240.00	260.00	280.00	300.00	320.00	340.00	360.00	380.00	400.00	420.00	440.00

EXISTING SEWER MAIN LONGITUDINAL SECTION WAKEHURST PARKWAY

SCALE 1: 750H
1:37.5V

Title:	Existing Sewer Main Longitudinal Section	Figure: D6	Rev: 1
Project:	Wakehurst Parkway - Option Analysis (The Bends)		

DISCLAIMER: WHILE ALL RESPONSIBLE CARE HAS BEEN TAKEN TO ENSURE THE INFORMATION CONTAINED ON THIS MAP IS UP TO DATE AND ACCURATE, THIS MAP CONTAINS DATA FROM A NUMBER OF SOURCES - NO WARRANTY IS GIVEN THAT THE INFORMATION CONTAINED ON THIS IS FREE FROM ERROR OR OMISSION. ANY RELIANCE PLACED ON SUCH INFORMATION SHALL BE AT THE SOLE RISK OF THE USER. PLEASE VERIFY THE ACCURACY OF ALL INFORMATION PRIOR TO USING IT. THIS MAP IS NOT A DESIGN DOCUMENT.

0 7.5 15 22.5 30 37.5 — SCALE 1:750 AT ORIGINAL SIZE

0 0.35 0.7 1.05 1.4 1.75m — SCALE 1:37.5 AT ORIGINAL SIZE

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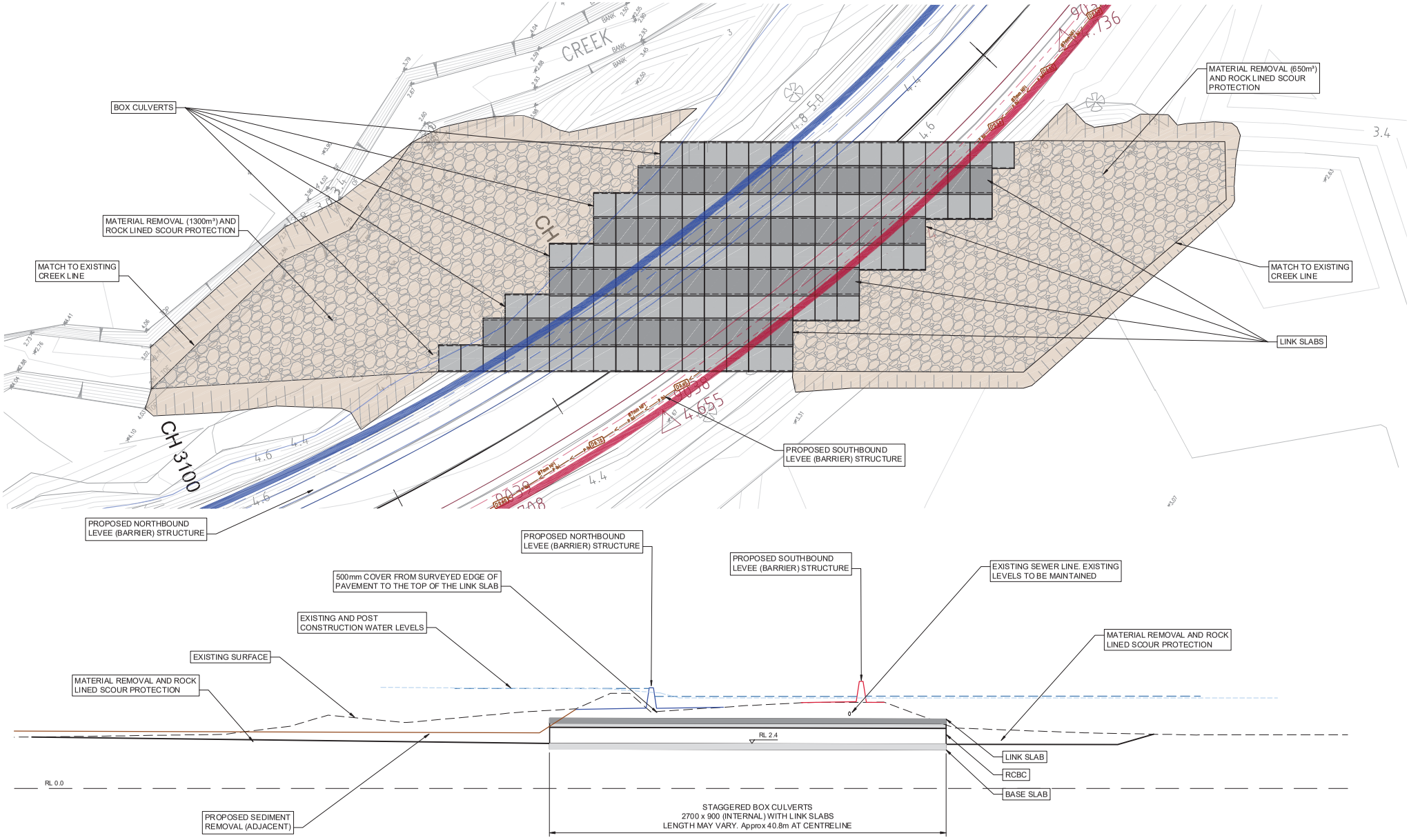

Title:	Southern Culvert Bank	Figure: D7	Rev: 1
Project:	Wakehurst Parkway - Option Analysis (The Bends)		

DISCLAIMER: WHILE ALL RESPONSIBLE CARE HAS BEEN TAKEN TO ENSURE THE INFORMATION CONTAINED ON THIS MAP IS UP TO DATE AND ACCURATE, THIS MAP CONTAINS DATA FROM A NUMBER OF SOURCES - NO WARRANTY IS GIVEN THAT THE INFORMATION CONTAINED ON THIS IS FREE FROM ERROR OR OMISSION. ANY RELIANCE PLACED ON SUCH INFORMATION SHALL BE AT THE SOLE RISK OF THE USER. PLEASE VERIFY THE ACCURACY OF ALL INFORMATION PRIOR TO USING IT. THIS MAP IS NOT A DESIGN DOCUMENT.

0 7.5 15 22.5 30 37.5 — SCALE 1:750 AT ORIGINAL SIZE

0 0.35 0.7 1.05 1.4 1.75m — SCALE 1:37.5 AT ORIGINAL SIZE

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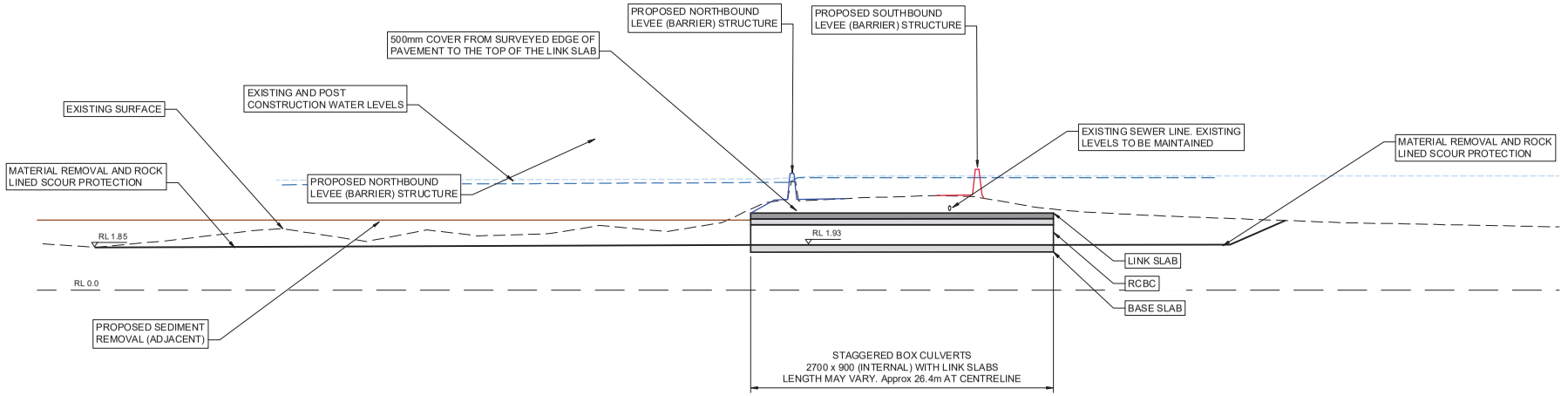

Title:	Northern Culvert Bank	Figure: D8	Rev: 1
Project:	Wakehurst Parkway - Option Analysis (The Bends)		

DISCLAIMER: WHILE ALL RESPONSIBLE CARE HAS BEEN TAKEN TO ENSURE THE INFORMATION CONTAINED ON THIS MAP IS UP TO DATE AND ACCURATE, THIS MAP CONTAINS DATA FROM A NUMBER OF SOURCES - NO WARRANTY IS GIVEN THAT THE INFORMATION CONTAINED ON THIS IS FREE FROM ERROR OR OMISSION. ANY RELIANCE PLACED ON SUCH INFORMATION SHALL BE AT THE SOLE RISK OF THE USER. PLEASE VERIFY THE ACCURACY OF ALL INFORMATION PRIOR TO USING IT. THIS MAP IS NOT A DESIGN DOCUMENT.

0 7.5 15 22.5 30 37.5 — SCALE 1:750 AT ORIGINAL SIZE

0 0.35 0.7 1.05 1.4 1.75m — SCALE 1:37.5 AT ORIGINAL SIZE

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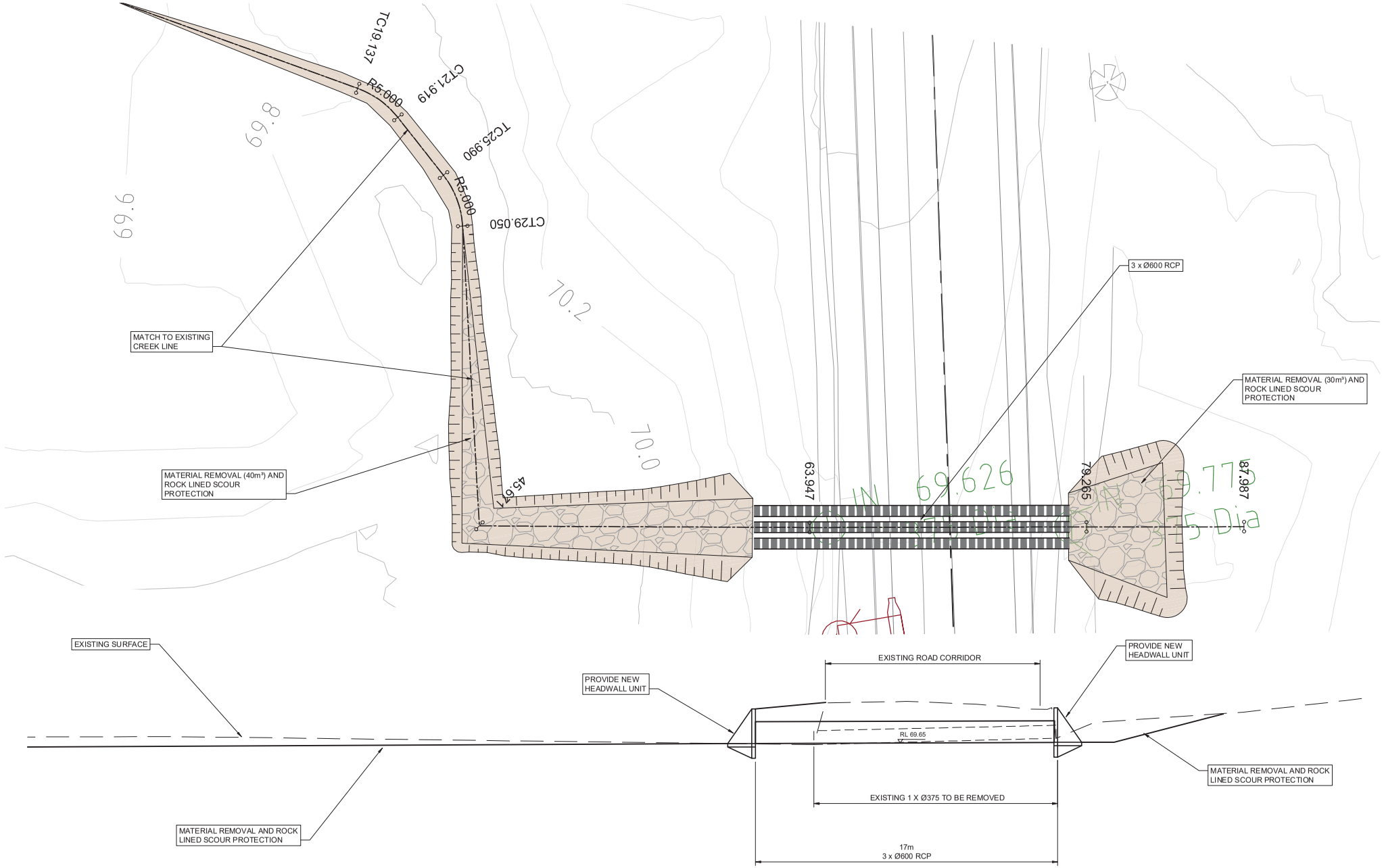

Title:	Culvert Capacity Increase Option 1
Project:	Wakehurst Parkway - Option Analysis (Oxford Falls)

Figure: D9

Rev: 1

DISCLAIMER: WHILE ALL RESPONSIBLE CARE HAS BEEN TAKEN TO ENSURE THE INFORMATION CONTAINED ON THIS MAP IS UP TO DATE AND ACCURATE, THIS MAP CONTAINS DATA FROM A NUMBER OF SOURCES - NO WARRANTY IS GIVEN THAT THE INFORMATION CONTAINED ON THIS IS FREE FROM ERROR OR OMISSION. ANY RELIANCE PLACED ON SUCH INFORMATION SHALL BE AT THE SOLE RISK OF THE USER. PLEASE VERIFY THE ACCURACY OF ALL INFORMATION PRIOR TO USING IT. THIS MAP IS NOT A DESIGN DOCUMENT.

0 0.5 1.0 1.5 2.0 2.5m — SCALE 1:50 AT ORIGINAL SIZE

0 1 2 3 4 5m — SCALE 1:100 AT ORIGINAL SIZE

File ID: RHDHV\PA1943\Cad\Figure OD1.dwg

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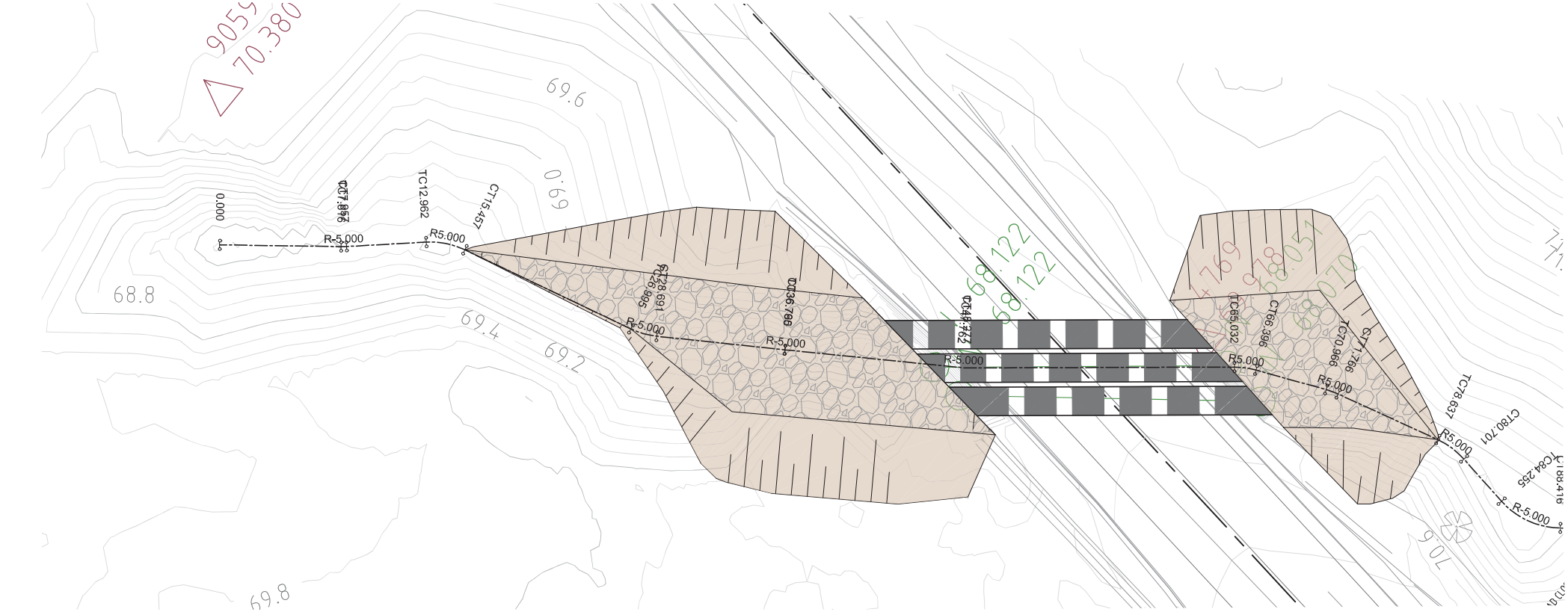

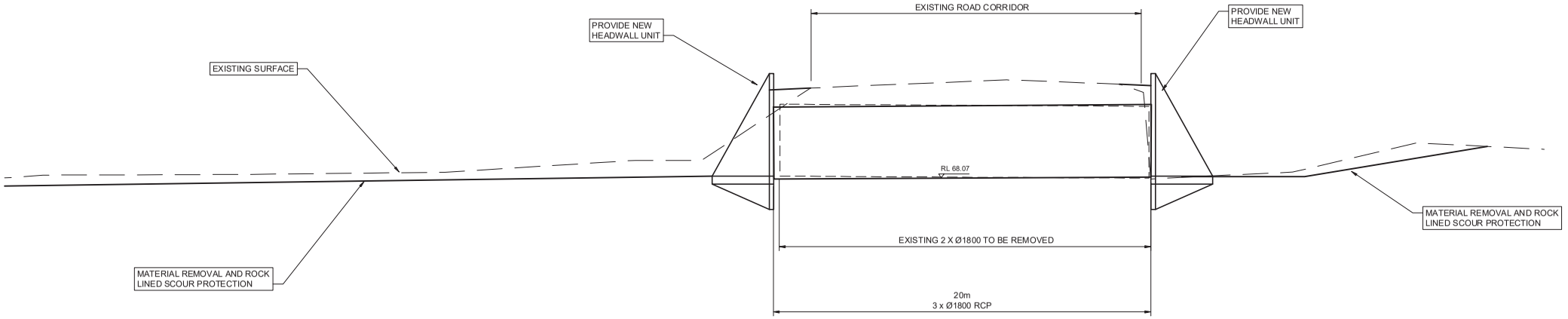

Title:	Culvert Capacity Increase Option 1	Figure: D10	Rev: 1
Project:	Wakehurst Parkway - Option Analysis (Oxford Falls)		

DISCLAIMER: WHILE ALL RESPONSIBLE CARE HAS BEEN TAKEN TO ENSURE THE INFORMATION CONTAINED ON THIS MAP IS UP TO DATE AND ACCURATE, THIS MAP CONTAINS DATA FROM A NUMBER OF SOURCES - NO WARRANTY IS GIVEN THAT THE INFORMATION CONTAINED ON THIS IS FREE FROM ERROR OR OMISSION. ANY RELIANCE PLACED ON SUCH INFORMATION SHALL BE AT THE SOLE RISK OF THE USER. PLEASE VERIFY THE ACCURACY OF ALL INFORMATION PRIOR TO USING IT. THIS MAP IS NOT A DESIGN DOCUMENT.

0 0.5 1.0 1.5 2.0 2.5m — SCALE 1:50 AT ORIGINAL SIZE

0 1 2 3 4 5m — SCALE 1:100 AT ORIGINAL SIZE

File ID: RHDHV\PA1943\Cad\Figure OD1.dwg

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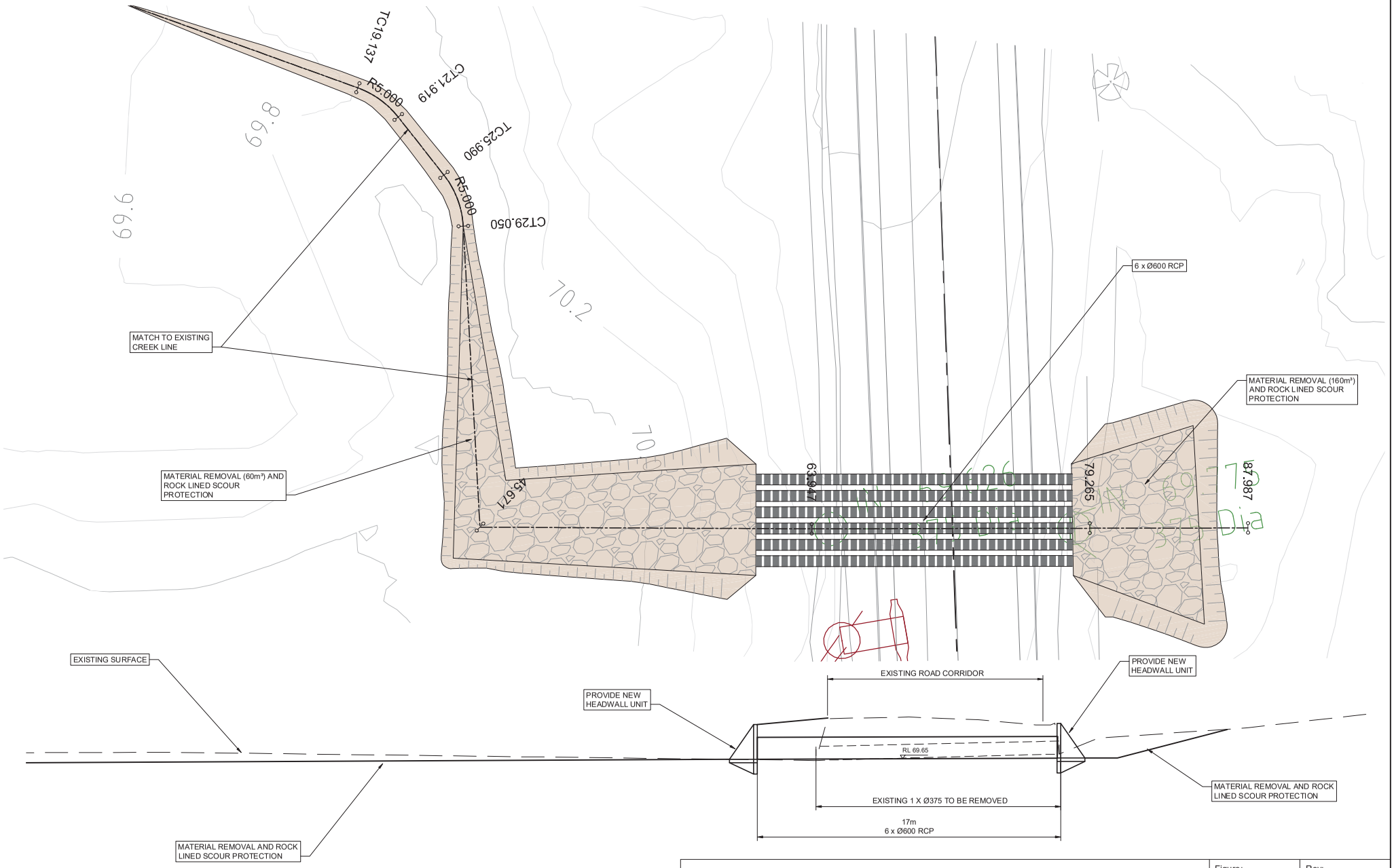

Title:	Culvert Capacity Increase Option 2 (2 Year Immunity)
Project:	Wakehurst Parkway - Option Analysis (Oxford Falls)

Figure: D11

Rev: 1

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0 0.5 1.0 1.5 2.0 2.5m — SCALE 1:50 AT ORIGINAL SIZE

0 1 2 3 4 5m — SCALE 1:100 AT ORIGINAL SIZE

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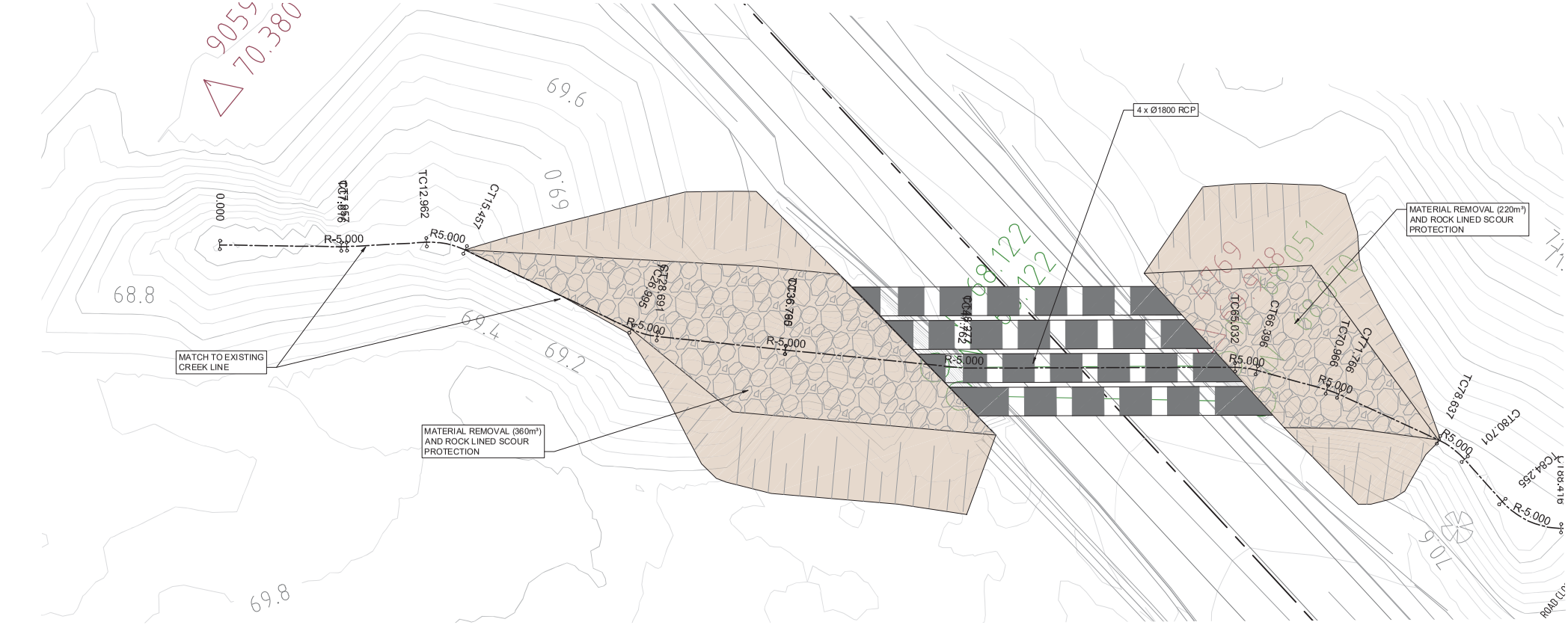

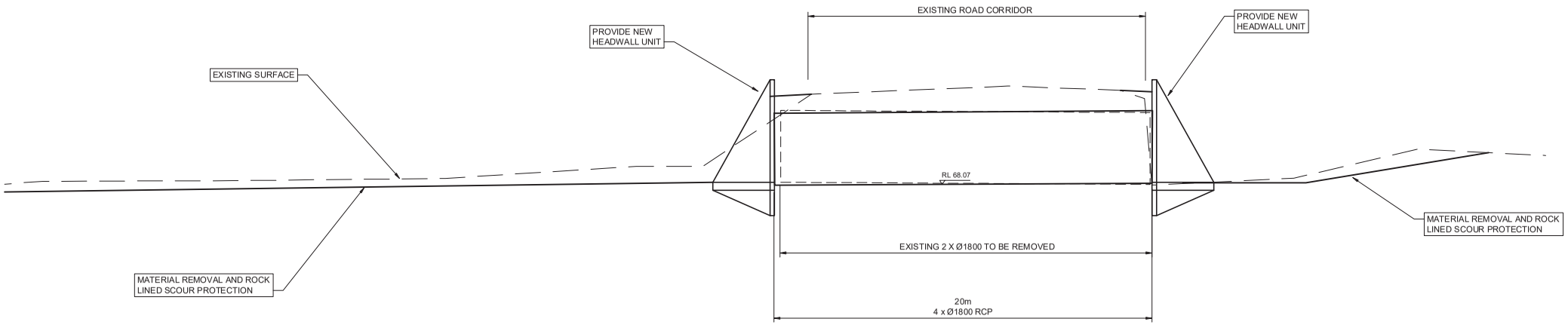

Title:	Culvert Capacity Increase Option 2 (2 Year Immunity)	Figure: D12	Rev: 1
Project:	Wakehurst Parkway - Option Analysis (Oxford Falls)		

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0 0.5 1.0 1.5 2.0 2.5m — SCALE 1:50 AT ORIGINAL SIZE

0 1 2 3 4 5m — SCALE 1:100 AT ORIGINAL SIZE

File ID: RHDHV\PA1943\Cad\Figure OD2.dwg

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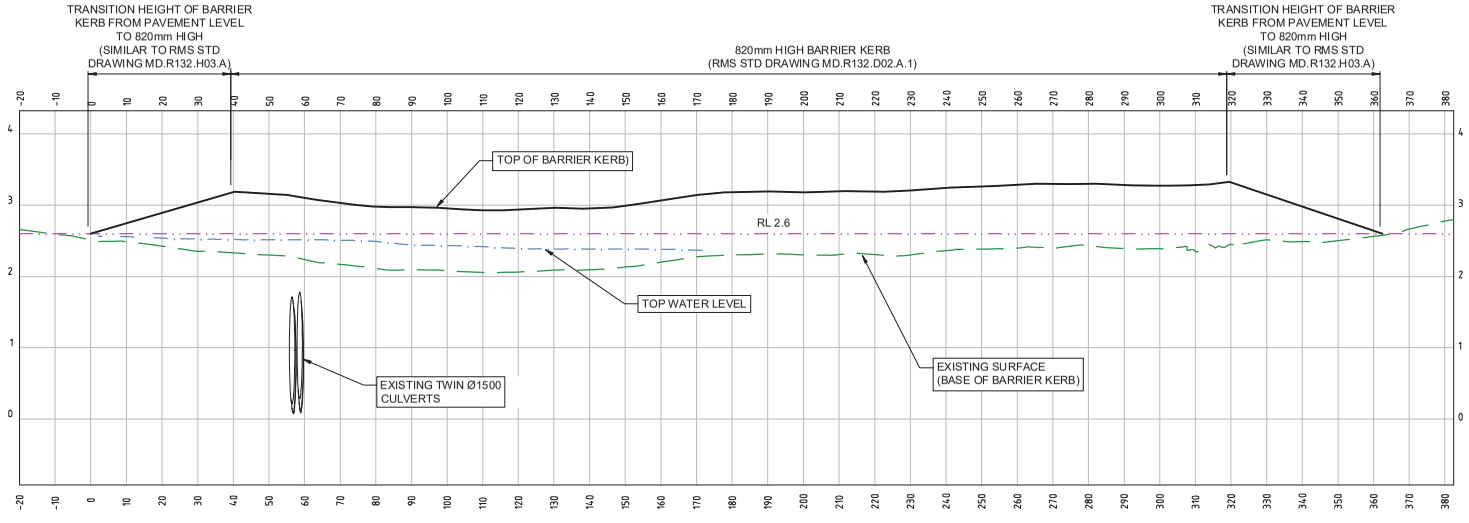

TOP OF BARRIER (820mm HIGH)	2.60	2.89	3.18	3.10	2.98	2.96	2.94	2.95	3.07	3.18	3.18	3.19	3.24	3.29	3.30	3.27	3.32	2.98	2.64
TOP WATER LEVEL (TWL)		2.54	2.52	2.52	2.49	2.43	2.39	2.38	2.38										
EXISTING SURFACE	2.51	2.43	2.33	2.24	2.11	2.08	2.06	2.09	2.20	2.30	2.30	2.31	2.36	2.40	2.43	2.39	2.45	2.49	2.56
CHAINAGE	0.00	20.00	40.00	60.00	80.00	100.00	120.00	140.00	160.00	180.00	200.00	220.00	240.00	260.00	280.00	300.00	320.00	340.00	360.00

CENTRELINE CONTROL NB

SCALE 1: 750H
1:37.5V

SAFETY BARRIER TREATMENTS AT LIMITS OF CONCRETE BARRIERS OR PLAN TRANSITION OF BARRIERS OUT OF CLEAR ZONES NOT SHOWN.

Title: Sports Centre Northbound Bund Longitudinal Section

Project: Wakehurst Parkway - Option Analysis (Sports Centre)

Figure: D13

Rev: 1

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0 7.5 15 22.5 30 37.5 — SCALE 1:750 AT ORIGINAL SIZE

0 0.35 0.7 1.05 1.4 1.75m — SCALE 1:37.5 AT ORIGINAL SIZE

File ID: RHDHV\PA1943\Cad\Figure SD.dwg

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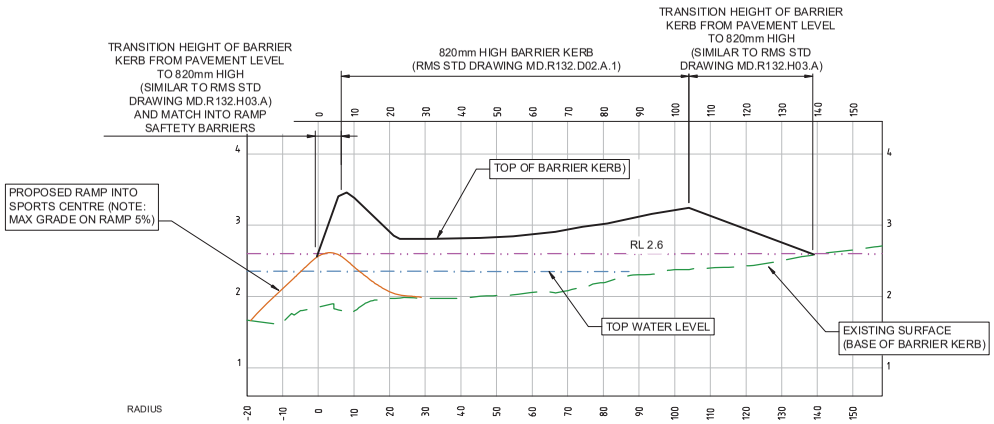
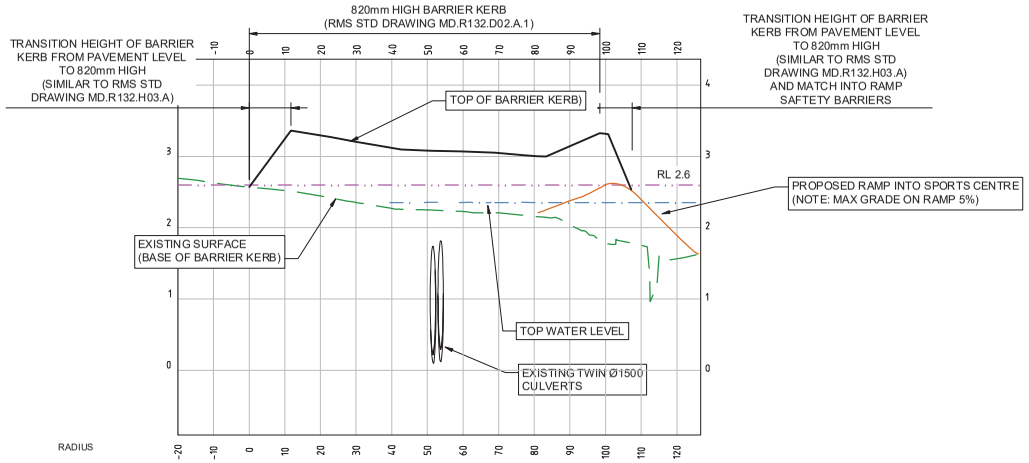


DATUM R.L. 0

TOP OF BARRIER (820mm HIGH)	2.62	2.91	2.82	2.87	3.02	3.21	2.94
TOP WATER LEVEL (TWL)	2.35	2.35	2.35	2.35	2.35		
EXISTING SURFACE	1.85	1.97	1.97	2.06	2.20	2.37	2.43
CHAINAGE	0.00	20.00	40.00	60.00	80.00	100.00	120.00

CENTRELINE CONTROL SB1

SCALE 1: 750H
1:37.5V



DATUM R.L. -2

TOP OF BARRIER (820mm HIGH)	2.57	3.29	3.12	3.07	3.00	3.32
TOP WATER LEVEL (TWL)			2.35	2.35	2.35	2.35
EXISTING SURFACE	2.57	2.44	2.27	2.23	2.15	1.78
CHAINAGE	0.00	20.00	40.00	60.00	80.00	100.00

CENTRELINE CONTROL SB2

SCALE 1: 750H
1:37.5V

SAFETY BARRIER TREATMENTS AT LIMITS OF CONCRETE BARRIERS OR PLAN TRANSITION OF BARRIERS OUT OF CLEAR ZONES NOT SHOWN.

Title: Sports Centre Southbound Bund Longitudinal Sections

Project: Wakehurst Parkway - Option Analysis (Sports Centre)

Figure: D14

Rev: 1

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0 7.5 15 22.5 30 37.5 SCALE 1:750 AT ORIGINAL SIZE

0 0.35 0.7 1.05 1.4 1.75m SCALE 1:37.5 AT ORIGINAL SIZE

File ID: RHDHV\PA1943\Cad\Figure SD.dwg

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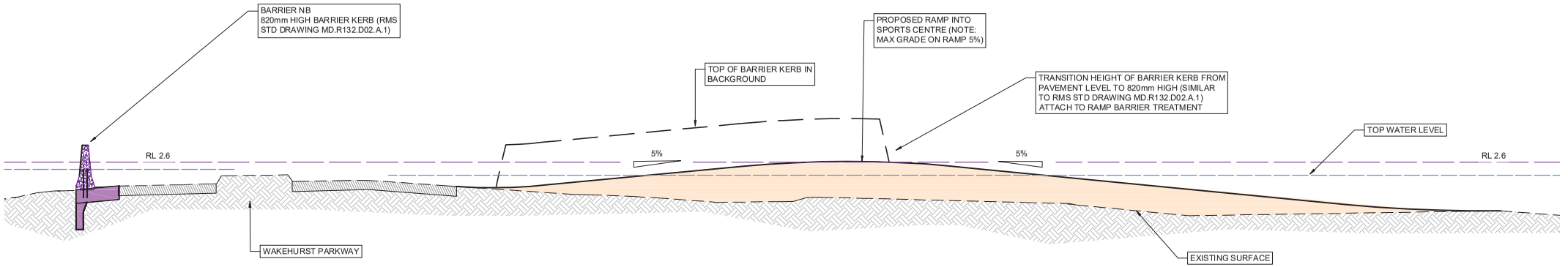
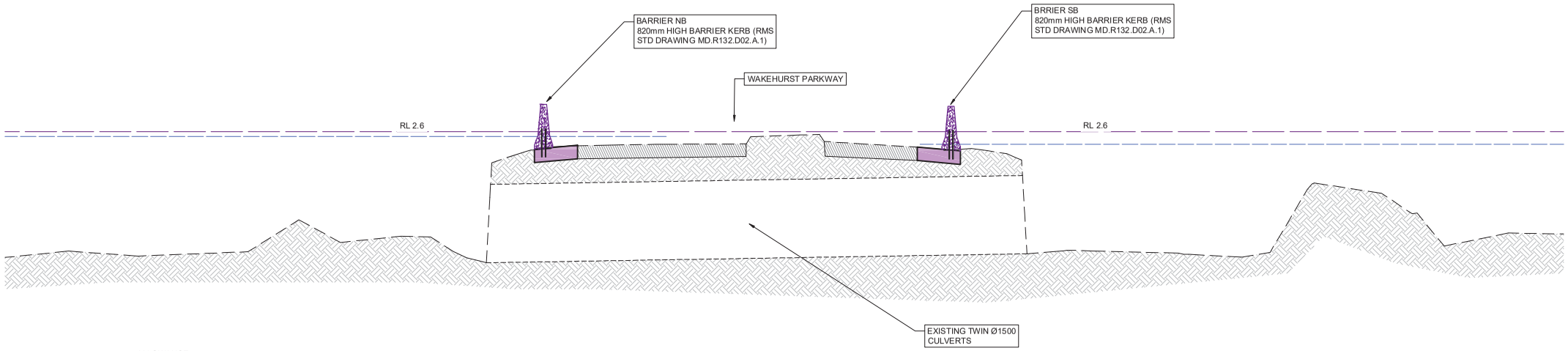


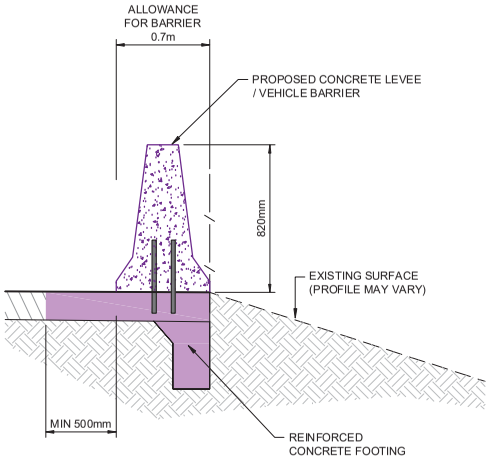
TYPICAL SECTION AT SPORTS CENTRE ENTRY

SCALE 1:75 H 1:37.5V



TYPICAL SECTION AT EXISTING CULVERTS

SCALE 1:75 H 1:37.5V



TYPICAL BARRIER DETAIL

Title:	Sports Centre Typical Sections	Figure: D15	Rev: 1
Project:	Wakehurst Parkway - Option Analysis (Sports Centre)		

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0 0.75 1.5 2.25 3.0 3.75

SCALE 1:75 AT ORIGINAL SIZE

File ID: RHDHV\PA1943\Cad\Figure SD.dwg

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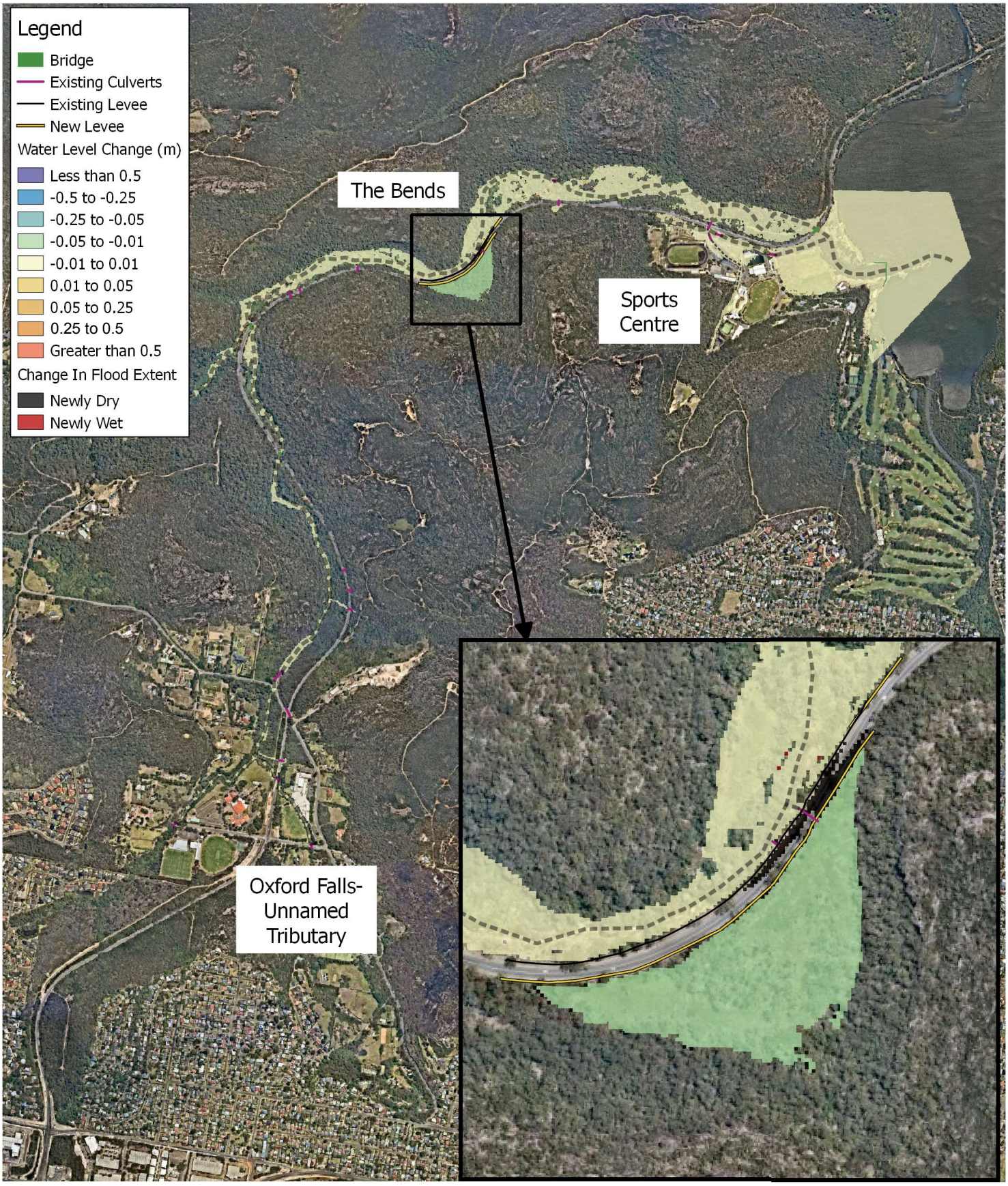
APPENDIX K – Flood Impact Maps



Title: Option B1 - Flood Impacts - 4 EY

Figure: G1

Rev: 1

Project: Wakehurst Parkway- Options Analysis

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N

0 200 400 600 800 1000 m

Main Map Only

TUFLOW ID: WP_()_GPU_Po1_010

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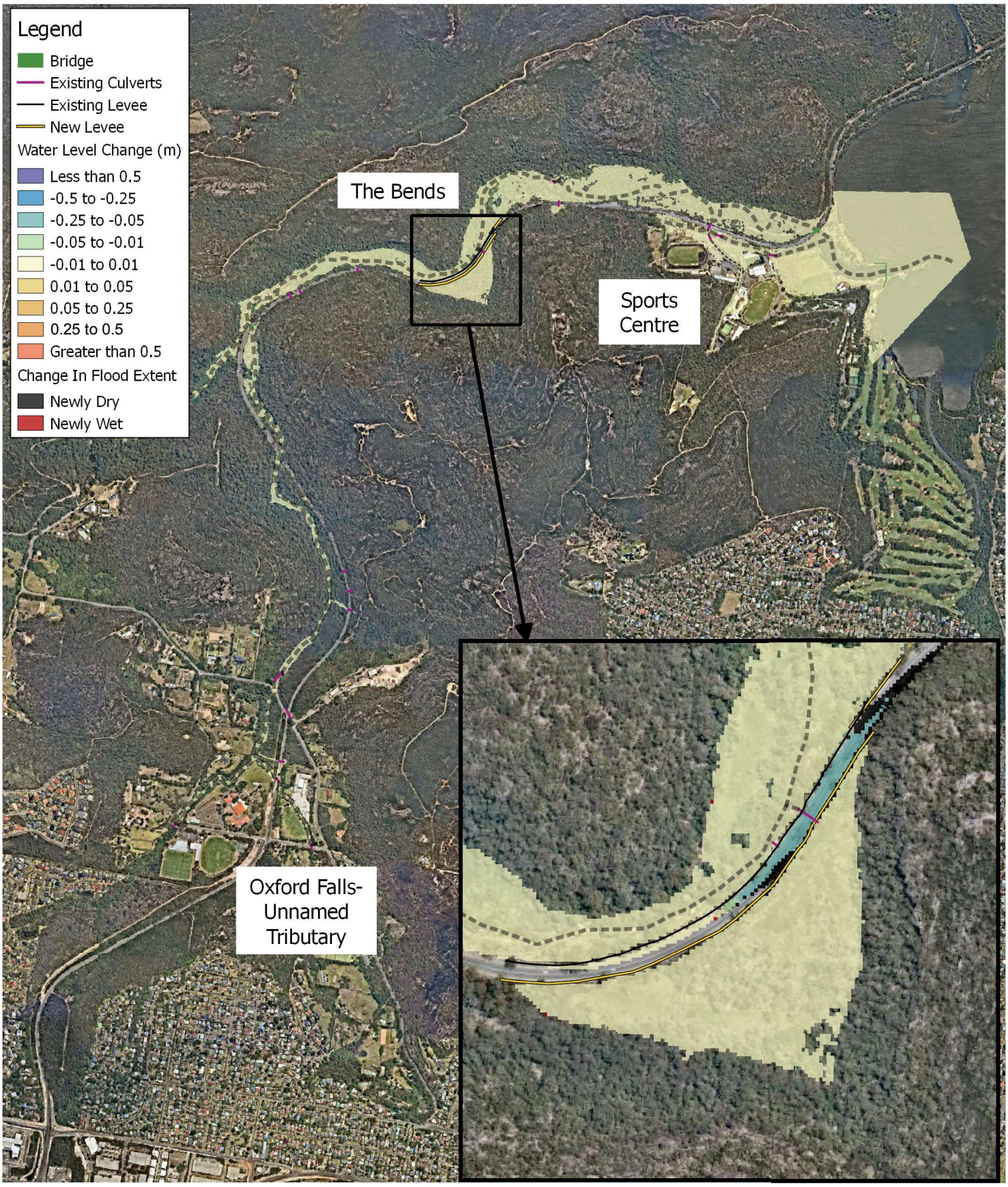

Title: Option B1 - Flood Impacts - 2 EY

Figure: G2

Rev: 1

Project: Wakehurst Parkway- Options Analysis

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N

0 200 400 600 800 1000 m

Main Map Only

TUFLOW ID: WP_()_GPU_Po1_010

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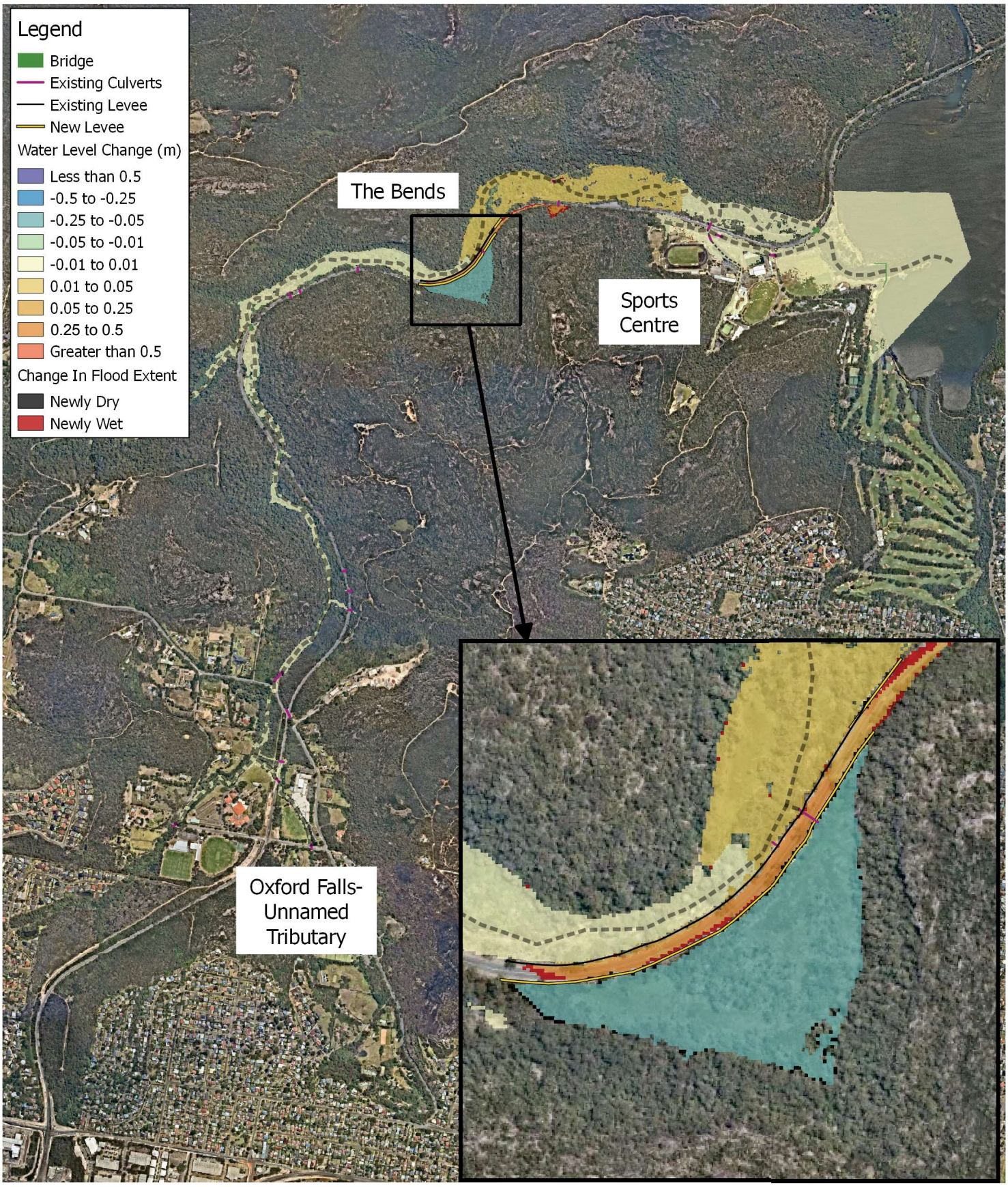

Title: Option B1 - Flood Impacts - 1 EY

Figure: G3

Rev: 1

Project: Wakehurst Parkway- Options Analysis

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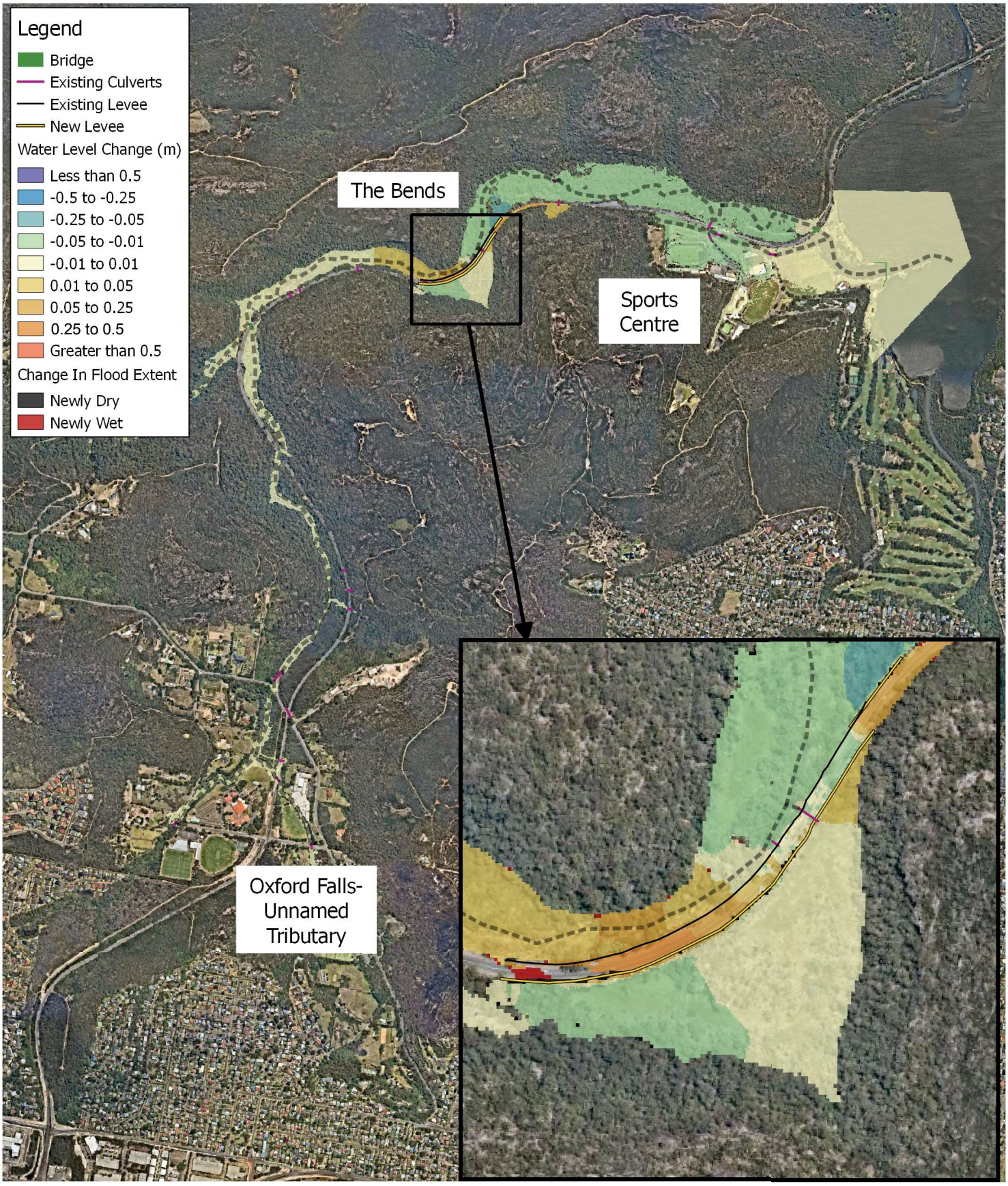

Title: Option B1 - Flood Impacts - 0.5 EY

Figure: G4

Rev: 1

Project: Wakehurst Parkway- Options Analysis

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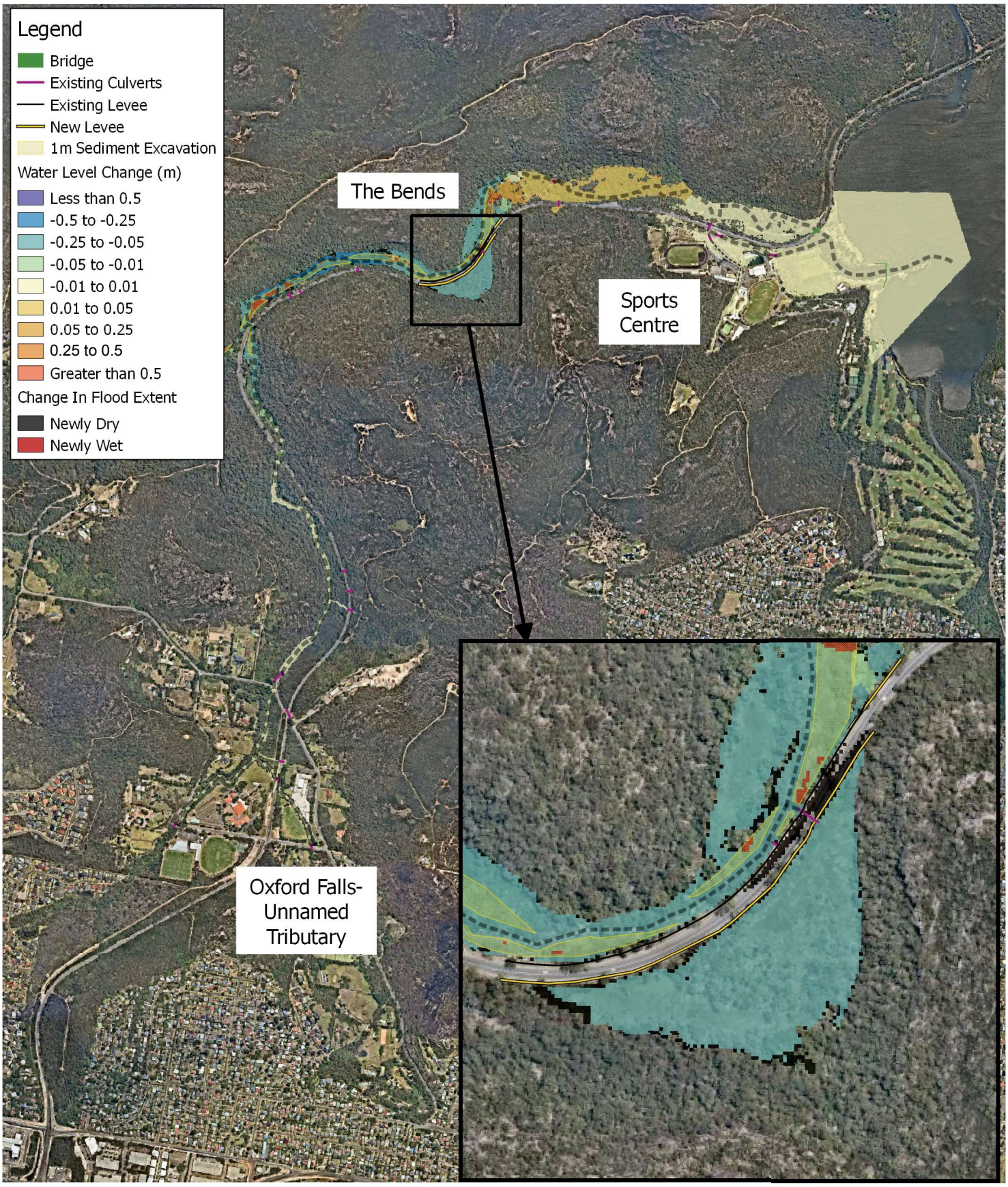

Title: Option B2 - Flood Impacts - 4 EY

Figure:	Rev:
G5	1

Project: Wakehurst Parkway- Options Analysis

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0 200 400 600 800 1000 m

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TUFLOW ID: WP_()_GPU_Po2_010

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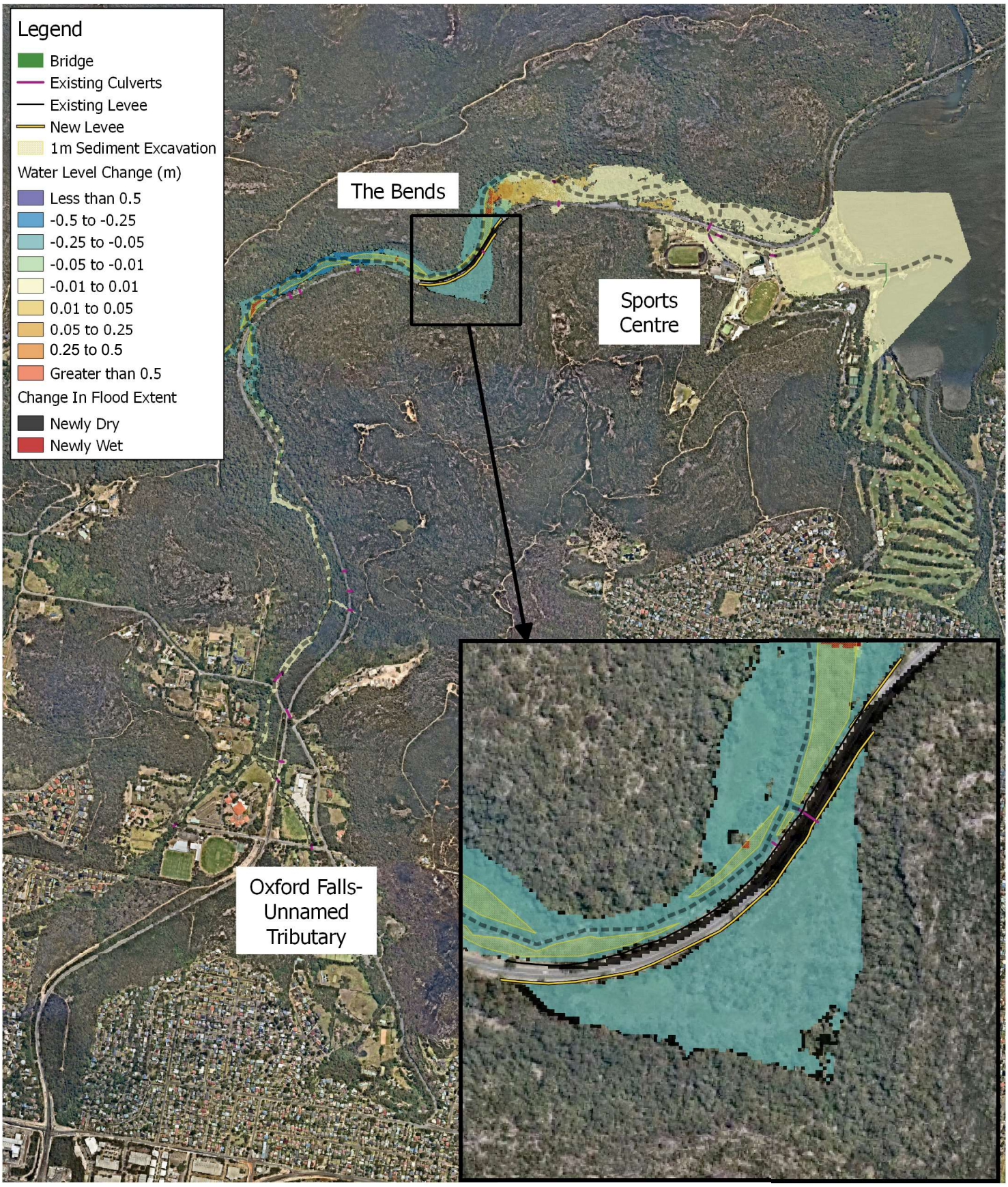

Title: Option B2 - Flood Impacts - 2 EY

Figure:	Rev:
G6	1

Project: Wakehurst Parkway- Options Analysis

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Main Map Only

TUFLOW ID: WP_()_GPU_Po2_010

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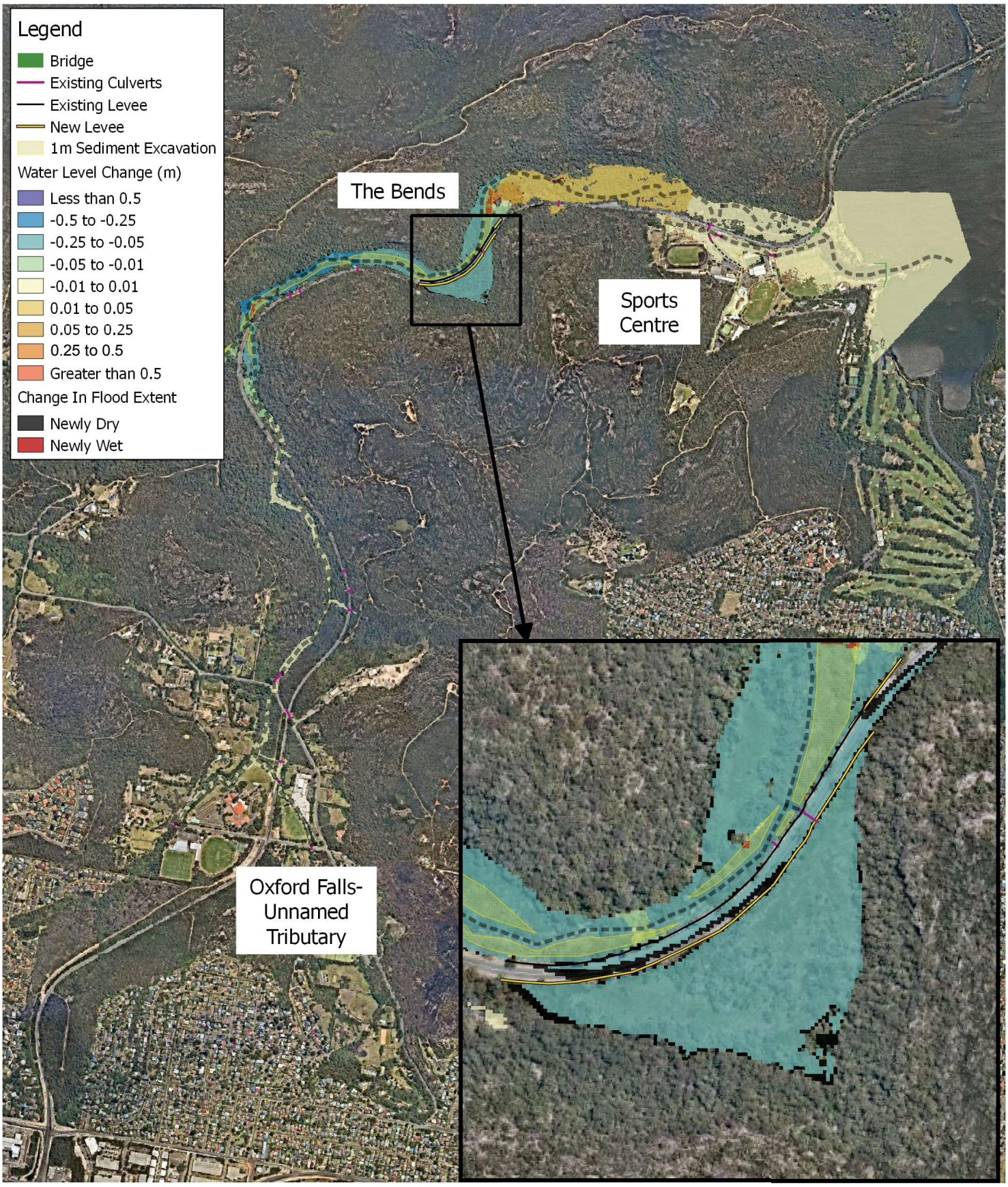

Title: Option B2 - Flood Impacts - 1 EY

Figure: G7

Rev: 1

Project: Wakehurst Parkway- Options Analysis

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N

0 200 400 600 800 1000 m

Main Map Only

TUFLOW ID: WP_()_GPU_Po2_010

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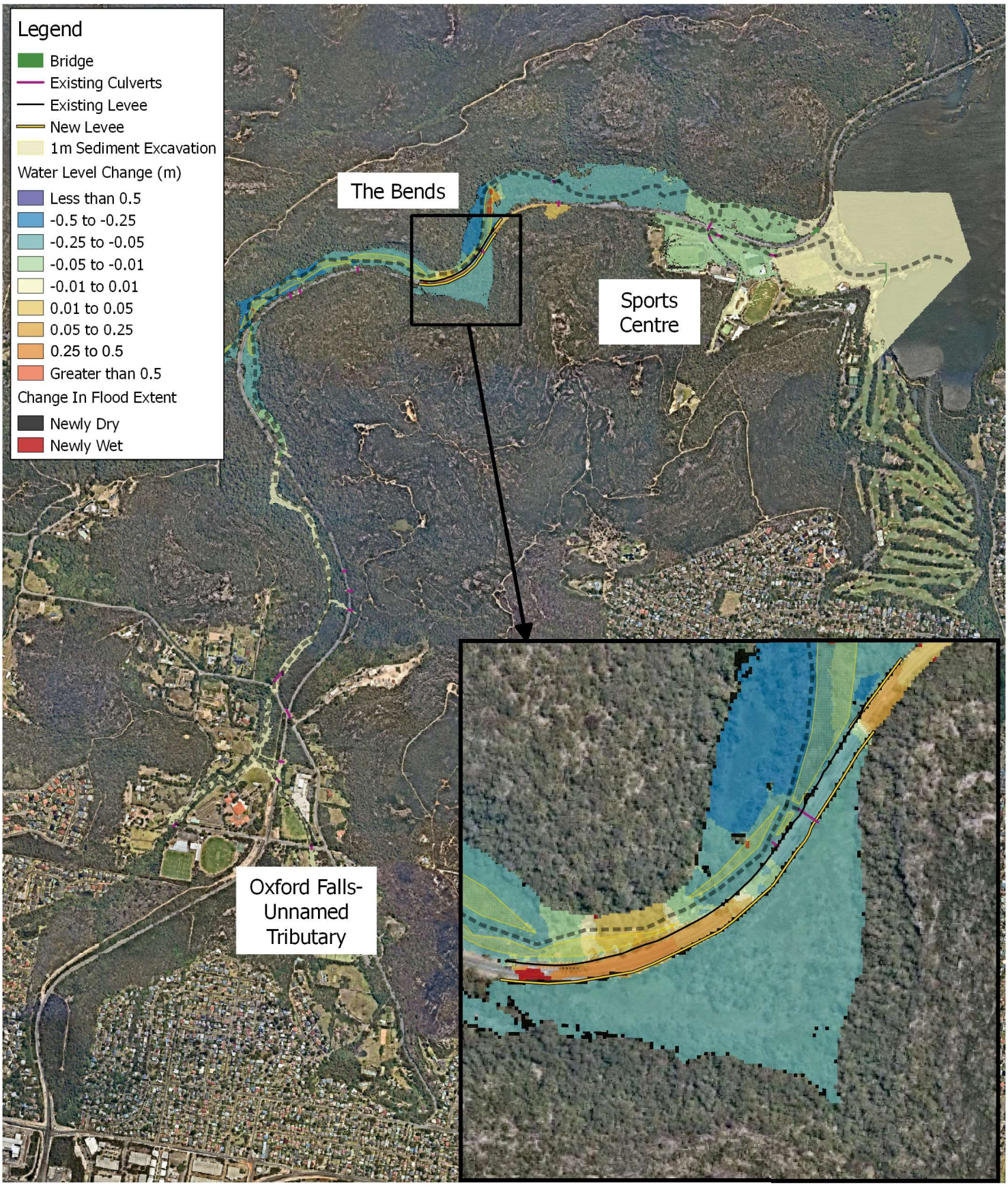

Title: Option B2 - Flood Impacts - 0.5 EY

Figure: G8

Rev: 1

Project: Wakehurst Parkway- Options Analysis

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0 200 400 600 800 1000 m

Main Map Only

TUFLOW ID: WP_()_GPU_Po2_010

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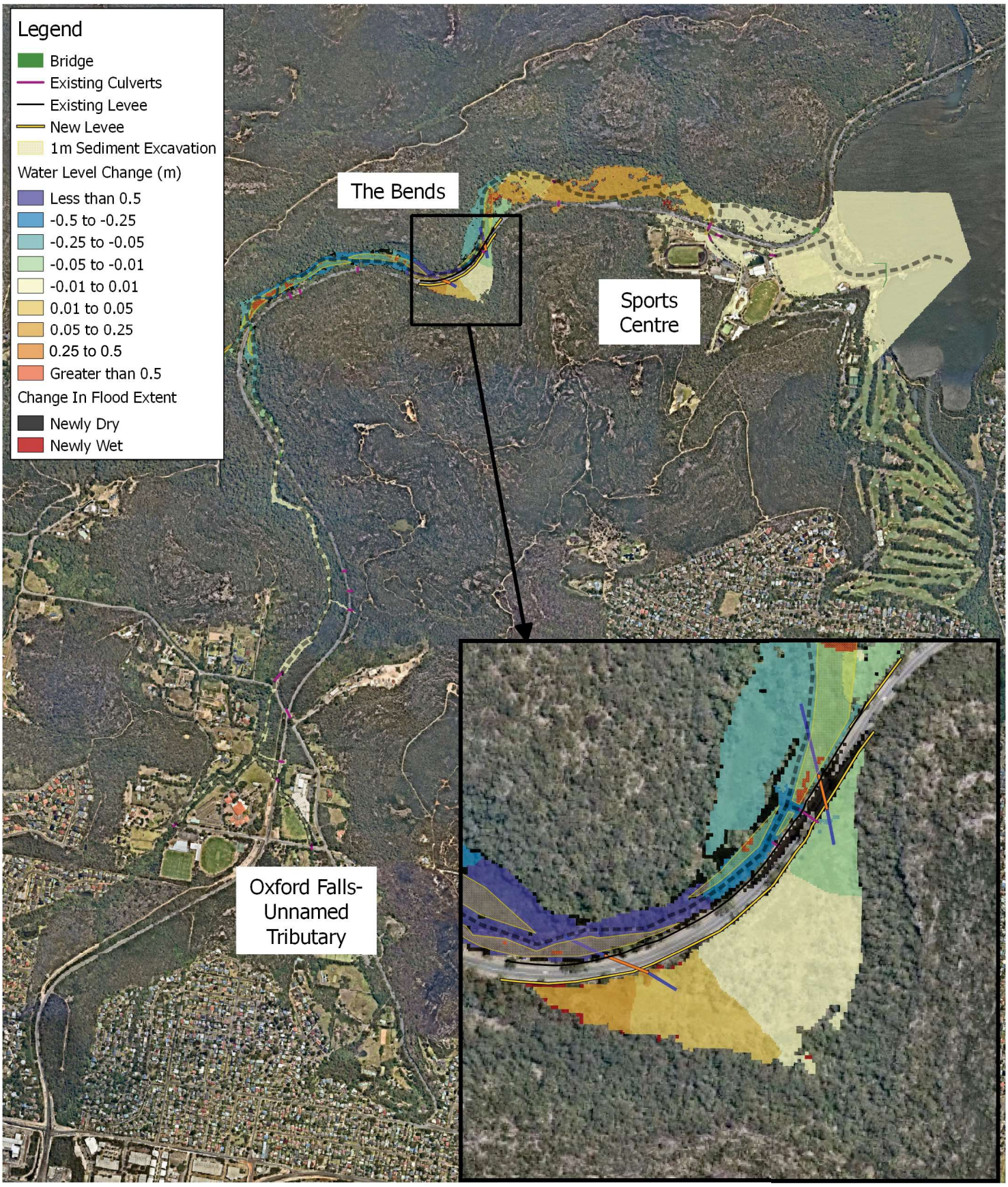

Title: Option B3 - Flood Impacts - 4 EY

Figure: G9

Rev: 1

Project: Wakehurst Parkway- Options Analysis

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N

0 200 400 600 800 1000 m

Main Map Only

TUFLOW ID: WP_()_GPU_Po3_010

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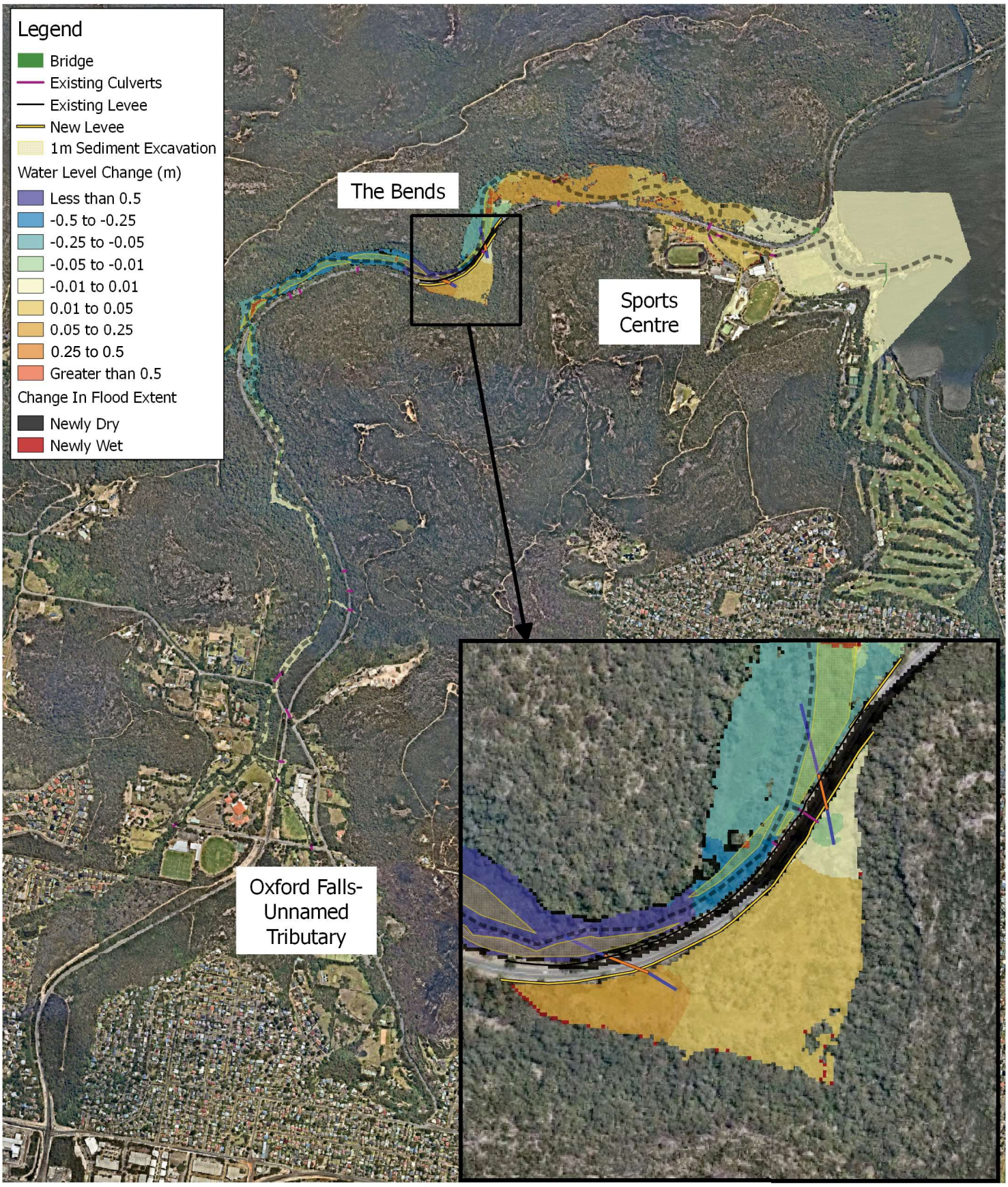

Title: Option B3 - Flood Impacts - 2 EY

Figure: G10

Rev: 1

Project: Wakehurst Parkway- Options Analysis

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0 200 400 600 800 1000 m

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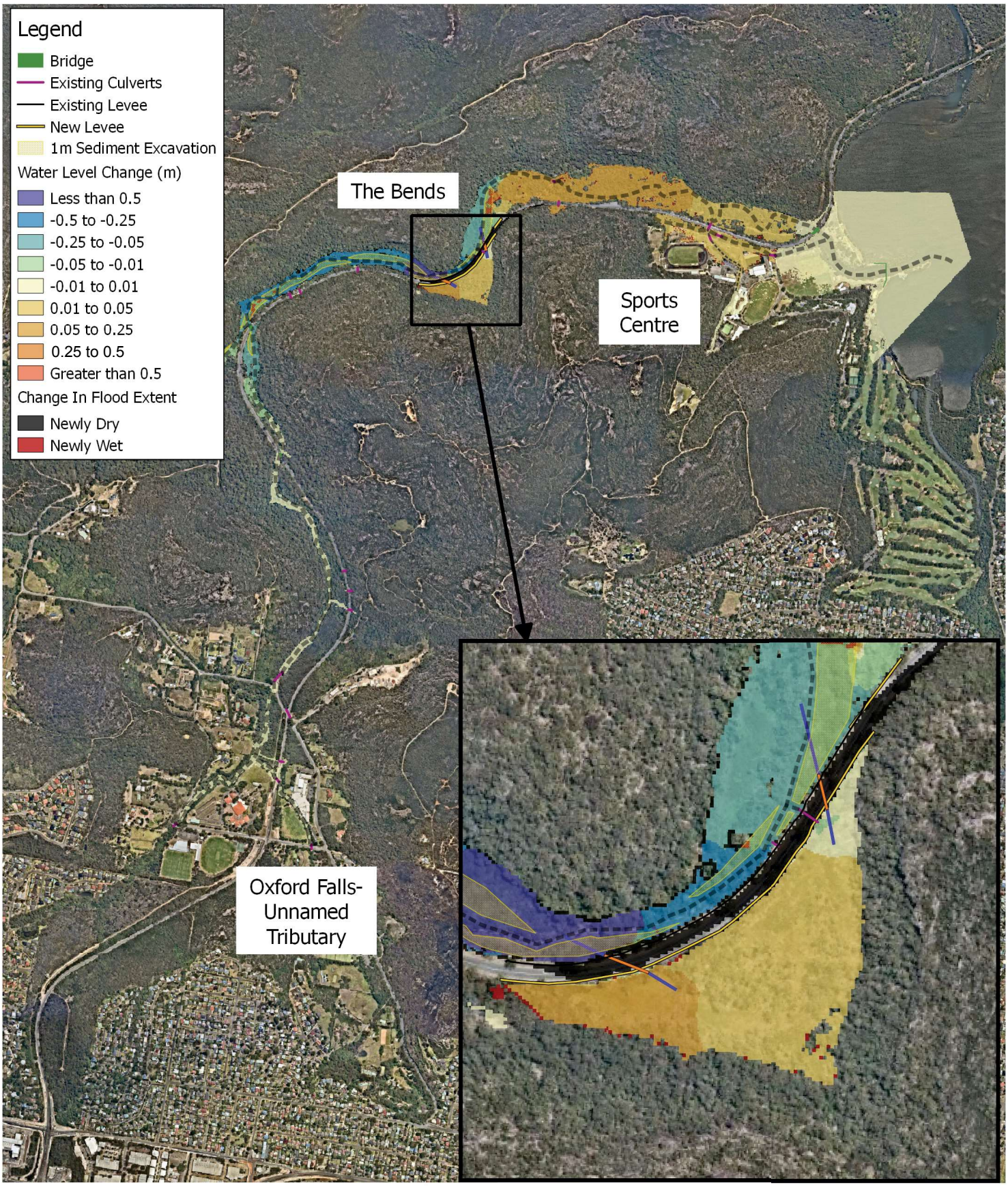

Title: Option B3 - Flood Impacts - 1 EY

Figure: G11

Rev: 1

Project: Wakehurst Parkway- Options Analysis

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0 200 400 600 800 1000 m

Main Map Only

TUFLOW ID: WP_()_GPU_Po3_010

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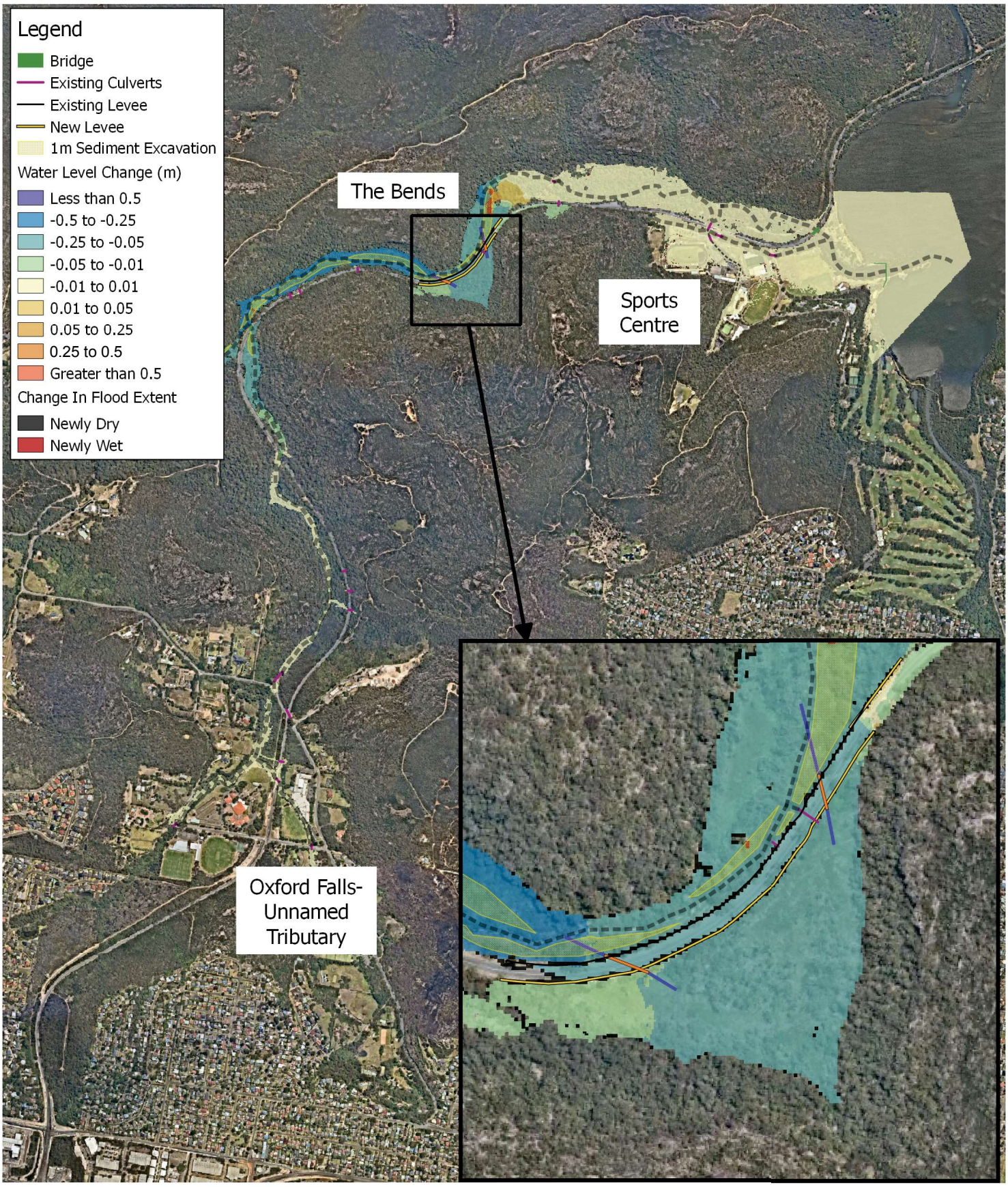

Title: Option B3 - Flood Impacts - 0.5 EY

Figure: G12

Rev: 1

Project: Wakehurst Parkway- Options Analysis

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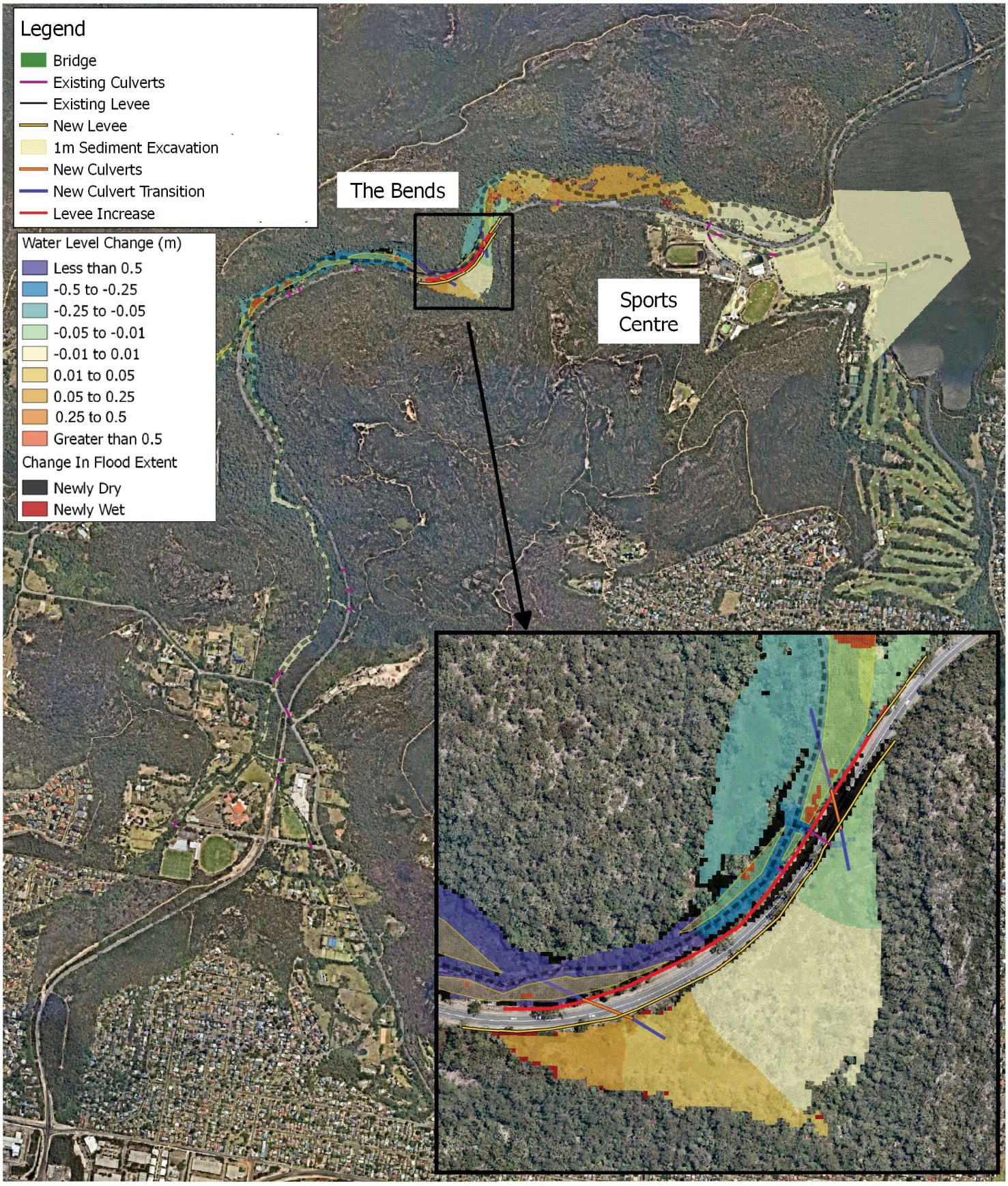

Title: Option B4 - Flood Impacts - 4 EY

Figure: G13

Rev: 1

Project: Wakehurst Parkway- Options Analysis

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TUFLOW ID: WP_()_GPU_Po7_014

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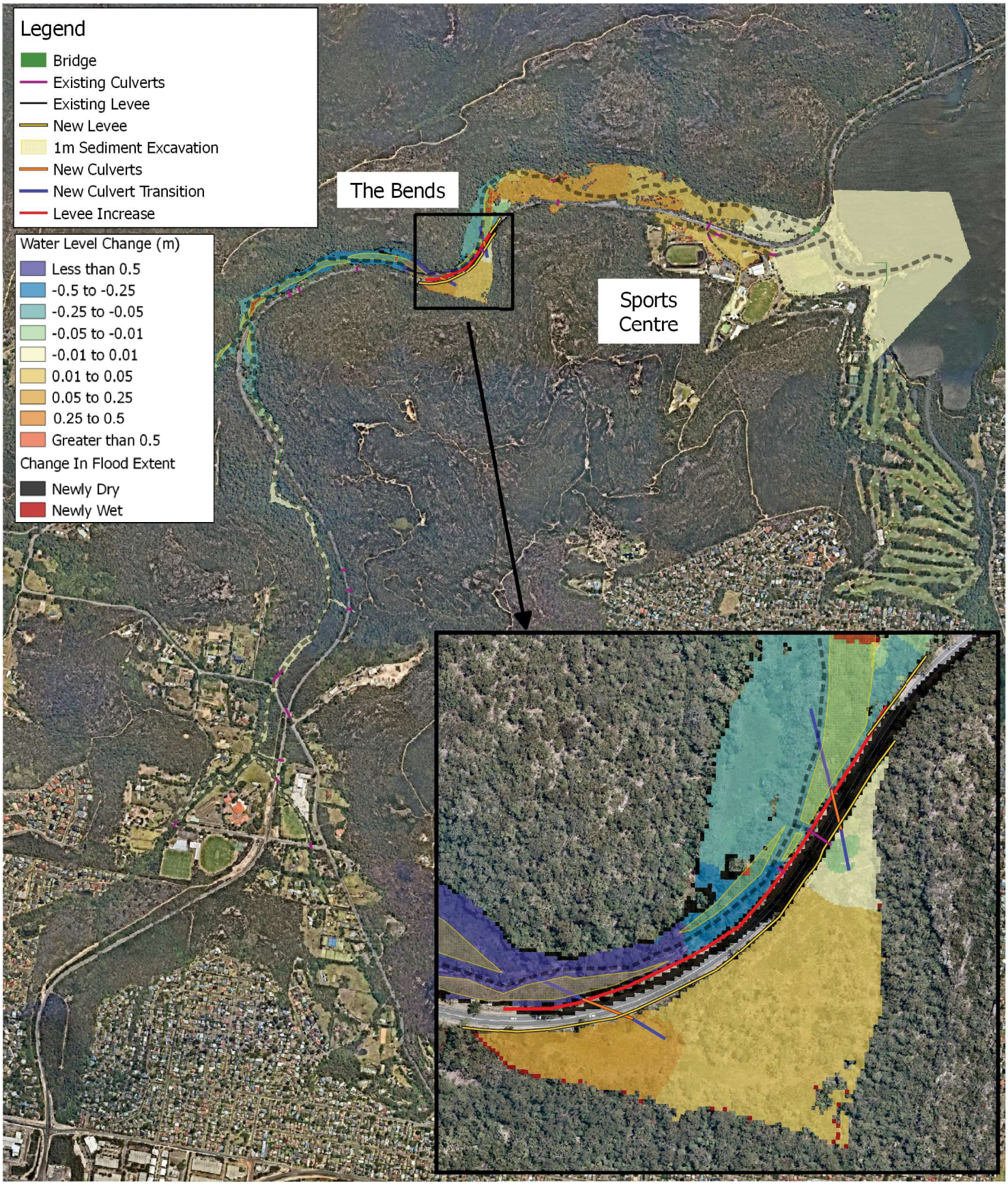

Title: Option B4 - Flood Impacts - 2 EY

Figure: G14

Rev: 1

Project: Wakehurst Parkway- Options Analysis

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Main Map Only

TUFLOW ID: WP_()_GPU_Po7_014

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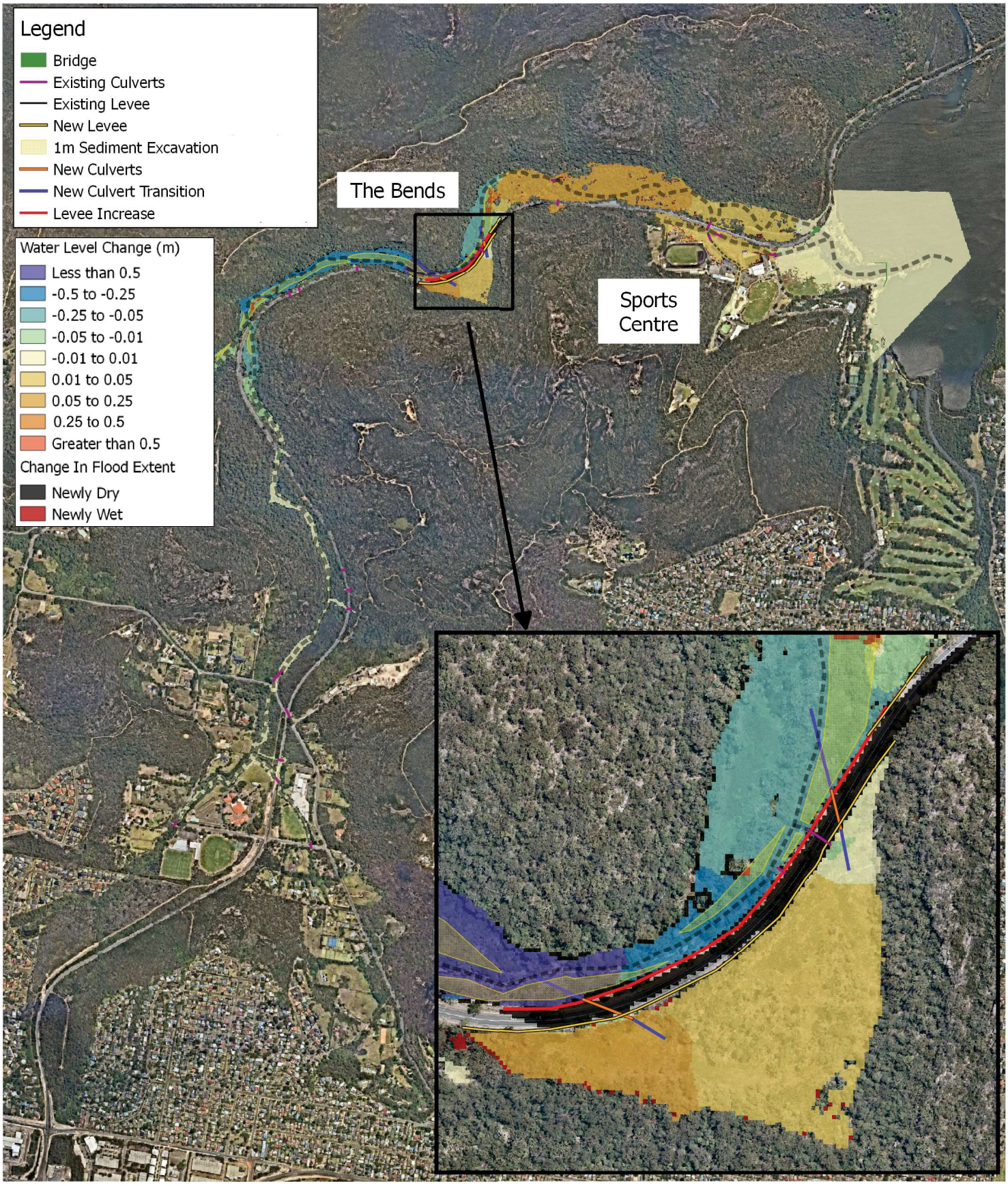

Title: Option B4 - Flood Impacts - 1 EY

Figure: G15

Rev: 1

Project: Wakehurst Parkway- Options Analysis

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Main Map Only

TUFLOW ID: WP_()_GPU_Po7_014

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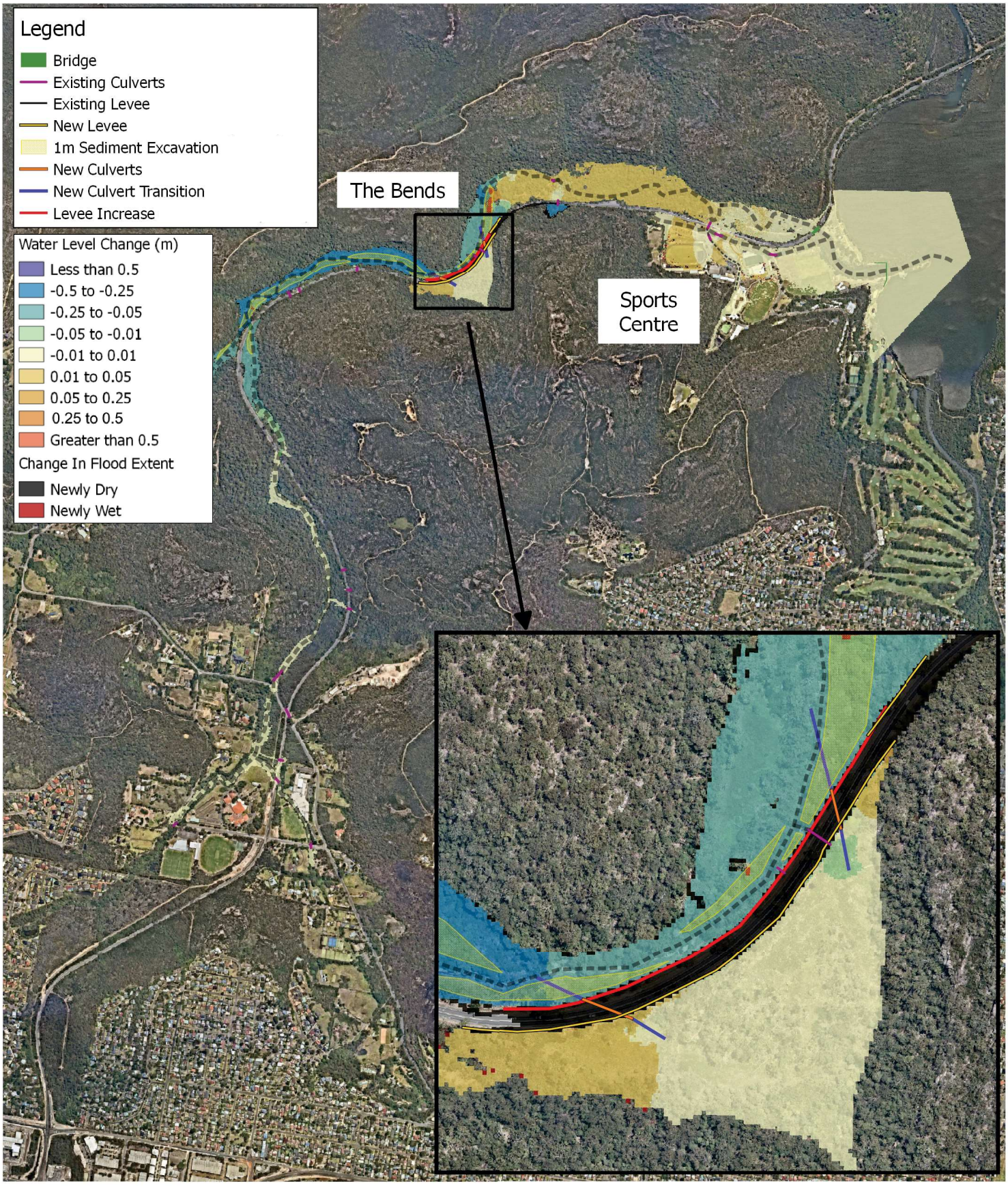

Title: Option B4 - Flood Impacts - 0.5 EY

Figure: G16

Rev: 1

Project: Wakehurst Parkway- Options Analysis

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0 200 400 600 800 1000 m

Main Map Only

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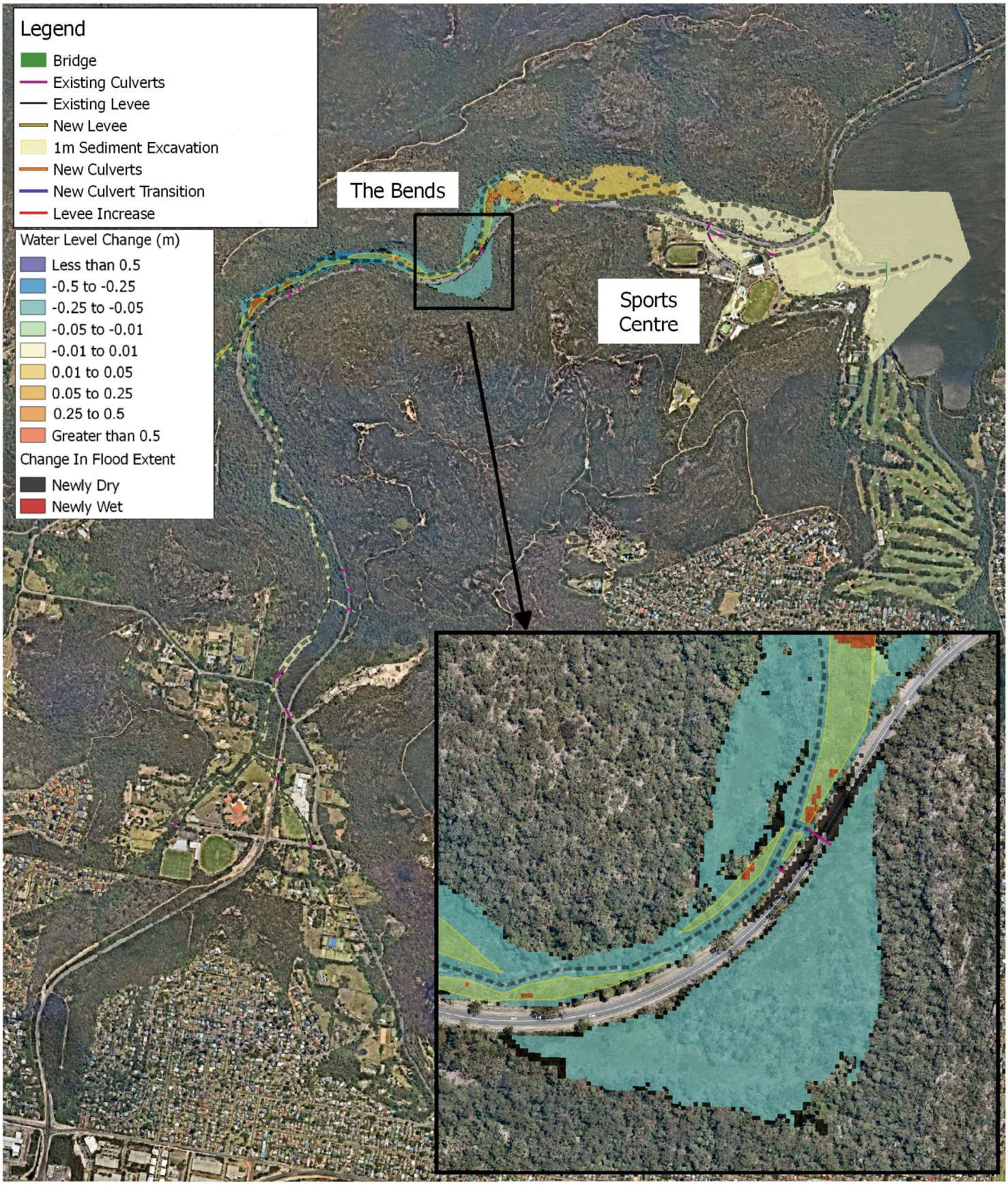

Title: Option B5 - Flood Impacts - 4 EY

Figure: G17

Rev: 1

Project: Wakehurst Parkway- Options Analysis

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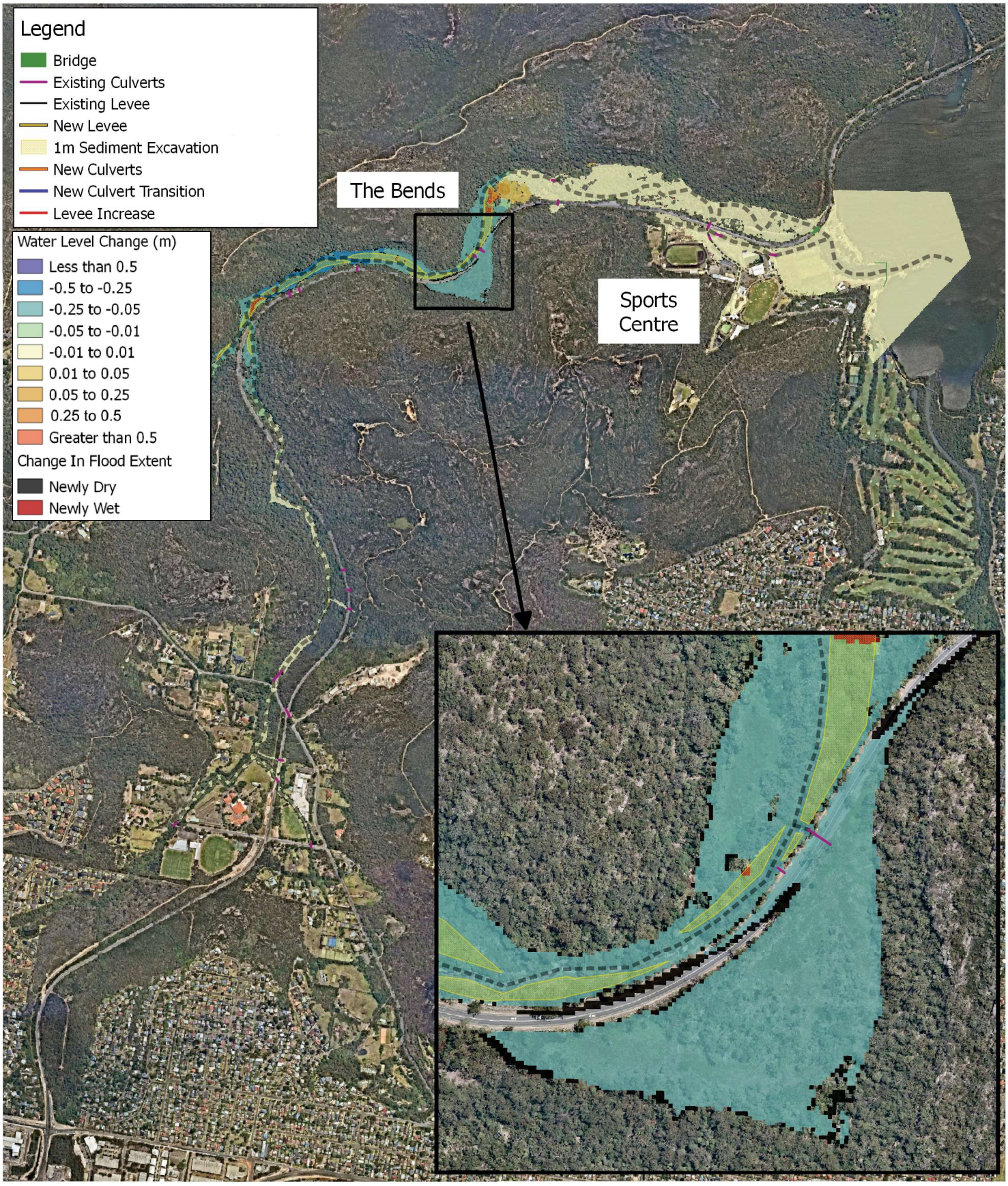

Title: Option B5 - Flood Impacts - 2 EY

Figure: G18

Rev: 1

Project: Wakehurst Parkway- Options Analysis

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Main Map Only

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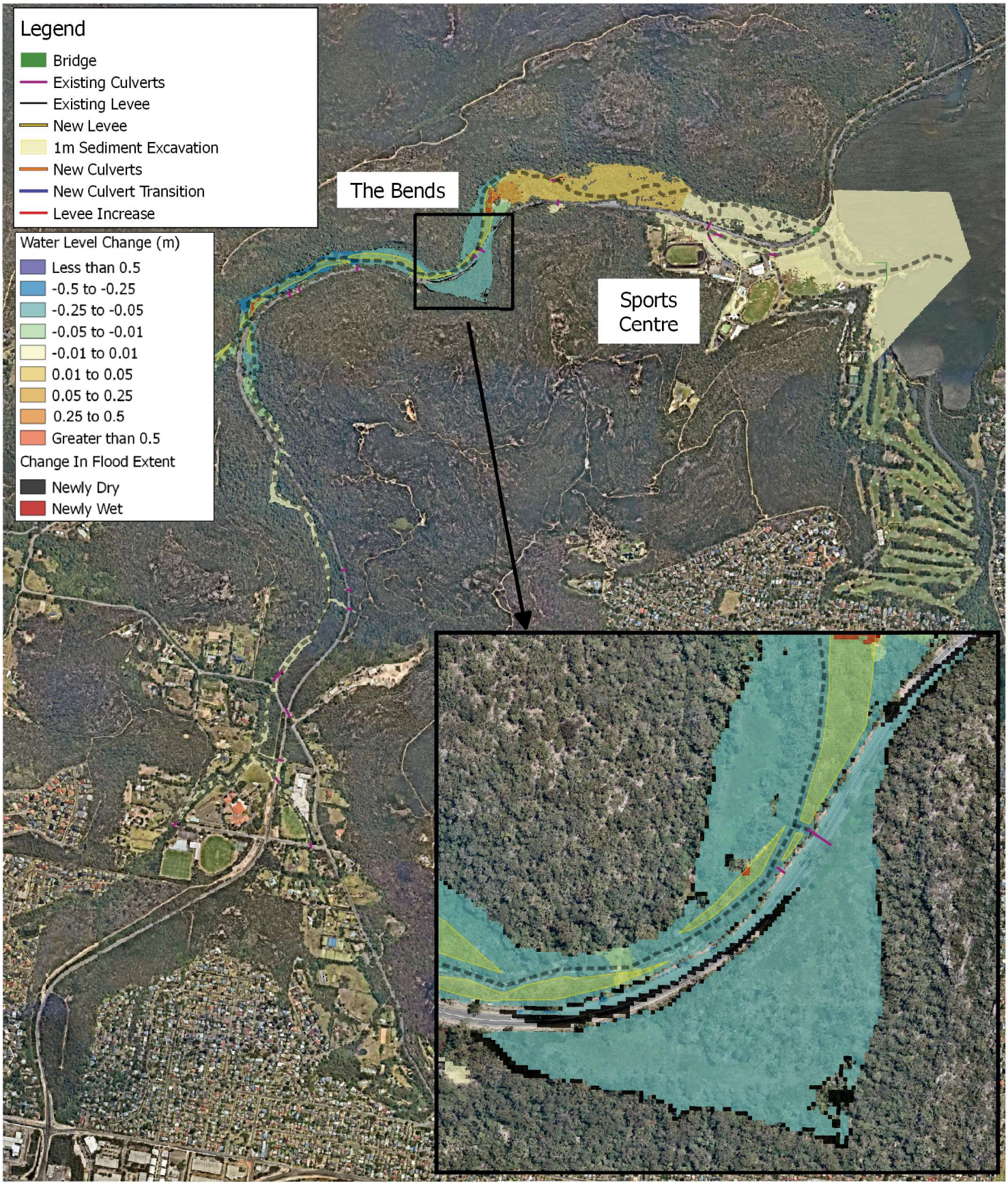

Title: Option B5 - Flood Impacts - 1 EY

Figure: G19

Rev: 1

Project: Wakehurst Parkway- Options Analysis

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Main Map Only

TUFLOW ID: WP_()_GPU_Po8_014

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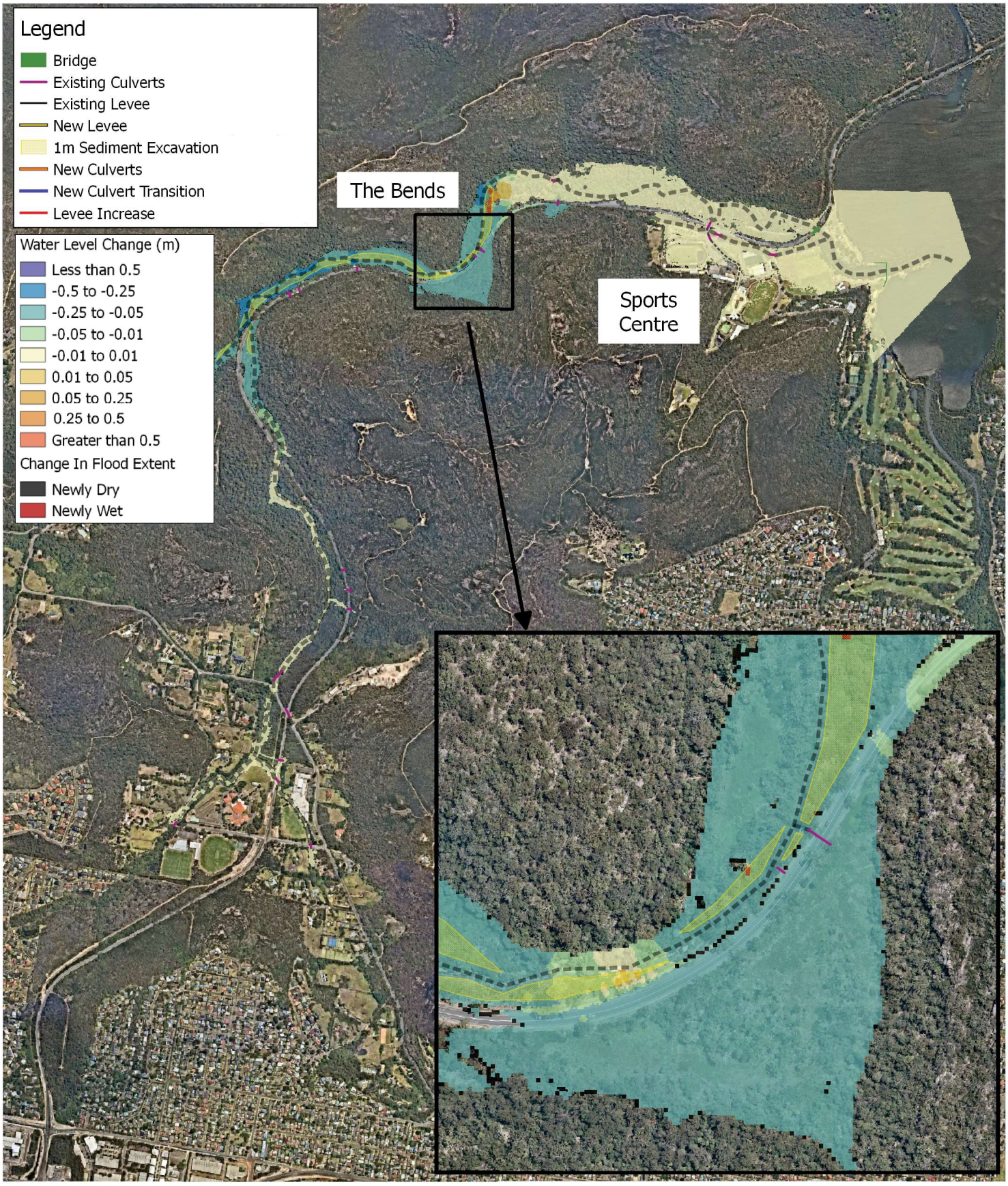

Title: Option B5 - Flood Impacts - 0.5 EY

Figure: G20

Rev: 1

Project: Wakehurst Parkway- Options Analysis

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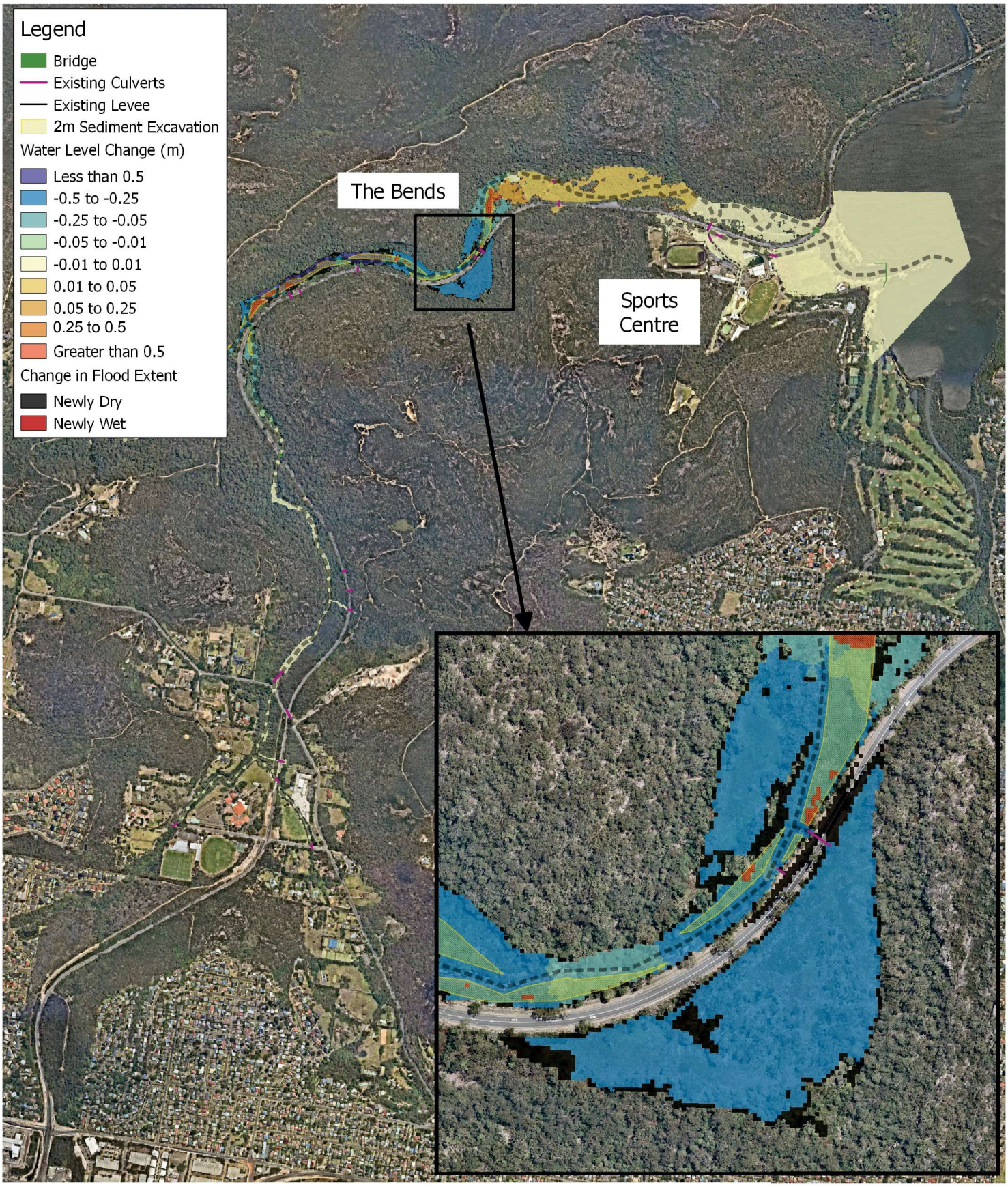

Title: Option B6 - Flood Impacts - 4 EY

Figure: G21

Rev: 1

Project: Wakehurst Parkway- Options Analysis

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Main Map Only

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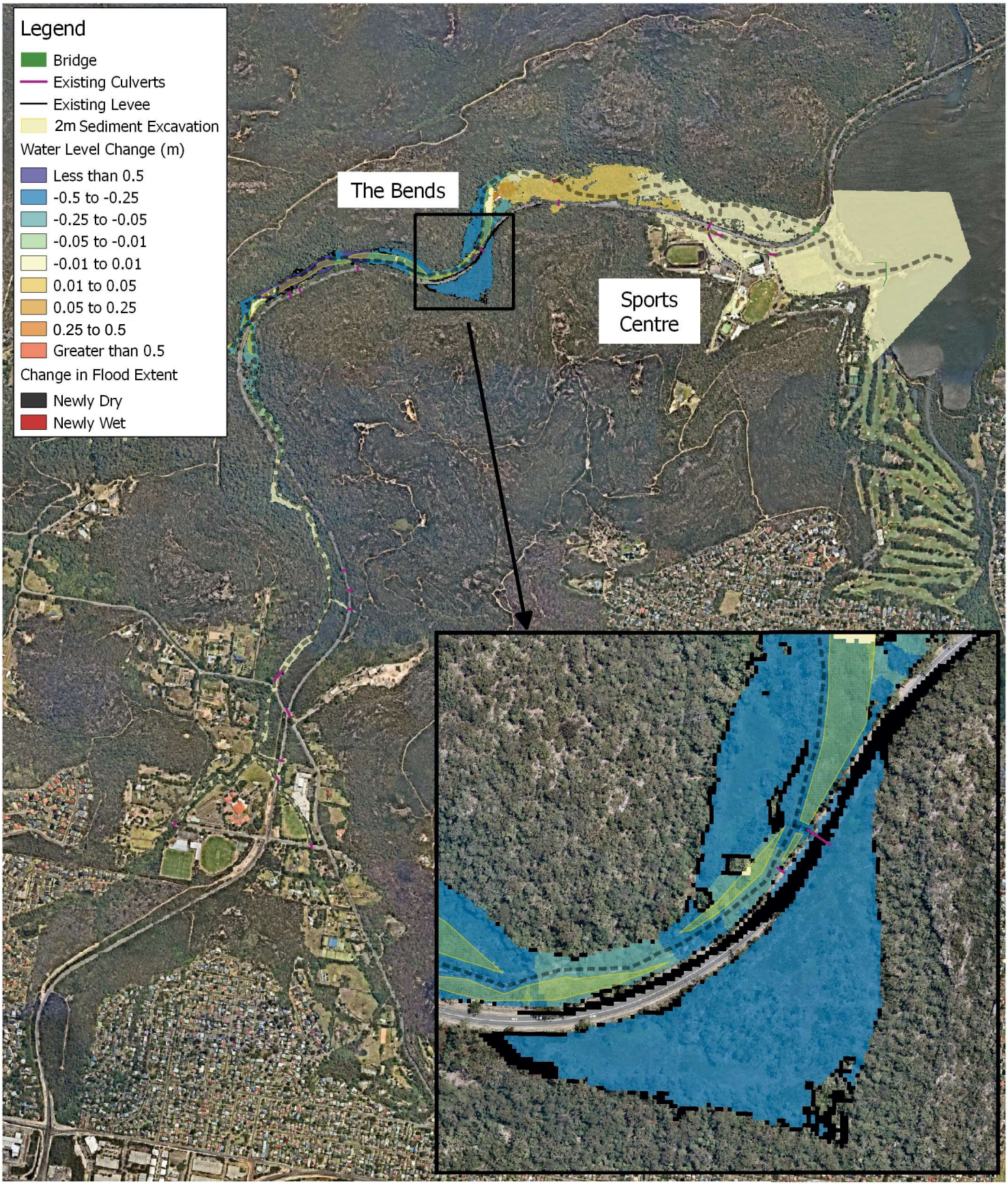

Title: Option B6 - Flood Impacts - 2 EY

Figure: G22

Rev: 1

Project: Wakehurst Parkway- Options Analysis

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Main Map Only

TUFLOW ID: FWP_()_GPU_Po9_014

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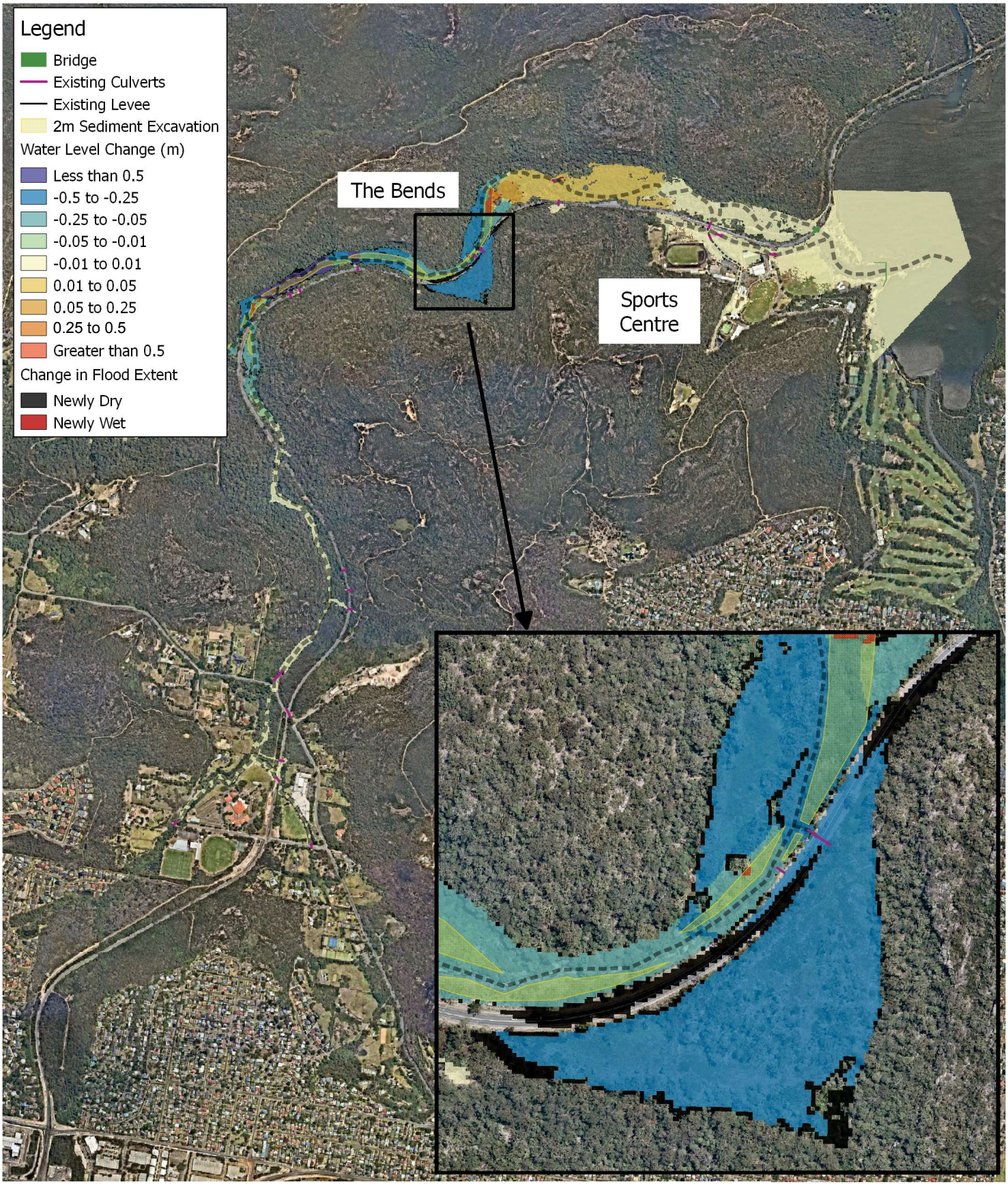

Title:Option B6 - Flood Impacts - 1 EY

Figure: G23

Rev: 1

Project: Wakehurst Parkway- Options Analysis

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TUFLOW ID: WP_()_GPU_Po9_014

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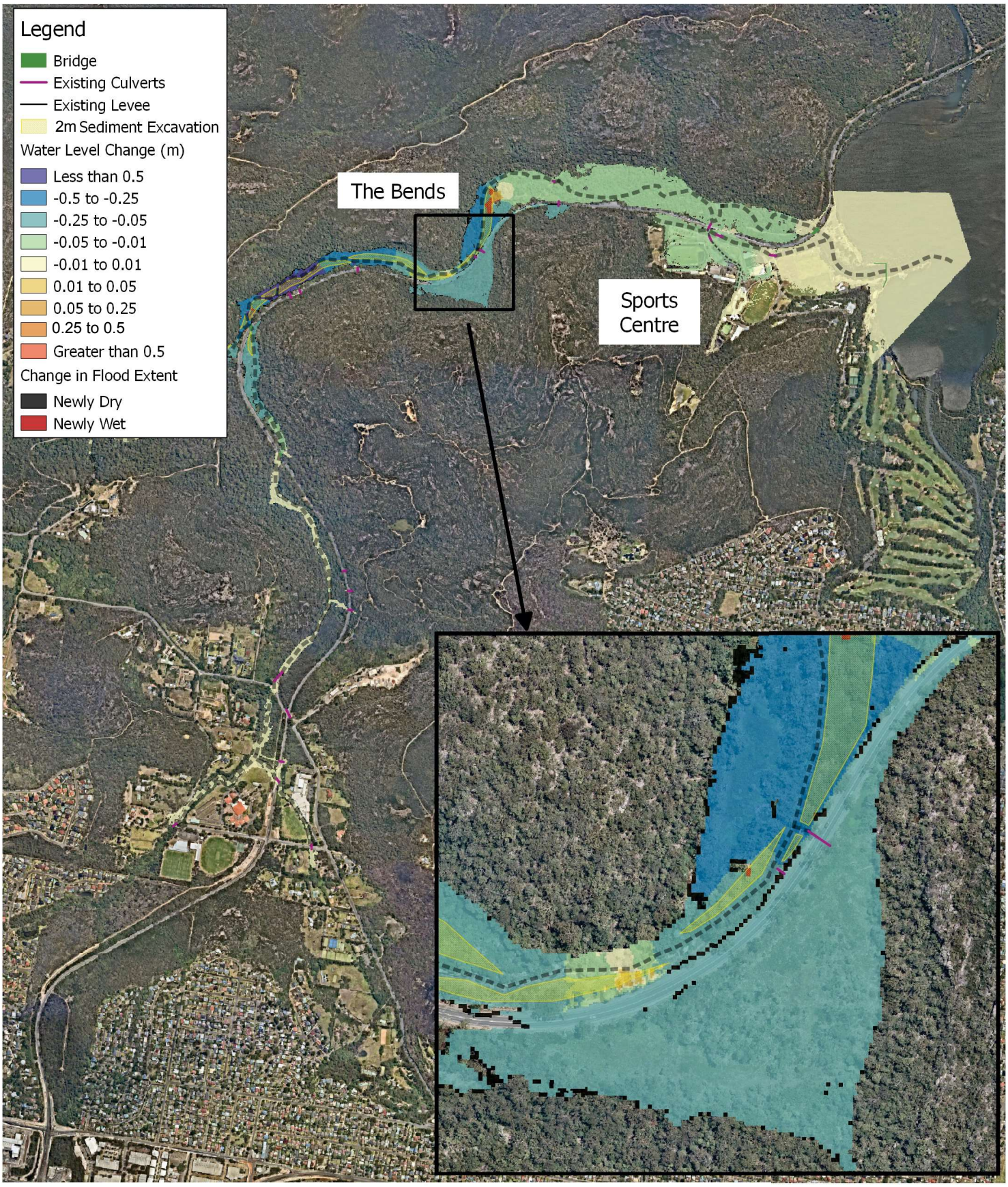

Title: Option B6 - Flood Impacts - 0.5 EY

Figure: G24

Rev: 1

Project: Wakehurst Parkway- Options Analysis

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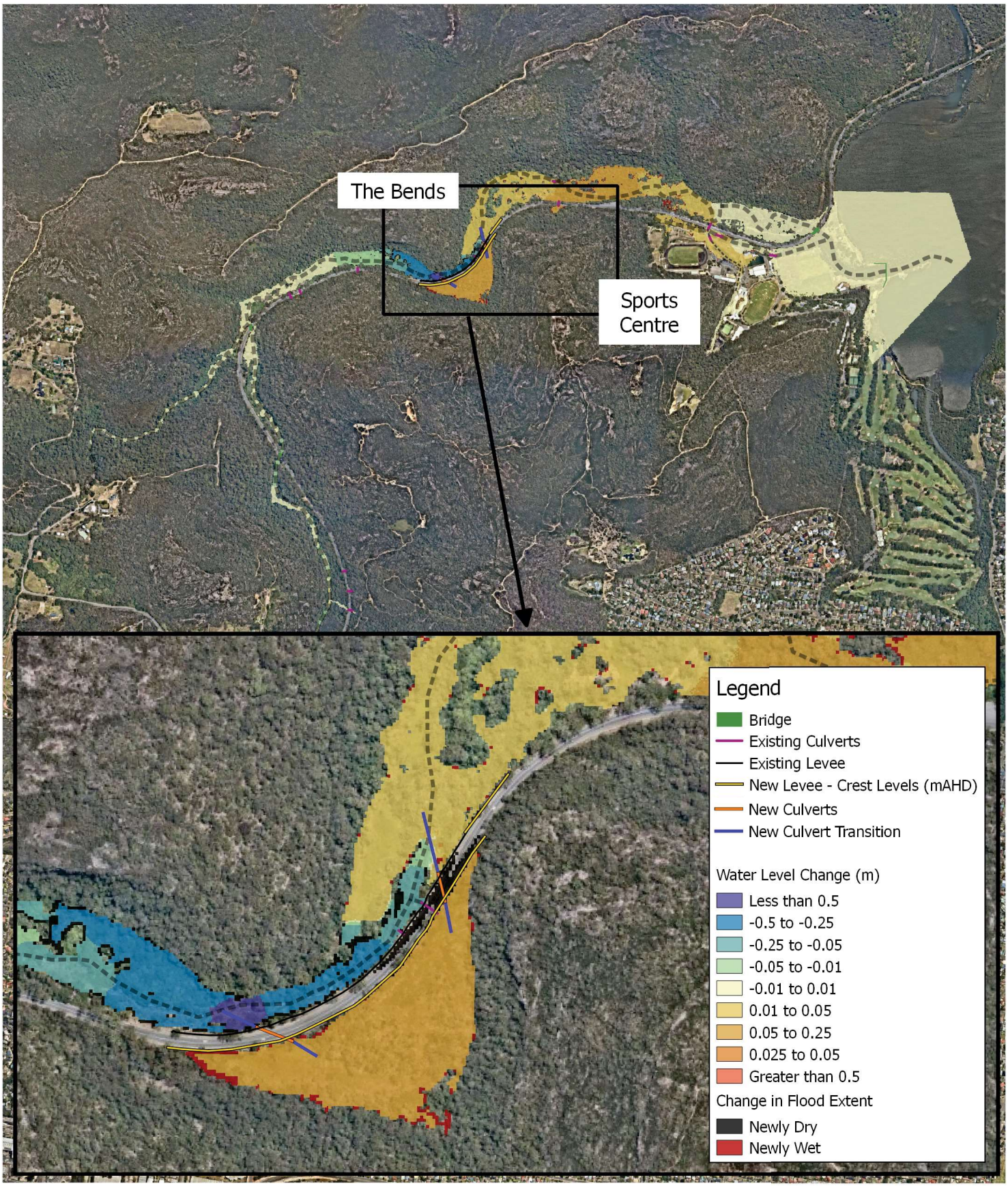

Title: Option B7 - Flood Impacts - 4 EY

Figure: G25

Rev: 1

Project: Wakehurst Parkway- Options Analysis

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TUFLOW ID: P15_018

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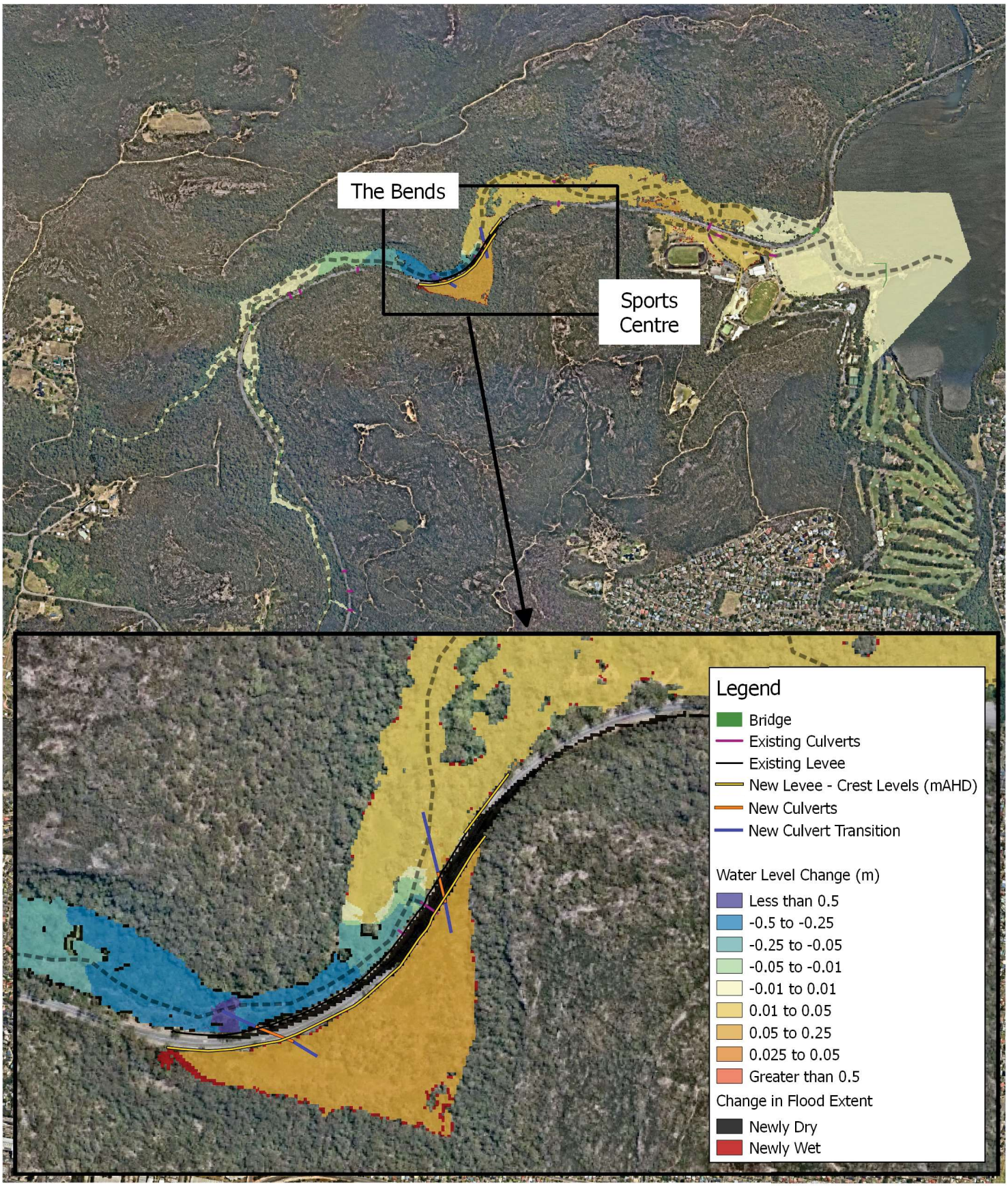

Title: Option B7 - Flood Impacts - 2 EY

Figure: G26

Rev: 1

Project: Wakehurst Parkway- Options Analysis

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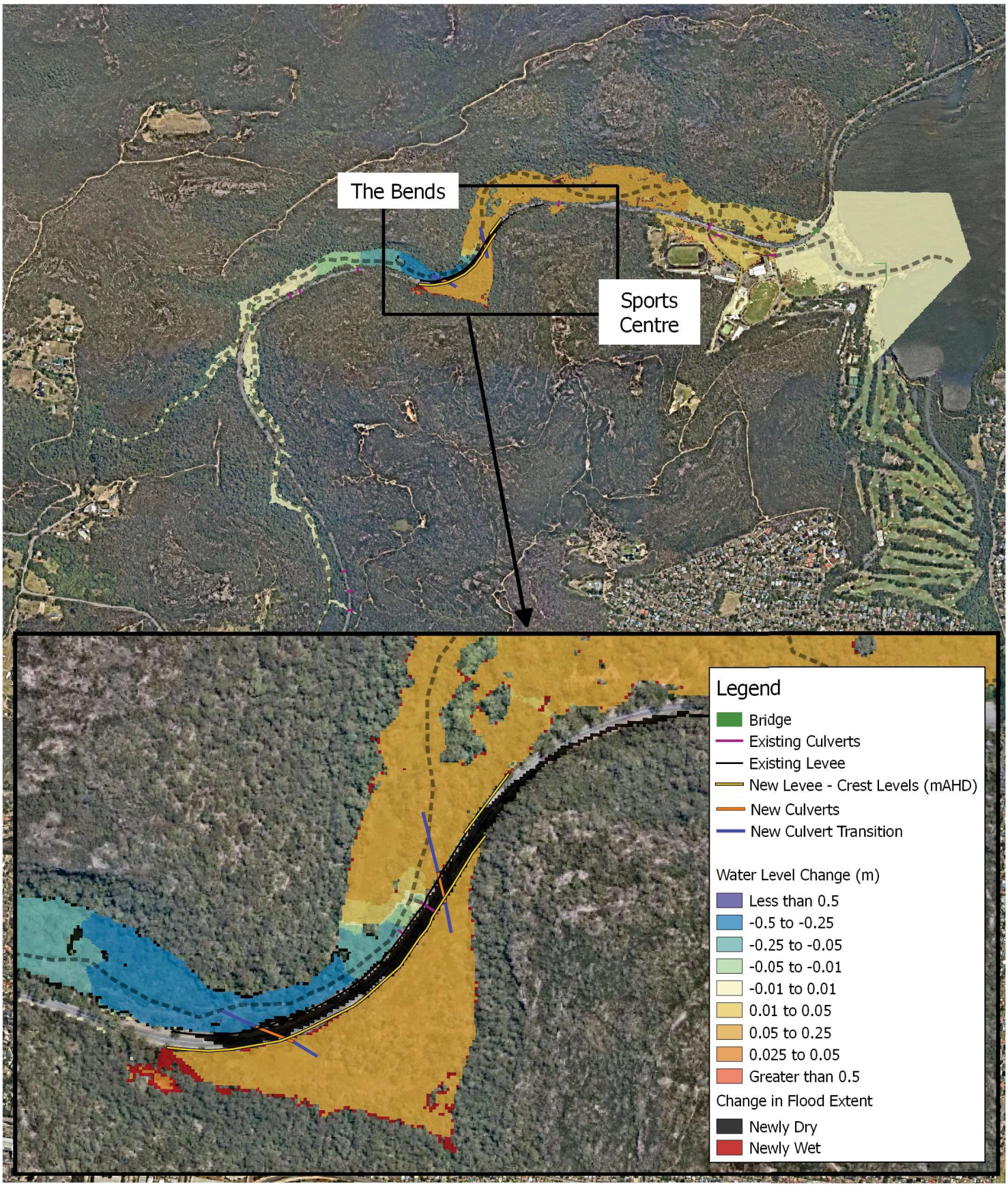

Title: Option B7 - Flood Impacts - 1 EY

Figure:	Rev:
G27	1

Project: Wakehurst Parkway- Options Analysis

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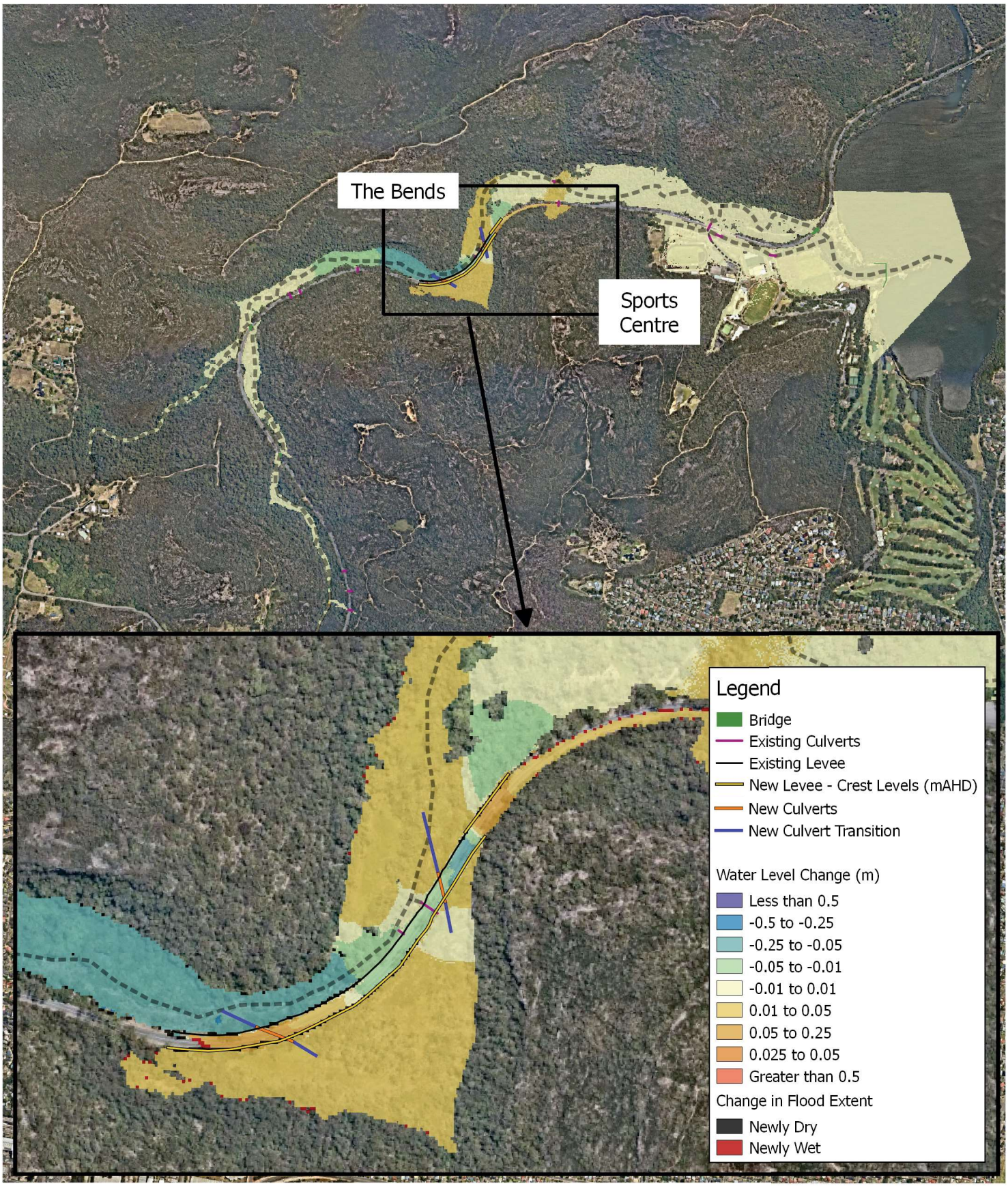

Title: Option B7 - Flood Impacts - 0.5 EY

Figure: G28

Rev: 1

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Main Map Only

TUFLOW ID: P15_018

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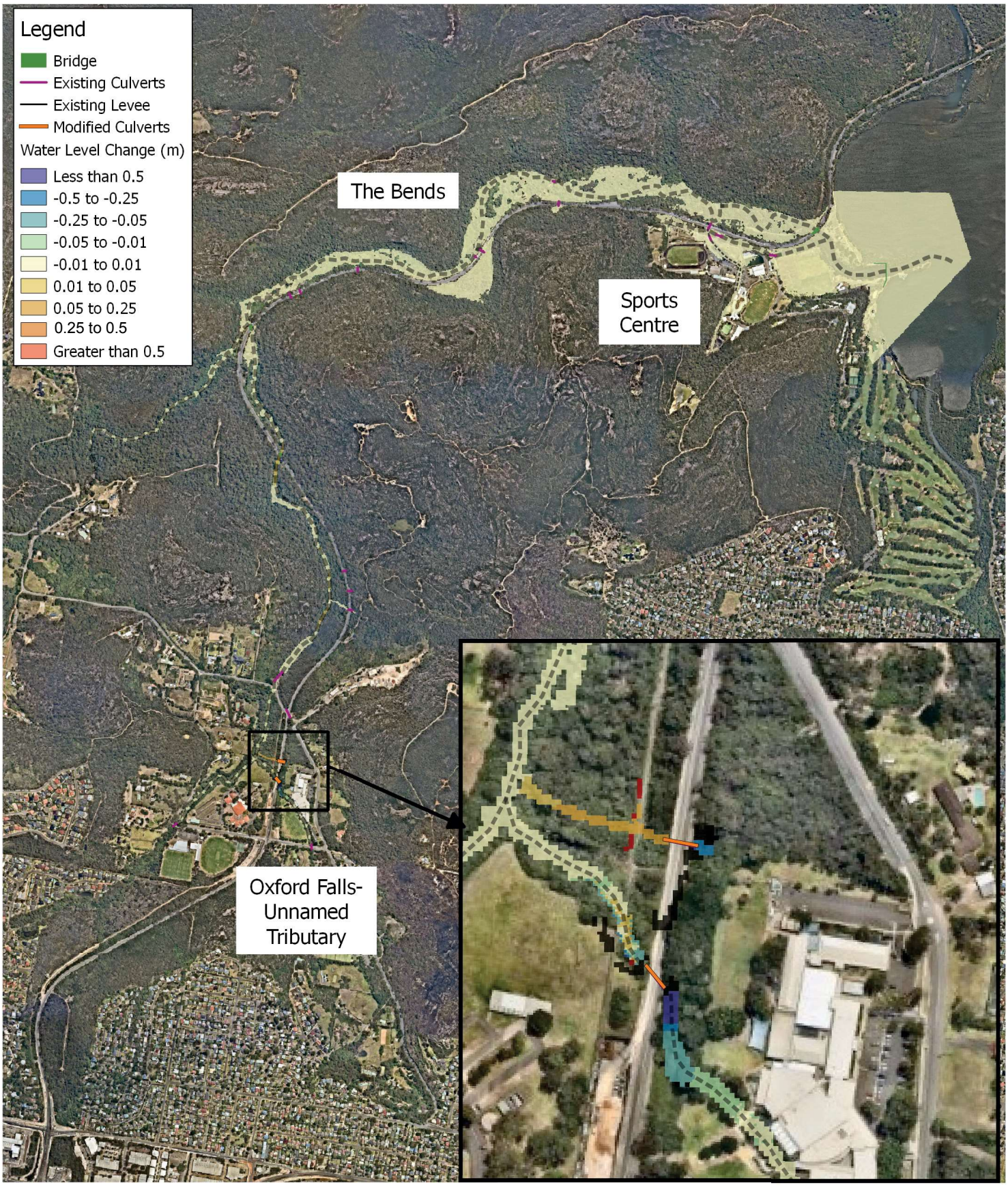

Title:Option O1 -Oxford Falls- Flood Impacts - 4 EY

Figure: G29

Rev: 1

Project: Wakehurst Parkway- Options Analysis

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Main Map Only

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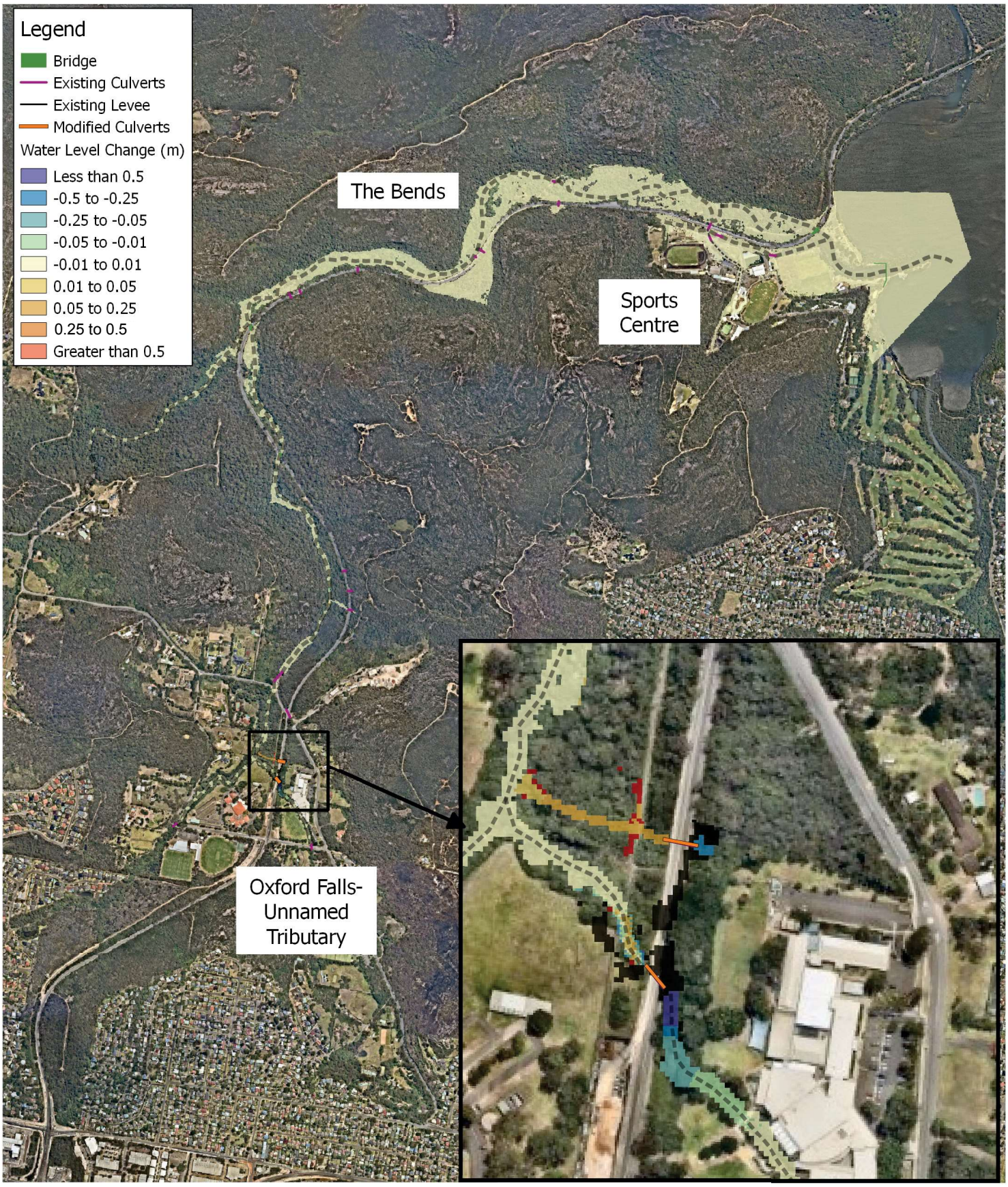

Title: Option O1 - Oxford Falls - Flood Impacts - 2 EY

Figure: G30

Rev: 1

Project: Wakehurst Parkway- Options Analysis

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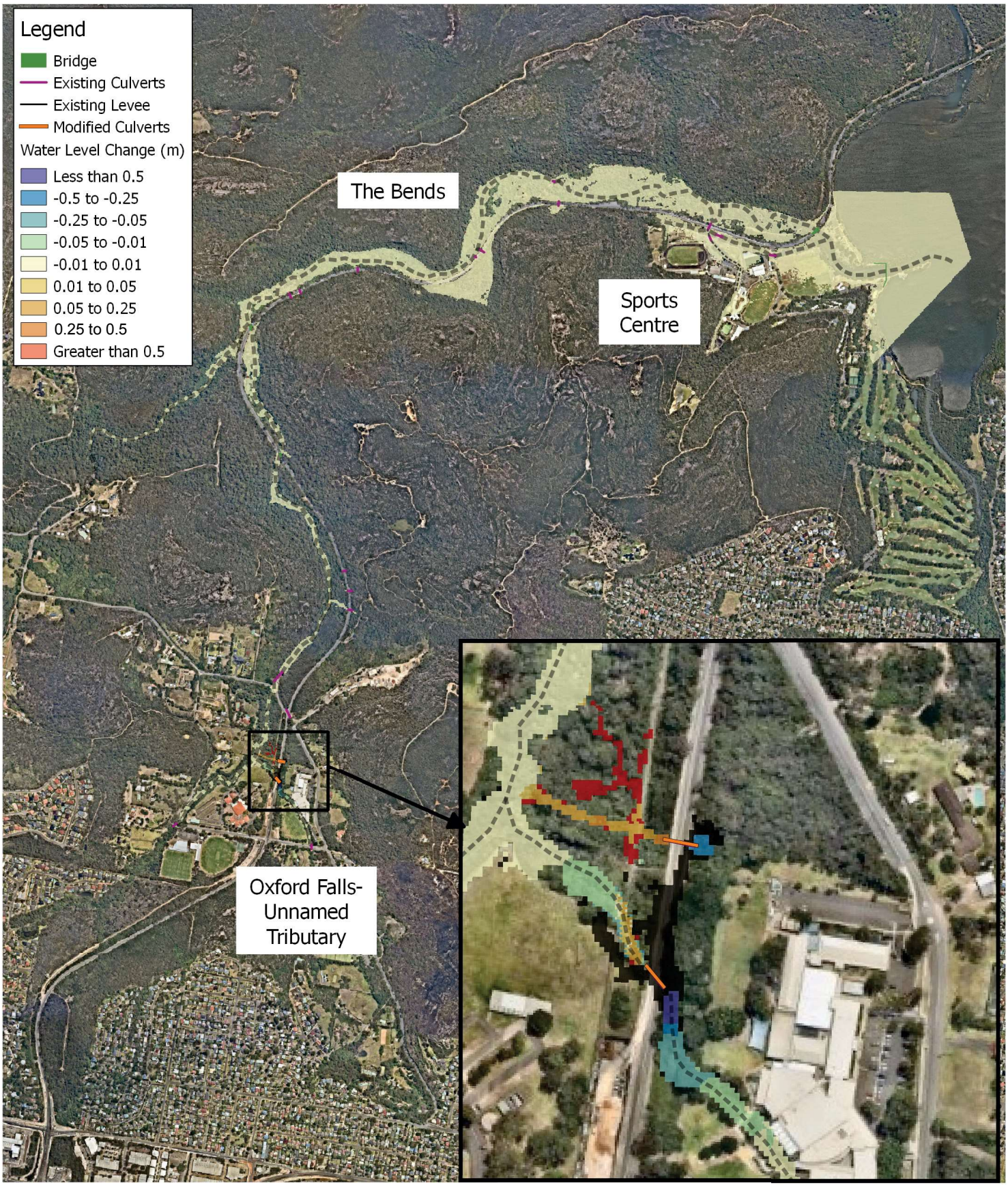

Title: Option O1 -Oxford Falls- Flood Impacts - 1 EY

Figure: G31

Rev: 1

Project: Wakehurst Parkway- Options Analysis

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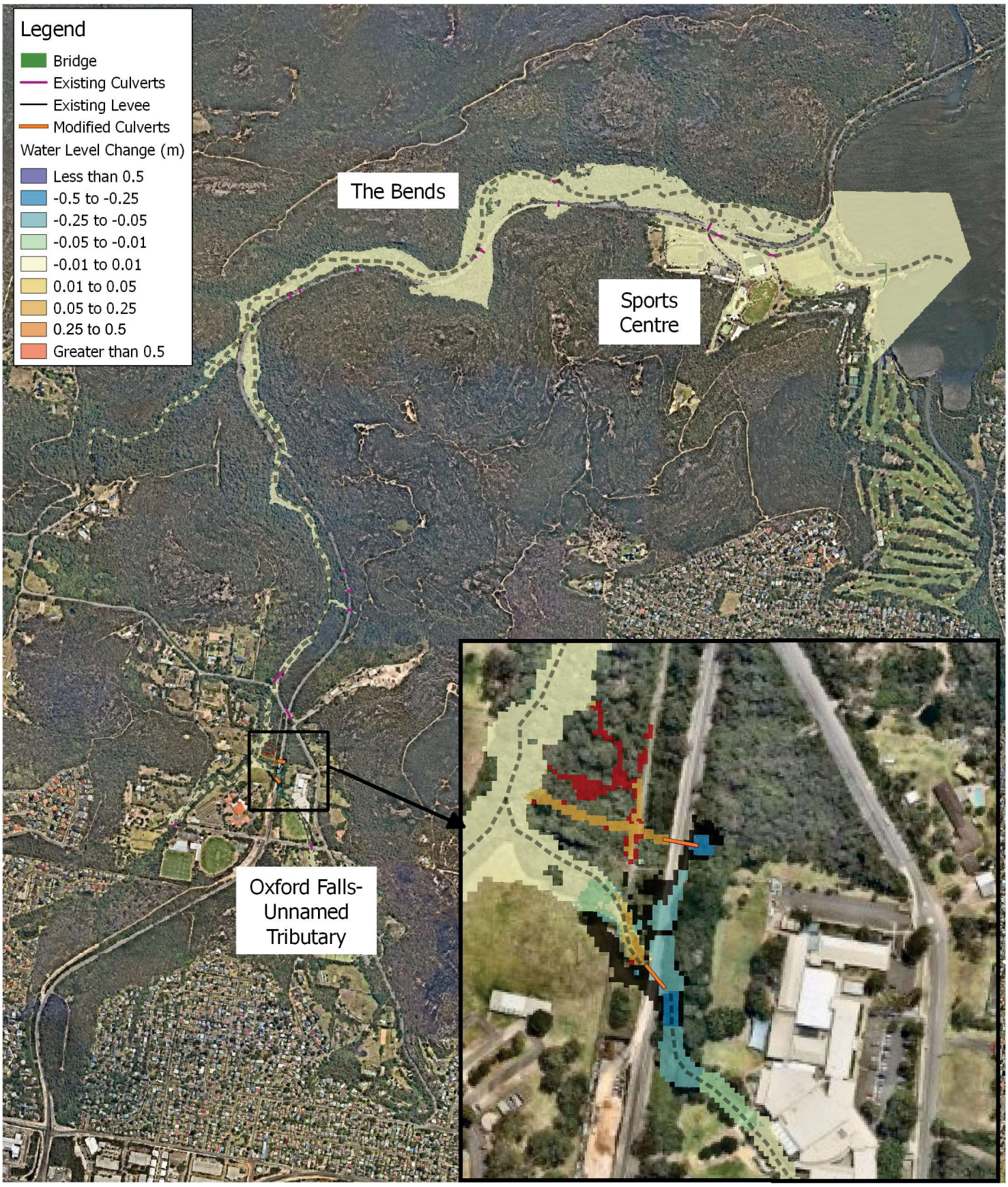

Title: Option O1 - Oxford Falls - Flood Impacts - 0.5 EY

Figure: G32

Rev: 1

Project: Wakehurst Parkway- Options Analysis

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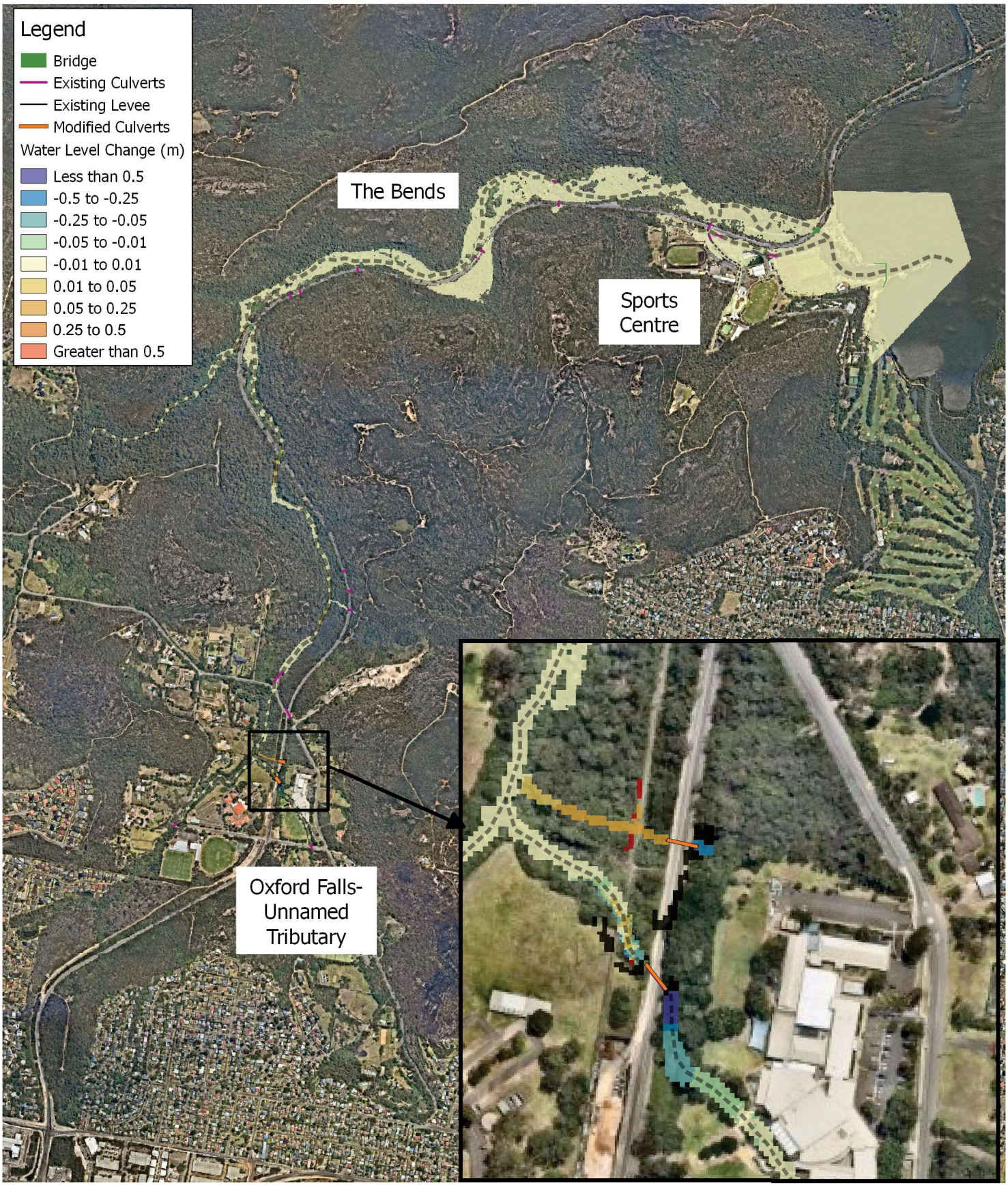

Title: Option O2 - Oxford Falls - Flood Impacts - 4 EY

Figure: G33

Rev: 1

Project: Wakehurst Parkway- Options Analysis

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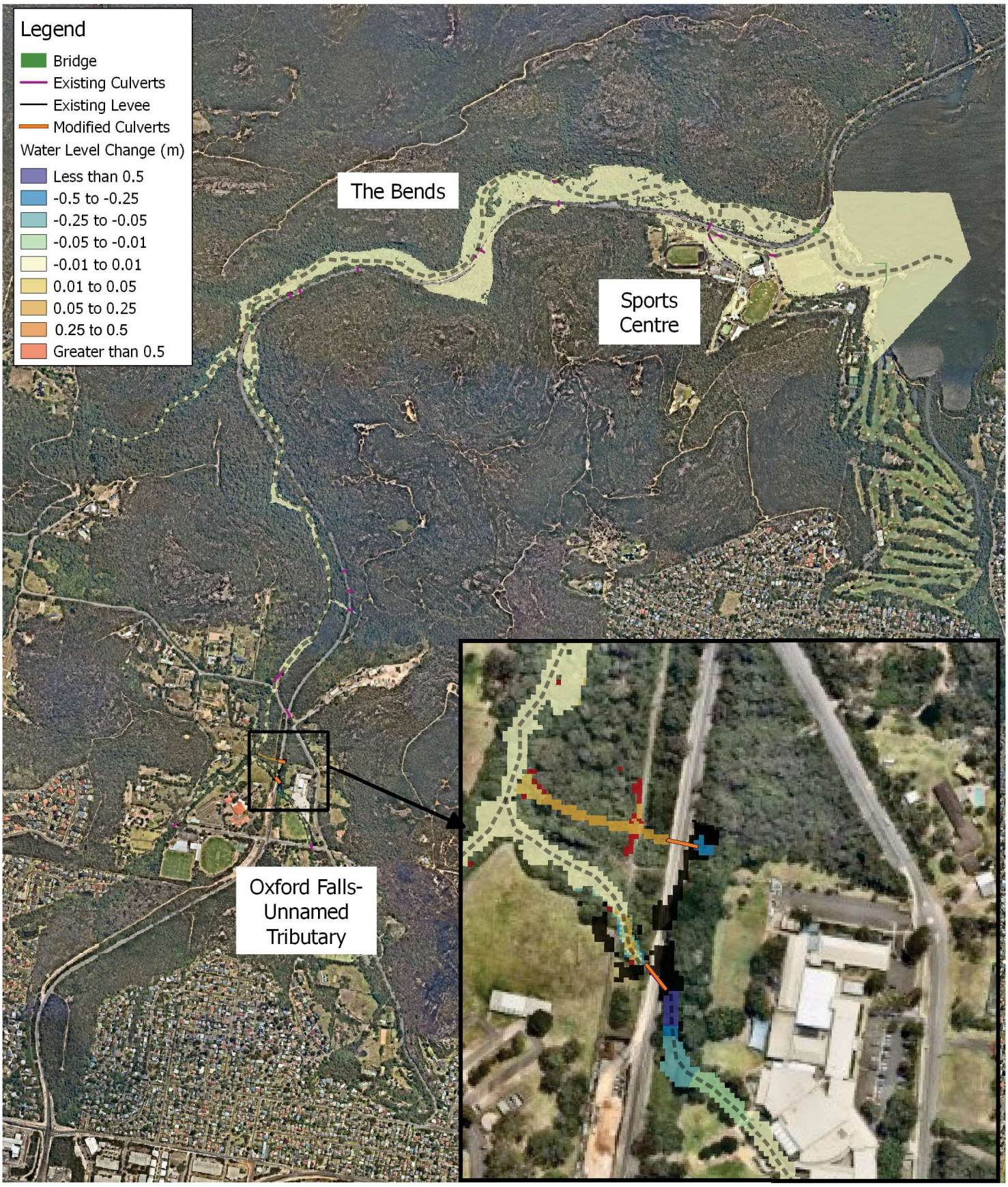

Title: Option O2 - Oxford Falls - Flood Impacts - 2 EY

Figure: G34

Rev: 1

Project: Wakehurst Parkway- Options Analysis

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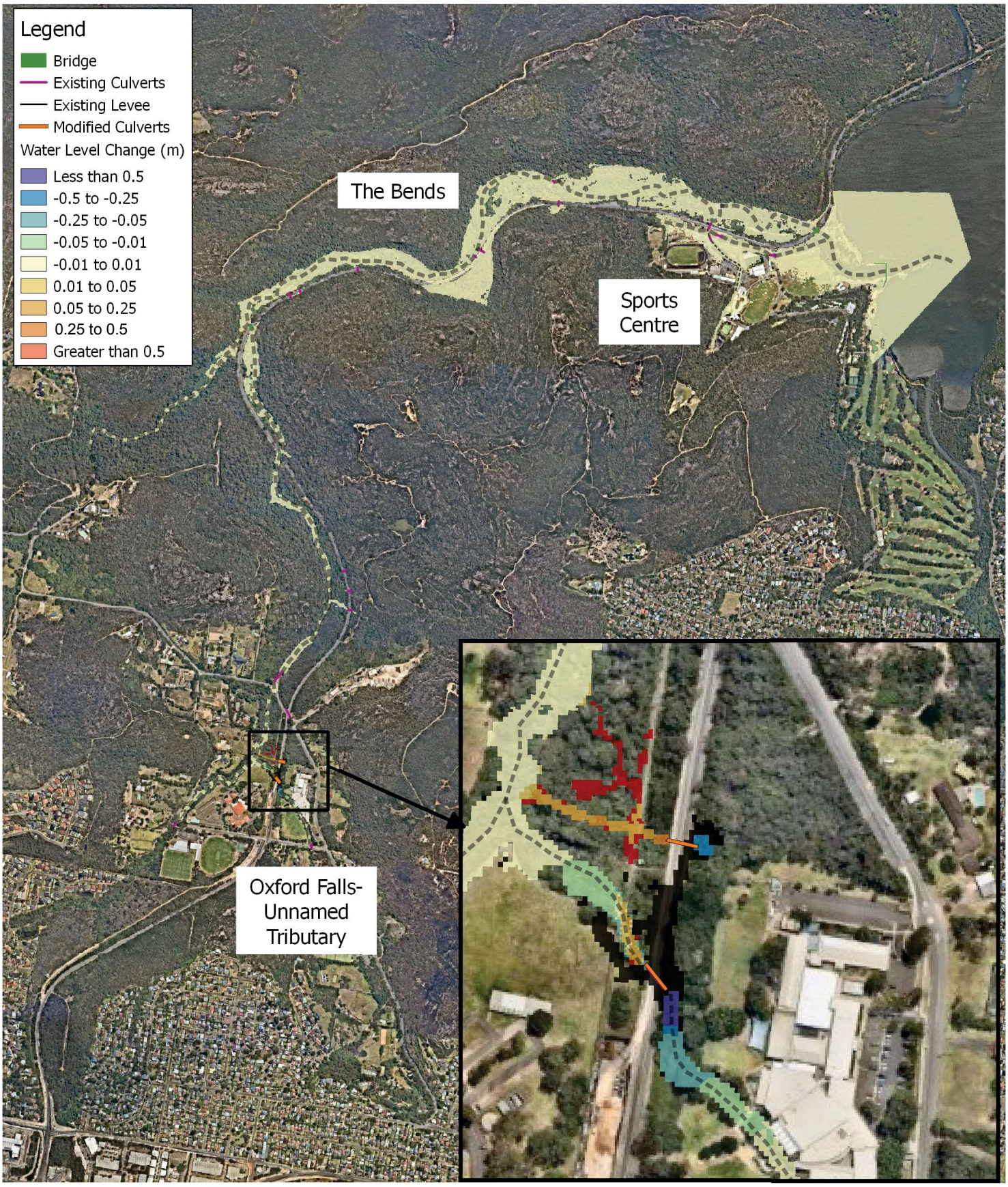

Title: Option O2 - Oxford Falls - Flood Impacts - 1 EY

Figure: G35

Rev: 1

Project: Wakehurst Parkway- Options Analysis

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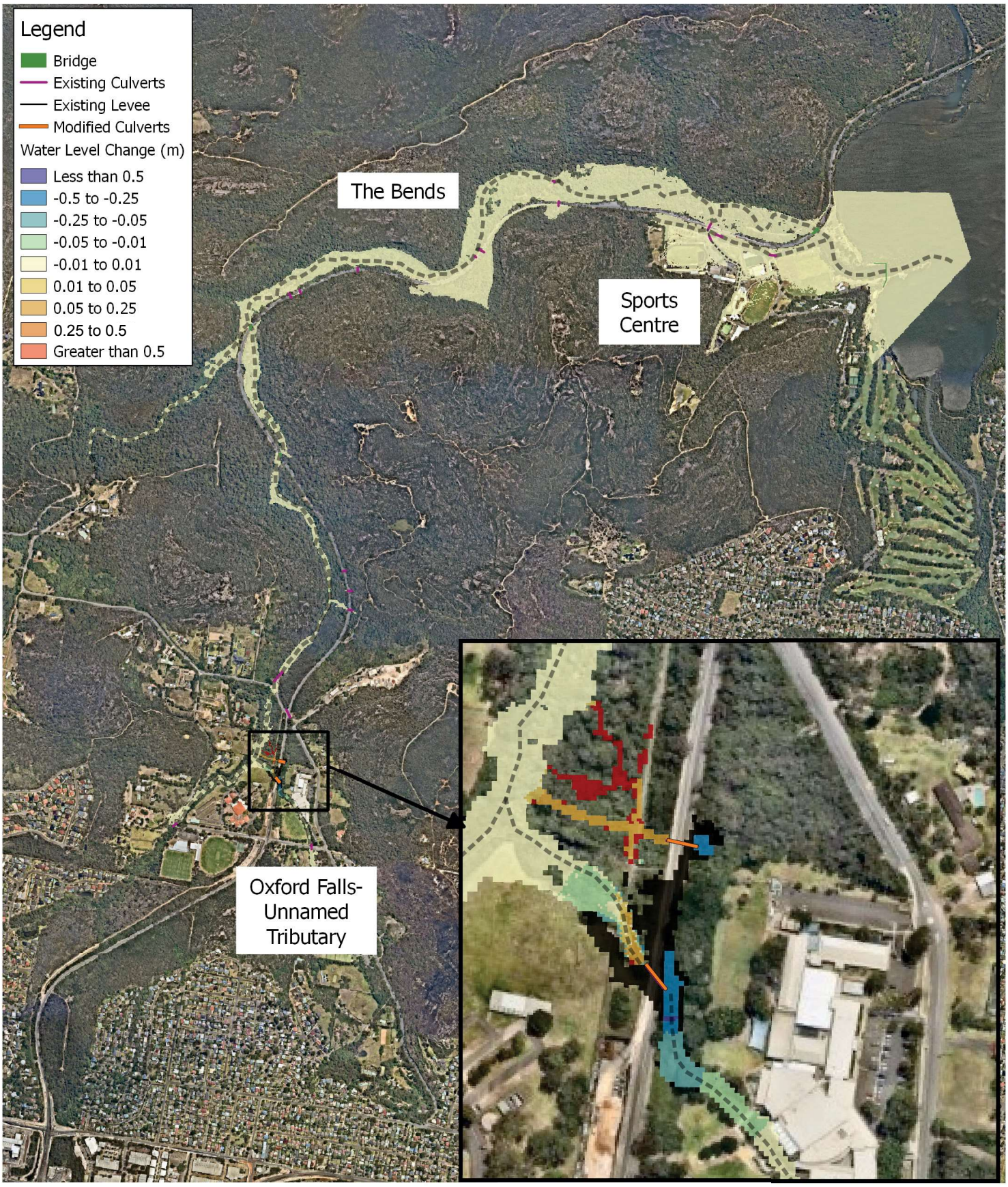

Title: Option O2 - Oxford Falls - Flood Impacts - 0.5 EY

Figure: G36

Rev: 1

Project: Wakehurst Parkway- Options Analysis

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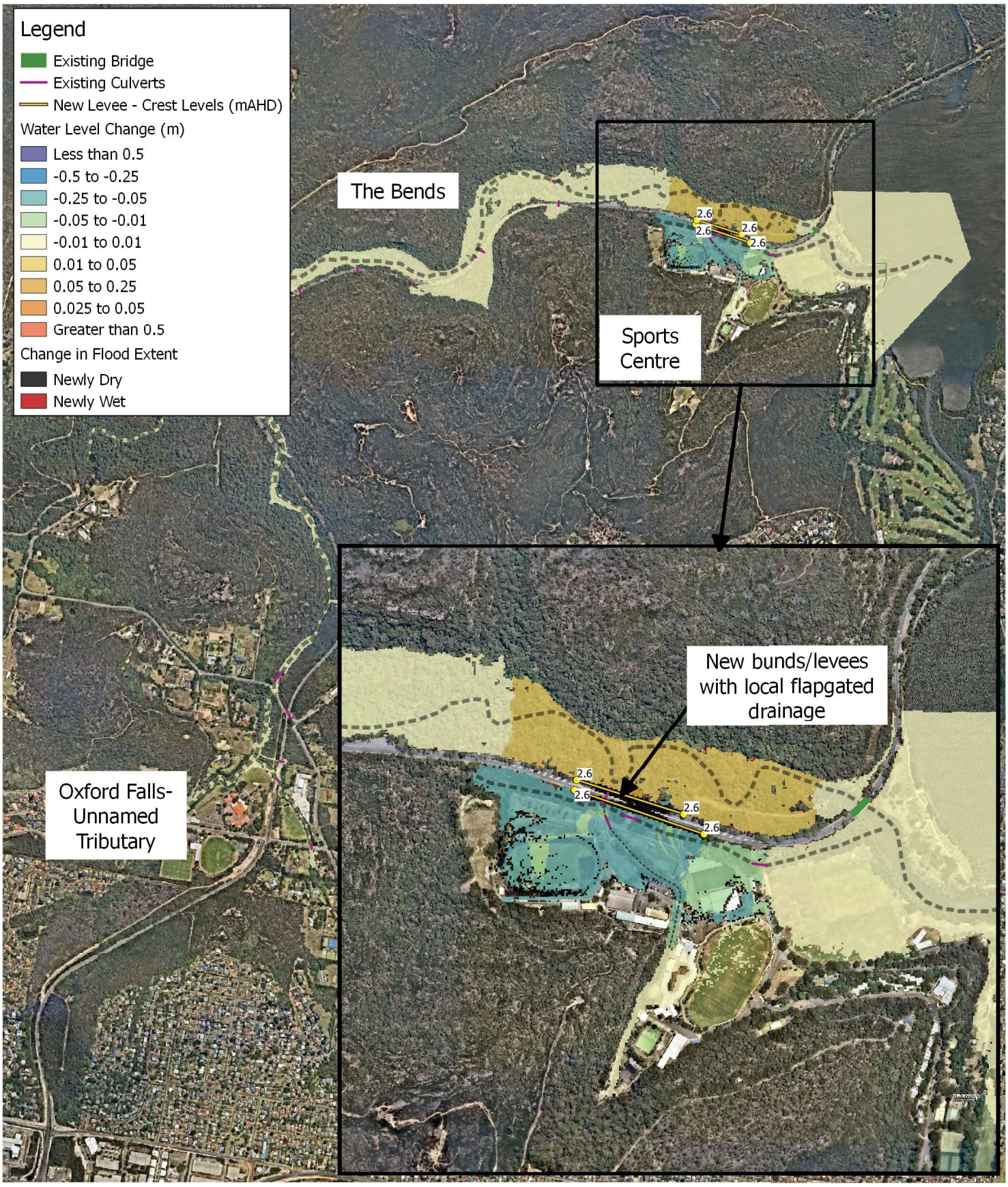

Title: Option S1 - Flood Impacts - 0.5 EY

Figure: G37

Rev: 1

Project: Wakehurst Parkway- Options Analysis

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APPENDIX L – Cost Estimates

DRAFT

Preliminary Budget Estimate

4/4/2019 **2019.024 Preliminary Budget Estimate Option B1 Rev 2**

for **Royal HaskoningDHV**

Preliminary Budget Estimate
Option B1 - New Levee

Description	Quantity	Unit	Rate	Markup	Total
DIRECT COSTS					**$1,607,203.28**
PRELIMINARIES					**$403,331.85**
Project Management & Supervision					**$154,660.00**
Project Manager - 50%	11	Week	$4,750.00		$52,250.00
Site Engineer - 50%	11	Week	$2,850.00		$31,350.00
Site Supervisor - 100%	22	Week	$3,230.00		$71,060.00
Site Compound, Hoardings, Accommodation & Amenities					**$29,650.18**
Construct temporary handstand	50	m2	$15.00		$750.00
Temporary Fence to Compound	30	m	$15.00		$450.00
Hire Crib Shed x 1	22	Week	$132.02		$2,904.44
Hire Ablution	22	Week	$99.12		$2,180.64
Holding Tank to last	22	Week	$127.05		$2,795.10
Hire Storage Container x 1	22	Week	$35.00		$770.00
Hire Generator including fuel	22	Week	$900.00		$19,800.00
Mobilisation & Demobilisation					**$16,900.00**
Mobilisation:					**$12,100.00**
Mobilise Crib Shed	1	No.	$750.00		$750.00
Mobilise Ablution & Storage Tank	1	No.	$750.00		$750.00
Mobilise Storage Container	1	No.	$250.00		$250.00
Mobilise Generator	1	No.	$400.00		$400.00
Connection of Electrical Services to compound	1	Item	$2,500.00		$2,500.00
Connection of Potable Water to compound	1	Item	$1,800.00		$1,800.00
Mobilise Plant	1	Item	$5,650.00		$5,650.00
Demobilisation:					**$4,800.00**

Description	Quantity	Unit	Rate	Markup	Total
Demobilise Crib Shed	1	No.	$750.00		$750.00
Demobilise Ablution & Storage Tank	1	No.	$750.00		$750.00
Demobilise Storage Container	1	No.	$250.00		$250.00
Disconnection of Electrical Services to compound	1	Item	$1,500.00		$1,500.00
Disconnection of Potable Water from compound	1	Item	$750.00		$750.00
Demobilise Plant	1	Item	$800.00		$800.00
Site OHS Supervision & Allowances					**$17,812.00**
Site OH& S Representative - 20%	4.4	Week	$3,230.00		$14,212.00
Site Induction (Allow 20 Workers)	20	Hr	$70.00		$1,400.00
PPE Equipment	1	Item	$2,200.00		$2,200.00
Site Survey & WAE					**$6,760.00**
Site Services Survey	1	Item	$2,500.00		$2,500.00
Site Survey & Setout	1	Item	$1,760.00		$1,760.00
Survey Crew Conformance	1	Item	$1,760.00		$1,760.00
Works As Executed	1	Item	$740.00		$740.00
Existing Services Location					**$2,585.00**
Services Locator	4	Hr	$95.00		$380.00
Non-Destuctive Digging Truck	4	Hr	$280.00		$1,120.00
Labourer x 2	8	Hr	$55.00		$440.00
Skid Steer Loader	5	Hr	$115.00		$575.00
Sand for Backfill	2	t	$35.00		$70.00
Environmental Monitoring					**$33,250.00**
Allowance for supervision of Ecologist during works (1 day per week)	5	Week	$6,650.00		$33,250.00
Erosion & Sediment Control					**$15,738.00**
Shaker Grid	1	No.			EXCL
Sediment Control Fence including maintenance	750	m	$13.00		$9,750.00
Hay Bale Check Dam (3 Bale)	12	No.	$124.00		$1,488.00
Allowance for water quality testing (Waterway)	6	Months	$750.00		$4,500.00
Construct Sediment Control basin - EXCL.	1	Item			EXCL
Traffic Management					**$105,606.67**
Traffic Management Plan	2	No.	$760.00		$1,520.00
VMS board (2No.)	44	Week	$460.00		$20,240.00
Mobilise concrete jersey kerb	500	m	$18.33		$9,166.67
Hire concrete jersey kerb	11,000	m/week	$3.20		$35,163.33
Demobilise concrete jersey kerb	500	m	$18.33		$9,166.67
Traffic Control Crew (3 Man)	13	Day	$1,950.00		$25,350.00

Description	Quantity	Unit	Rate	Markup	Total
Allowance for Misc. Signage & Barricades	1	Item	$5,000.00		$5,000.00
Geotech Supervision & Testing					**$10,650.00**
Stripped Surface Inspections (3No.)	18	Hr	$225.00		$4,050.00
Mobilsation of Geotechnician	8	No.	$100.00		$800.00
Density Tests Road Pavement	30	No.	$110.00		$3,300.00
Geotech Final Report	1	Item	$2,500.00		$2,500.00
Site Office Expenses					**$6,820.00**
WIFI/Internet	22	Week	$25.00		$550.00
Water Supply	22	Week	$60.00		$1,320.00
Rubbish Disposal	22	Week	$25.00		$550.00
Office & Amenity Cleaning	22	Week	$200.00		$4,400.00
Small Tools & Equipment	1	Item	$1,100.00		$1,100.00
Contract Insurances & Security					**$1,800.00**
Contractors Work Insurance	1	Item			INCL
Public & Products Liability Insurance	1	Item			INCL
Professional Indemnity Insurance	1	Item			INCL
Workers Compensation Insurance	1	Item			INCL
Security (2 x 5% Bank Guarantees)	1	Item	$1,800.00		$1,800.00
CLEARING					**$67,495.96**
Clear, grub & remove from site the following trees:					**$59,000.00**
Small Tree	8	No.	$1,500.00		$12,000.00
Medium Tree	9	No.	$2,500.00		$22,500.00
Large Tree	7	No.	$3,500.00		$24,500.00
Clear & grub sundry vegetation	1,251	m2	$6.79		$8,495.96
DEMOLITION					**$36,128.68**
Sawcut existing AC pavement not exceeding 100 thick	430	m	$14.75		$6,342.50
Demolish & remove the following from site:					**$29,786.18**
Sealed shoulder, not exceeding 200 thick	425	m2	$47.51		$20,191.18
Chainmesh fence	435	m	$15.00		$6,525.00
Double gate	1	No.	$300.00		$300.00
Service box & post at gate	1	Item	$2,500.00		$2,500.00
Road signs	2	No.	$75.00		$150.00
Guideposts	8	No.	$15.00		$120.00
EARTHWORKS					**$51,959.14**
Strip topsoil (nominal 150 thick), windrow adjacent to work area	850	m2	$2.50		$2,125.00
Allowance to supply & place imported Select material to shoulder	100	m3	$156.54		$15,654.06

Description	Quantity	Unit	Rate	Markup	Total
Detailed excavation/boxout for Levee foundation (spoil to be lost on batter)	319	m3	$91.50		$29,188.50
Trim batters	850	m2	$3.20		$2,720.00
Spread on site topsoil to batters not exceeding 300 thick	128	m3	$17.75		$2,271.58
ROAD PAVEMENT					**$88,423.28**
Sealed Shoulder:					**$85,687.73**
Trim & compact road subgrade	425	m2	$14.00		$5,950.00
Allowance to remove & replace unsuitable material with imported Select (10% of trim area x 300 thick)	13	m3	$253.83		$3,299.73
7mm primer seal	553	m2	$9.77		$5,403.50
200 thick AC14 wearing course (2 courses)	425	m2	$135.90		$57,757.50
Allow to key into existing pavement	425	m	$31.24		$13,277.00
Culvert Access Track:					**$2,735.55**
Allowance to construct gravel access track to existing culvert (1No.)	40	m2	$68.39		$2,735.55
LEVEE WALL					**$706,480.16**
Form, reinforce & pour concrete Levee foundation	281	m3	$891.82		$250,602.00
Ditto concrete Levee wall (nominal 1100 high x 700 thick overall)	184	m3	$2,473.52		$455,128.16
Extra Over last to offset & taper last	1	No.	$750.00		$750.00
STORMWATER					**$5,000.00**
Allowance for supply & installation of flapgate to existing culvert	1	No.	$5,000.00		$5,000.00
Extension of existing culvert - EXCL.	1	Item			EXCL
Subsoil drainage adjacent to Levee footing (1 side only) - EXCL.	1	Item			EXCL
SERVICES & UTILITIES					
Adjustments to existing services & utilities in road corridor - EXCL.	1	Item			EXCL
SIGNAGE & LINEMARKING					**$4,529.00**
Signage:					**$1,000.00**
Allowance for new road signage	4	No.	$250.00		$1,000.00
Linemarking:					**$3,529.00**
Mobilise linemarker	1	No.	$2,500.00		$2,500.00
Waterborne linemarking as detailed to the following:					**$697.50**
Line Type E1	465	m	$1.50		$697.50
Raised pavement markers	39	No.	$8.50		$331.50
FENCING & ROAD FURNITURE					**$28,745.00**

Description	Quantity	Unit	Rate	Markup	Total
1800 high galvanised chainmesh fence	465	m	$57.00		$26,505.00
Extra Over last for double gate including lock	1	Pair	$1,800.00		$1,800.00
Supply & install Guideposts	8	No.	$55.00		$440.00
LANDSCAPING & REMEDIATION					**$5,475.00**
Allowance for native seeding of topsoiled berms & batters	850	m2	$3.50		$2,975.00
Maintenance of last (12 months beyond practical completion)	1	Item	$2,500.00		$2,500.00
CONTRACTORS OVERJHEADS & MARGIN					**$209,635.21**
Allowance for Contractors Corporate Overheads & Margin (15%)	1	Item	$209,635.21		$209,635.21
INDIRECT COSTS					**$353,584.72**
CONTINGENCY					**$273,224.56**
Allowance for Design Development Contingency (7%)	1	Item	$112,504.23		$112,504.23
Allowance for Construction Contingency (10%)	1	Item	$160,720.33		$160,720.33
PROFESSIONAL FEES					**$64,288.13**
Allowance for Design Consultants Fees (4%)	1	Item	$64,288.13		$64,288.13
AUTHORITIES FEES & CHARGES					**$16,072.03**
Allowance for Authorities Fees & Charges including liaison with RMS (1%)	1	Item	$16,072.03		$16,072.03
ENVIRONMENTAL OFFSETS					
Allowance for Environmental Offsets - EXCL.	1	Item			EXCL
COST ESCALATION					
Allowance for Cost Escalation beyond April 2019 - EXCL.	1	Item			EXCL
SCHEDULE OF INFORMATION					
Concept Drawings by Royal Haskoning DHV - Sediment Removal Plan (13 B6 PLAN-2)		NOTE			
Concept Drawings by Royal Haskoning DHV - Bends Culvert Plans - 5 Sheets (BENDS CULVERT)		NOTE			
Concept Drawings by Royal Haskoning DHV - Oxford Falls Culvert Design - 4 Sheets (OXFORD FALLS)		NOTE			
Concept Drawings by Royal Haskoning DHV - Sports Centre Design - 3 Sheets (SPORTS CENTRE)		NOTE			
Concept Drawings by Royal Haskoning DHV - Wakehurst Parkway Barrier Design - 6 Sheets (WAKEHURST BARRIERS NB-SB)		NOTE			

Description	Quantity	Unit	Rate	Markup	Total
SCHEDULE OF EXCLUSIONS					
Tendering Costs - EXCL.		NOTE			
Staging Costs - EXCL.		NOTE			
Unknown steakholder requirements - EXCL.		NOTE			
Delay costs including Inclement Weather- EXCL.		NOTE			
Testing, treatment & management of contaminated material/buried rubbish on site - EXCL.		NOTE			
Unknown ground conditions & engineers design - EXCL.		NOTE			
Cost escalation beyond April 2019 - EXCL.		NOTE			

Subtotal	**$1,960,788.00**
Adjustment	$0.00
Post adjustment	$1,960,788.00
G.S.T [10%]	$196,078.80
Total	**$2,156,866.80**

Preliminary Budget Estimate

4/4/2019 **2019.024 Preliminary Budget Estimate Option B2 Rev 2**

for **Royal HaskoningDHV**

Preliminary Budget Estimate
Option B2 - New Levee & Overbank Sediment Removal

Description	Quantity	Unit	Rate	Markup	Total
DIRECT COSTS					**$4,328,213.89**
PRELIMINARIES					**$901,364.35**
Project Management & Supervision					**$224,960.00**
Project Manager - 50%	16	Week	$4,750.00		$76,000.00
Site Engineer - 50%	16	Week	$2,850.00		$45,600.00
Site Supervisor - 100%	32	Week	$3,230.00		$103,360.00
Site Compound, Hoardings, Accommodation & Amenities					**$49,306.72**
Construct temporary handstand	50	m2	$15.00		$750.00
Temporary Fence to Compound	30	m	$15.00		$450.00
Hire Crib Shed x 2	64	Week	$132.02		$8,449.28
Hire Ablution	32	Week	$99.12		$3,171.84
Holding Tank to last	32	Week	$127.05		$4,065.60
Hire Storage Container x 1	32	Week	$35.00		$1,120.00
Hire Generator including fuel	32	Week	$900.00		$28,800.00
Allowance for bunded fuel refueling area	1	Item	$2,500.00		$2,500.00
Off Site Stockpile Area:					**$20,700.00**
Allowance for ATF fencing to area	200	m	$15.00		$3,000.00
Allowance for sediment control fence to perimeter	200	m	$12.00		$2,400.00
Allowance for shaker grid	1	No.	$1,800.00		$1,800.00
Allowance for signage	1	Item	$2,500.00		$2,500.00
Allowance to make good & revegetation area at completion of work	2,200	m2	$5.00		$11,000.00
Mobilisation & Demobilisation					**$47,950.00**
Mobilisation:					**$28,000.00**
Mobilise Crib Shed	2	No.	$750.00		$1,500.00

Description	Quantity	Unit	Rate	Markup	Total
Mobilise Ablution & Storage Tank	1	No.	$750.00		$750.00
Mobilise Storage Container	1	No.	$250.00		$250.00
Mobilise Generator	1	No.	$400.00		$400.00
Connection of Electrical Services to compound	1	Item	$2,500.00		$2,500.00
Connection of Potable Water to compound	1	Item	$1,800.00		$1,800.00
Mobilise Plant	1	Item	$20,800.00		$20,800.00
Demobilisation:					**$19,950.00**
Demobilise Crib Shed	2	No.	$750.00		$1,500.00
Demobilise Ablution & Storage Tank	1	No.	$750.00		$750.00
Demobilise Storage Container	1	No.	$250.00		$250.00
Disconnection of Electrical Services to compound	1	Item	$1,500.00		$1,500.00
Disconnection of Potable Water from compound	1	Item	$750.00		$750.00
Demobilise Plant	1	Item	$15,200.00		$15,200.00
Site OHS Supervision & Allowances					**$25,972.00**
Site OH& S Representative - 20%	6.4	Week	$3,230.00		$20,672.00
Site Induction (Allow 30 Workers)	30	Hr	$70.00		$2,100.00
PPE Equipment	1	Item	$3,200.00		$3,200.00
Site Survey & WAE					**$29,360.00**
Site Services Survey	1	Item	$2,500.00		$2,500.00
Site Survey & Setout	1	Item	$12,320.00		$12,320.00
Survey Crew Conformance	1	Item	$12,320.00		$12,320.00
Works As Executed	1	Item	$2,220.00		$2,220.00
Existing Services Location					**$2,585.00**
Services Locator	4	Hr	$95.00		$380.00
Non-Destuctive Digging Truck	4	Hr	$280.00		$1,120.00
Labourer x 2	8	Hr	$55.00		$440.00
Skid Steer Loader	5	Hr	$115.00		$575.00
Sand for Backfill	2	t	$35.00		$70.00
Environmental Monitoring					**$159,600.00**
Allowance for full time supervision of Ecologist during works	24	Week	$6,650.00		$159,600.00
Erosion & Sediment Control					**$55,337.25**
No go tape to extent of works	2,719	m	$0.75		$2,039.25
Shaker Grid	2	No.	$1,800.00		$3,600.00
Sediment Control Fence including maintenance	2,750	m	$13.00		$35,750.00
Hay Bale Check Dam (3 Bale)	52	No.	$124.00		$6,448.00

Description	Quantity	Unit	Rate	Markup	Total
Silt boom to creek	10	m	$150.00		$1,500.00
Allowance for water quality testing (Waterway)	8	Months	$750.00		$6,000.00
Construct Sediment Control basin - EXCL.	1	Item			EXCL
Traffic Management					**$217,138.00**
Traffic Management Plan	4	No.	$760.00		$3,040.00
VMS board (4No.)	128	Week	$460.00		$58,880.00
Mobilise concrete jersery kerb	800	m	$18.33		$14,666.67
Hire concrete jersey kerb	25,600	m/week	$3.20		$81,834.67
Demobilise concrete jersey kerb	800	m	$18.33		$14,666.67
Traffic Control Crew (3 Man)	19	Day	$1,950.00		$37,050.00
Allowance for Misc. Signage & Barricades	1	Item	$7,000.00		$7,000.00
Geotech Supervision & Testing					**$33,770.00**
Stripped Surface Inspections (5No.)	30	Hr	$225.00		$6,750.00
Level 1 supervision (Fill Operations)	10	Day	$1,500.00		$15,000.00
Mobilsation of Geotechnician	16	No.	$100.00		$1,600.00
Density Tests Access Ramps	48	No.	$110.00		$5,280.00
Density Tests Road Pavement	24	No.	$110.00		$2,640.00
Geotech Final Report	1	Item	$2,500.00		$2,500.00
Site Office Expenses					**$9,920.00**
WIFI/Internet	32	Week	$25.00		$800.00
Water Supply	32	Week	$60.00		$1,920.00
Rubbish Disposal	32	Week	$25.00		$800.00
Office & Amenity Cleaning	32	Week	$200.00		$6,400.00
Small Tools & Equipment	1	Item	$1,600.00		$1,600.00
Contract Insurances & Security					**$23,165.38**
Contractors Work Insurance	1	Item			INCL
Public & Products Liability Insurance	1	Item			INCL
Professional Indemnity Insurance	1	Item			INCL
Workers Compensation Insurance	1	Item			INCL
Security (2 x 5% Bank Guarantees)	1	Item	$23,165.38		$23,165.38
CLEARING					**$154,485.86**
Clear, grub & remove from site the following trees:					**$154,485.86**
Road Corridor:					**$67,495.96**
Small Tree	8	No.	$1,500.00		$12,000.00
Medium Tree	9	No.	$2,500.00		$22,500.00
Large Tree	7	No.	$3,500.00		$24,500.00
Clear & grub sundry vegetation	1,251	m2	$6.79		$8,495.96

Description	Quantity	Unit	Rate	Markup	Total
Access Tracks & Stockpile Areas:					**$5,589.89**
Clear & grub sundry vegetation (excavator mounted groomer) after environmental relocation & preservation works are completed	1,758	m2	$3.18		$5,589.89
Creek:					**$81,400.00**
Clear & grub sundry vegetation (excavator mounted groomer) after environmental relocation & preservation works are completed	25,600	m2	$3.18		$81,400.00
DEMOLITION					**$36,798.68**
Sawcut existing AC pavement not exceeding 100 thick	430	m	$14.75		$6,342.50
Demolish & remove the following from site:					**$30,036.18**
Sealed shoulder, not exceeding 200 thick	425	m2	$47.51		$20,191.18
Chainmesh fence	435	m	$15.00		$6,525.00
Double gate	1	No.	$300.00		$300.00
Service box & post at gate	1	Item	$2,500.00		$2,500.00
Road signs	2	No.	$75.00		$150.00
Guideposts	8	No.	$15.00		$120.00
Guardrail posts	5	No.	$50.00		$250.00
Take down & store on site existing guardrail for site access (2No.)	12	m	$35.00		$420.00
EARTHWORKS					**$1,404,350.92**
Road Corridor:					**$51,959.14**
Strip topsoil (nominal 150 thick), windrow adjacent to work area	850	m2	$2.50		$2,125.00
Allowance to supply & place imported Select material to shoulder	100	m3	$156.54		$15,654.06
Detailed excavation/boxout for Levee foundation (spoil to be lost on batter)	319	m3	$91.50		$29,188.50
Trim batters	850	m2	$3.20		$2,720.00
Spread on site topsoil to batters not exceeding 300 thick	128	m3	$17.75		$2,271.58
Access Tracks & Stockpile Areas:					**$179,130.01**
Strip mulched vegetation after clearing & stockpile on site for revegetation	1,758	m2	$4.93		$8,659.23
Strip topsoil (nominal 150 thick), windrow adjacent to work area	225	m2	$3.69		$831.20
Allowance to construct bunded stockpile area on site (2No.)	1,652	m2	$14.48		$23,920.00
Allowance to construct access ramp/roads (4No.)	1,192	m2	$70.95		$84,576.49
Allowance to remove bunded stockpile area at completion of works (2No.)	1,652	m2	$1.89		$3,125.00

Description	Quantity	Unit	Rate	Markup	Total
Allowance to remove access ramp/roads at completion of works - PC Disposal fee $30/t (4No.)	1,192	m2	$41.74		$49,755.50
Allowance to respread mulched vegetation & topsoil on site at completion of works	1,758	m2	$4.70		$8,262.60
Creek:					**$1,173,261.76**
Strip mulched vegetation after clearing & stockpile on site for revegetation	25,600	m2	$4.93		$126,095.72
Allow to excavate sediment material & stockpile on site for off site disposal	28,200	m3	$18.28		$515,596.18
Allowance to load from on site sediment & haul (3km one way to off site screening & disposal site)	28,200	m3	$14.58		$411,249.86
Allowance to screen sediment off site for reuse - EXCL.	1	Item			EXCL
Disposal of debris/waste from screening - EXCL.	1	Item			EXCL
Haulage & Disposal of screened sediment from off site screening & disposal site - EXCL.	1	Item			EXCL
Allowance to respread mulched vegetation on site at completion of works	25,600	m2	$4.70		$120,320.00
ROAD PAVEMENT					**$88,423.28**
Sealed Shoulder:					**$85,687.73**
Trim & compact road subgrade	425	m2	$14.00		$5,950.00
Allowance to remove & replace unsuitable material with imported Select (10% of trim area x 300 thick)	13	m3	$253.83		$3,299.73
7mm primer seal	553	m2	$9.77		$5,403.50
200 thick AC14 wearing course (2 courses)	425	m2	$135.90		$57,757.50
Allow to key into existing pavement	425	m	$31.24		$13,277.00
Culvert Access Track:					**$2,735.55**
Allowance to construct gravel access track to existing culvert (1No.)	40	m2	$68.39		$2,735.55
LEVEE WALL					**$706,480.16**
Form, reinforce & pour concrete Levee foundation	281	m3	$891.82		$250,602.00
Ditto concrete Levee wall (nominal 1100 high x 700 thick overall)	184	m3	$2,473.52		$455,128.16
Extra Over last to offset & taper last	1	No.	$750.00		$750.00
STORMWATER					**$5,000.00**
Allowance for supply & installation of flapgate to existing culvert	1	No.	$5,000.00		$5,000.00
Extension of existing culvert - EXCL.	1	Item			EXCL

Description	Quantity	Unit	Rate	Markup	Total
Subsoil drainage adjacent to Levee footing (1 side only) - EXCL.	1	Item			EXCL
SERVICES & UTILITIES					
Adjustments to existing services & utilities in road corridor - EXCL.	1	Item			EXCL
SIGNAGE & LINEMARKING					**$4,529.00**
Signage:					**$1,000.00**
Allowance for new road signage	4	No.	$250.00		$1,000.00
Linemarking:					**$3,529.00**
Mobilise linemarker	1	No.	$2,500.00		$2,500.00
Waterborne linemarking as detailed to the following:					**$697.50**
Line Type E1	465	m	$1.50		$697.50
Raised pavement markers	39	No.	$8.50		$331.50
FENCING & ROAD FURNITURE					**$31,745.00**
1800 high galvanised chainmesh fence	465	m	$57.00		$26,505.00
Extra Over last for double gate including lock	1	Pair	$1,800.00		$1,800.00
Supply & install Guideposts	8	No.	$55.00		$440.00
Allow to reinstate existing guardrail to site access (2No.)	12	m	$250.00		$3,000.00
LANDSCAPING & REMEDIATION					**$430,487.00**
Road Corridor:					**$5,475.00**
Allowance for native seeding of topsoiled berms & batters	850	m2	$3.50		$2,975.00
Maintenance of last (12 months beyond practical completion)	1	Item	$2,500.00		$2,500.00
Access Tracks & Stockpile Areas:					**$30,612.00**
Cultivate subgrade	1,758	m2	$0.50		$879.00
Tube stock (2/m2)	3,516	No.	$5.50		$19,338.00
Allowance for native seeding of topsoiled areas	1,758	m2	$2.50		$4,395.00
Maintenance of last (12 months beyond practical completion)	1	Item	$6,000.00		$6,000.00
Creek:					**$394,400.00**
Cultivate subgrade	25,600	m2	$0.50		$12,800.00
Tube stock (2/m2)	51,200	No.	$5.50		$281,600.00
Allowance for native seeding of topsoiled areas	25,600	m2	$2.50		$64,000.00
Maintenance of last (12 months beyond practical completion)	1	Item	$36,000.00		$36,000.00
CONTRACTORS OVERJHEADS & MARGIN					**$564,549.64**

Description	Quantity	Unit	Rate	Markup	Total
Allowance for Contractors Corporate Overheads & Margin (15%)	1	Item	$564,549.64		$564,549.64
INDIRECT COSTS					**$1,465,642.78**
CONTINGENCY					**$649,232.08**
Allowance for Design Development Contingency (5%)	1	Item	$216,410.69		$216,410.69
Allowance for Construction Contingency (10%)	1	Item	$432,821.39		$432,821.39
PROFESSIONAL FEES					**$173,128.56**
Allowance for Design Consultants Fees (4%)	1	Item	$173,128.56		$173,128.56
AUTHORITIES FEES & CHARGES					**$43,282.14**
Allowance for Authorities Fees & Charges including liaison with RMS (1%)	1	Item	$43,282.14		$43,282.14
ENVIRONMENTAL OFFSETS					**$600,000.00**
Allowance for Environmental Offsets	1	Item	$600,000.00		$600,000.00
COST ESCALATION					
Allowance for Cost Escalation beyond March 2019 - EXCL.	1	Item			EXCL
SCHEDULE OF INFORMATION					
Concept Drawings by Royal Haskoning DHV - Sediment Removal Plan (13 B6 PLAN-2)		NOTE			
Concept Drawings by Royal Haskoning DHV - Bends Culvert Plans - 5 Sheets (BENDS CULVERT)		NOTE			
Concept Drawings by Royal Haskoning DHV - Oxford Falls Culvert Design - 4 Sheets (OXFORD FALLS)		NOTE			
Concept Drawings by Royal Haskoning DHV - Sports Centre Design - 3 Sheets (SPORTS CENTRE)		NOTE			
Concept Drawings by Royal Haskoning DHV - Wakehurst Parkway Barrier Design - 6 Sheets (WAKEHURST BARRIERS NB-SB)		NOTE			
SCHEDULE OF EXCLUSIONS					
Tendering Costs - EXCL.		NOTE			
Staging Costs - EXCL.		NOTE			
Unknown steakholder requirements - EXCL.		NOTE			
Delay costs including Inclement Weather- EXCL.		NOTE			
Testing, treatment & management of contaminated material/buried rubbish on site - EXCL.		NOTE			
Unknown ground conditions & engineers design - EXCL.		NOTE			

Description	Quantity	Unit	Rate	Markup	Total
Cost escalation beyond April 2019 - EXCL.		NOTE			

Subtotal	**$5,793,856.66**
Adjustment	$0.00
Post adjustment	$5,793,856.66
G.S.T [10%]	$579,385.67
Total	**$6,373,242.33**

Preliminary Budget Estimate

4/4/2019 **2019.024 Preliminary Budget Estimate Option B3 Rev 1**

for **Royal HaskoningDHV**

Preliminary Budget Estimate
Option B3 - New Levee, Overbank Sediment Removal & Culverts

Description	Quantity	Unit	Rate	Markup	Total
DIRECT COSTS					**$9,425,819.39**
PRELIMINARIES					**$2,000,493.04**
Project Management & Supervision					**$487,350.00**
Project Manager - 100%	45	Week	$4,750.00		$213,750.00
Site Engineer - 100%	45	Week	$2,850.00		$128,250.00
Site Supervisor - 100%	45	Week	$3,230.00		$145,350.00
Site Compound, Hoardings, Accommodation & Amenities					**$72,280.15**
Construct temporary handstand	70	m2	$15.00		$1,050.00
Temporary Fence to Compound	50	m	$15.00		$750.00
Hire Site Office	45	Week	$85.46		$3,845.70
Hire Crib Shed x 2	90	Week	$132.02		$11,881.80
Hire Ablution	45	Week	$99.12		$4,460.40
Holding Tank to last	45	Week	$127.05		$5,717.25
Hire Storage Container x 1	45	Week	$35.00		$1,575.00
Hire Generator including fuel	45	Week	$900.00		$40,500.00
Allowance for bunded fuel refueling area	1	Item	$2,500.00		$2,500.00
Off Site Stockpile Area:					**$20,700.00**
Allowance for ATF fencing to area	200	m	$15.00		$3,000.00
Allowance for sediment control fence to perimeter	200	m	$12.00		$2,400.00
Allowance for shaker grid	1	No.	$1,800.00		$1,800.00
Allowance for signage	1	Item	$2,500.00		$2,500.00
Allowance to make good & revegetation area at completion of work	2,200	m2	$5.00		$11,000.00
Mobilisation & Demobilisation					**$53,850.00**
Mobilisation:					**$32,350.00**

Description	Quantity	Unit	Rate	Markup	Total
Mobilise Site Office	1	No.	$750.00		$750.00
Mobilise Crib Shed	2	No.	$750.00		$1,500.00
Mobilise Ablution & Storage Tank	1	No.	$750.00		$750.00
Mobilise Storage Container	1	No.	$250.00		$250.00
Mobilise Generator	1	No.	$400.00		$400.00
Connection of Electrical Services to compound	1	Item	$3,000.00		$3,000.00
Connection of Potable Water to compound	1	Item	$2,000.00		$2,000.00
Mobilise Plant	1	Item	$23,700.00		$23,700.00
Demobilisation:					**$21,500.00**
Demobilise Site Office	1	No.	$750.00		$750.00
Demobilise Crib Shed	2	No.	$750.00		$1,500.00
Demobilise Ablution & Storage Tank	1	No.	$750.00		$750.00
Demobilise Storage Container	1	No.	$250.00		$250.00
Disconnection of Electrical Services to compound	1	Item	$1,500.00		$1,500.00
Disconnection of Potable Water from compound	1	Item	$750.00		$750.00
Demobilise Plant	1	Item	$16,000.00		$16,000.00
Site OHS Supervision & Allowances					**$37,770.00**
Site OH& S Representative - 20%	9	Week	$3,230.00		$29,070.00
Site Induction (Allow 60 Workers)	60	Hr	$70.00		$4,200.00
PPE Equipment	1	Item	$4,500.00		$4,500.00
Site Survey & WAE					**$45,660.00**
Site Services Survey	1	Item	$3,240.00		$3,240.00
Site Survey & Setout	1	Item	$19,360.00		$19,360.00
Survey Crew Conformance	1	Item	$19,360.00		$19,360.00
Works As Executed	1	Item	$3,700.00		$3,700.00
Existing Services Location					**$3,890.00**
Services Locator	6	Hr	$95.00		$570.00
Non-Destuctive Digging Truck	6	Hr	$280.00		$1,680.00
Labourer x 2	12	Hr	$55.00		$660.00
Skid Steer Loader	7	Hr	$115.00		$805.00
Sand for Backfill	5	t	$35.00		$175.00
Environmental Monitoring					**$226,100.00**
Allowance for full time supervision of Ecologist during works	34	Week	$6,650.00		$226,100.00
Erosion & Sediment Control					**$70,877.25**
No go tape to extent of works	2,719	m	$0.75		$2,039.25
Shaker Grid	2	No.	$1,800.00		$3,600.00

Description	Quantity	Unit	Rate	Markup	Total
Sediment Control Fence including maintenance	2,850	m	$13.00		$37,050.00
Hay Bale Check Dam (3 Bale)	62	No.	$124.00		$7,688.00
Silt boom to creek	10	m	$150.00		$1,500.00
Allowance for water quality testing (Waterway)	12	Months	$750.00		$9,000.00
Construct Sediment Control basin	2	No.	$5,000.00		$10,000.00
Traffic Management					**$847,487.18**
Traffic Management Plan	9	No.	$760.00		$6,840.00
VMS board (4No.)	180	Week	$460.00		$82,800.00
Day makers	112	Day	$268.00		$30,016.00
Mobilise TL2 Barriers (Culvert Works)	360	m	$15.00		$5,400.00
Hire TL2 Barrier	5,760	m/week	$12.85		$73,987.20
Demobilise TL2 Barrier	360	m	$15.00		$5,400.00
Mobilise concrete jersery kerb	800	m	$18.33		$14,666.67
Hire concrete jersey kerb	25,600	m/week	$3.20		$81,834.67
Demobilise concrete jersey kerb	800	m	$18.33		$14,666.67
Allowance for temporary road pavements during culvert works (4No.):					**$454,625.98**
Allowance to boxout/earthworks to prepare subgrade	2,800	m2	$25.00		$70,000.00
Supply & place 200 thick subbase	2,800	m2	$22.20		$62,172.00
Supply & place 120 thick base	2,800	m2	$17.55		$49,153.98
7mm primer seal	2,800	m2	$7.36		$20,600.00
50 thick AC14 wearing course	2,800	m2	$30.25		$84,700.00
Allowance to remove temporary road pavements at completion of works	2,800	m2	$60.00		$168,000.00
Traffic Control Crew (3 Man)	35	Day	$1,950.00		$68,250.00
Allowance for Misc. Signage & Barricades	1	Item	$9,000.00		$9,000.00
Geotech Supervision & Testing					**$52,490.00**
Stripped Surface Inspections (9No.)	54	Hr	$225.00		$12,150.00
Level 1 supervision (Fill Operations)	10	Day	$1,500.00		$15,000.00
Mobilsation of Geotechnician	16	No.	$100.00		$1,600.00
Density Tests Access Ramps	48	No.	$110.00		$5,280.00
Density Tests Road Pavement	24	No.	$110.00		$2,640.00
Density Tests Culverts	112	No.	$110.00		$12,320.00
Geotech Final Report	1	Item	$3,500.00		$3,500.00
Site Office Expenses					**$13,950.00**
WIFI/Internet	45	Week	$25.00		$1,125.00
Water Supply	45	Week	$60.00		$2,700.00
Rubbish Disposal	45	Week	$25.00		$1,125.00
Office & Amenity Cleaning	45	Week	$200.00		$9,000.00

Description	Quantity	Unit	Rate	Markup	Total
Small Tools & Equipment	1	Item	$2,250.00		$2,250.00
Contract Insurances & Security					**$65,838.46**
Contractors Work Insurance	1	Item			INCL
Public & Products Liability Insurance	1	Item			INCL
Professional Indemnity Insurance	1	Item			INCL
Workers Compensation Insurance	1	Item			INCL
Security (2 x 5% Bank Guarantees)	1	Item	$65,838.46		$65,838.46
CLEARING					**$162,498.67**
Clear, grub & remove from site the following trees:					**$162,498.67**
Road Corridor:					**$67,495.96**
Small Tree	8	No.	$1,500.00		$12,000.00
Medium Tree	9	No.	$2,500.00		$22,500.00
Large Tree	7	No.	$3,500.00		$24,500.00
Clear & grub sundry vegetation	1,251	m2	$6.79		$8,495.96
Access Tracks & Stockpile Areas:					**$5,589.89**
Clear & grub sundry vegetation (excavator mounted groomer) after environmental relocation & preservation works are completed	1,758	m2	$3.18		$5,589.89
Creek:					**$81,400.00**
Clear & grub sundry vegetation (excavator mounted groomer) after environmental relocation & preservation works are completed	25,600	m2	$3.18		$81,400.00
Culverts:					**$8,012.81**
Clear & grub sundry vegetation (excavator mounted groomer) after environmental relocation & preservation works are completed	2,520	m2	$3.18		$8,012.81
DEMOLITION					**$89,821.08**
Sawcut existing AC pavement not exceeding 100 thick	480	m	$14.75		$7,080.00
Demolish & remove the following from site:					**$28,235.40**
Sealed shoulder, not exceeding 200 thick	335	m2	$47.51		$15,915.40
Chainmesh fence	600	m	$15.00		$9,000.00
Double gate	1	No.	$300.00		$300.00
Service box & post at gate	1	Item	$2,500.00		$2,500.00
Road signs	2	No.	$75.00		$150.00
Guideposts	8	No.	$15.00		$120.00
Guardrail posts	5	No.	$50.00		$250.00

Description	Quantity	Unit	Rate	Markup	Total
Take down & store on site existing guardrail for site access (2No.)	12	m	$35.00		$420.00
Demolish existing stabilised earth berm (nominal 1000 high)	110	m	$113.52		$12,487.50
Demolish & remove existing AC wearing course not exceeding 50 thick	687	m2	$28.37		$19,490.19
Demolish existing 2 x 1500 diameter RC pipe culvert	26	m	$667.28		$17,349.25
Demolish existing twin 1500 precast headwall	2	No.	$2,054.37		$4,108.74
Demolish existing scour protection to last	50	m2	$13.00		$650.00
EARTHWORKS					**$1,999,145.67**
Road Corridor:					**$51,959.14**
Strip topsoil (nominal 150 thick), windrow adjacent to work area	850	m2	$2.50		$2,125.00
Allowance to supply & place imported Select material to shoulder	100	m3	$156.54		$15,654.06
Detailed excavation/boxout for Levee foundation (spoil to be lost on batter)	319	m3	$91.50		$29,188.50
Trim batters	850	m2	$3.20		$2,720.00
Spread on site topsoil to batters not exceeding 300 thick	128	m3	$17.75		$2,271.58
Access Tracks & Stockpile Areas:					**$179,130.01**
Strip mulched vegetation after clearing & stockpile on site for revegetation	1,758	m2	$4.93		$8,659.23
Strip topsoil (nominal 150 thick), windrow adjacent to work area	225	m2	$3.69		$831.20
Allowance to construct bunded stockpile area on site (2No.)	1,652	m2	$14.48		$23,920.00
Allowance to construct access ramp/roads (4No.)	1,192	m2	$70.95		$84,576.49
Allowance to remove bunded stockpile area at completion of works (2No.)	1,652	m2	$1.89		$3,125.00
Allowance to remove access ramp/roads at completion of works - PC Disposal fee $30/t (4No.)	1,192	m2	$41.74		$49,755.50
Allowance to respread mulched vegetation & topsoil on site at completion of works	1,758	m2	$4.70		$8,262.60
Creek:					**$1,173,261.76**
Strip mulched vegetation after clearing & stockpile on site for revegetation	25,600	m2	$4.93		$126,095.72
Allow to excavate sediment material & stockpile on site for off site disposal	28,200	m3	$18.28		$515,596.18
Allowance to load from on site sediment & haul (3km one way to off site screening & disposal site)	28,200	m3	$14.58		$411,249.86
Allowance to screen sediment off site for reuse - EXCL.	1	Item			EXCL

Description	Quantity	Unit	Rate	Markup	Total
Disposal of debris/waste from screening - EXCL.	1	Item			EXCL
Haulage & Disposal of screened sediment from off site screening & disposal site - EXCL.	1	Item			EXCL
Allowance to respread mulched vegetation on site at completion of works	25,600	m2	$4.70		$120,320.00
Culverts:					**$594,794.74**
Strip topsoil (nominal 150 thick) and stockpile on site	1,712	m2	$2.50		$4,280.00
Excavate in Other than Rock for culvert	4,253	m3	$5.20		$22,115.60
Extra Over last to excavate in rock - EXCL.	1	Item			EXCL
Excavate in OTR for culvert channels	2,652.003	m3	$11.38		$30,188.26
Extra Over last to excavate in rock - EXCL.	1	Item			EXCL
Allowance to Haul & dispose of spoil off site within 30km (Tip Fee PC $25/t)	6,905	m3	$74.25		$512,693.07
Trim & compact base culvert subgrade	1,740	m2	$8.20		$14,268.00
Allowance to trim batters	665	m2	$3.20		$2,128.00
Allowance to respread topsoil to batters not exceeding 300 thick	514	m3	$17.75		$9,121.82
ROADWORKS					**$177,688.92**
Road Corridor:					**$85,687.73**
Sealed Shoulder:					**$85,687.73**
Trim & compact road subgrade	425	m2	$14.00		$5,950.00
Allowance to remove & replace unsuitable material with imported Select (10% of trim area x 300 thick)	13	m3	$253.83		$3,299.73
7mm primer seal	553	m2	$9.77		$5,403.50
200 thick AC14 wearing course (2 courses)	425	m2	$135.90		$57,757.50
Allow to key into existing pavement	425	m	$31.24		$13,277.00
Culverts:					**$92,001.20**
Supply & place imported select layer over culverts (nominal 300 thick)	522	m3	$36.63		$19,120.86
Supply & place 200 thick subbase	755.997	m2	$22.22		$16,796.40
Supply & place 120 thick base	687	m2	$32.79		$22,529.48
7mm primer seal	687	m2	$6.65		$4,566.06
50 thick AC14 wearing course	687	m2	$30.25		$20,781.75
Allowance to construct gravel access track to existing culvert (2No.)	120	m2	$68.39		$8,206.65
LEVEE WALL					**$717,388.07**
Form, reinforce & pour concrete Levee foundation	281	m3	$891.82		$250,602.00

Description	Quantity	Unit	Rate	Markup	Total
Ditto concrete Levee wall (nominal 1100 high x 700 thick overall)	132	m3	$2,473.52		$326,504.98
Ditto over new culverts	52	m3	$2,683.29		$139,531.08
Allowance for offset & taper to Levee wall	1	No.	$750.00		$750.00
STORMWATER					**$5,000.00**
Allowance for supply & installation of flapgate to existing culvert	1	No.	$5,000.00		$5,000.00
Extension of existing culvert - EXCL.	1	Item			EXCL
Subsoil drainage adjacent to Levee footing (1 side only) - EXCL.	1	Item			EXCL
CULVERTS					**$2,487,922.71**
Allowance for 250 thick reinforced concrete base slab on & including blinding	1,740	m2	$347.50		$604,650.00
Supply 2700 x 900 x 2400 long RCBC	138	No.	$3,679.90		$507,825.65
Supply 2700 x 2400 long link slab	99	No.	$3,381.00		$334,719.00
Allowance to unload culverts & link slabs on site	1	Item	$55,440.00		$55,440.00
Installation of culverts & link slabs including taping joins & grouting legs	1	Item	$160,459.50		$160,459.50
Culvert Headwalls:					**$585,833.53**
Detailed excavation for new headwall	30.998	m3	$186.84		$5,791.69
Trim & compact subgrade	1,034	m2	$29.34		$30,339.74
Form, reinforce & pour 250 thick concrete apron slab on & including 50 thick granular blinding	258.995	m3	$1,914.58		$495,866.55
Form, reinforce & pour 250 thick wing walls (8No.)	11	m3	$2,691.27		$29,604.00
Form, reinforce & pour 500 high x 250 thick head beam (4No.)	9.004	m3	$2,691.27		$24,231.55
100 diameter Class 1000 socked agg line	128	m	$25.00		$3,200.00
Flushpoint to last	4	No.	$95.00		$380.00
Subsoil tailout drain	4	No.	$350.00		$1,400.00
Allowance for drainage aggregate to subsoil drains	12	m3	$174.32		$2,091.84
Allowance to backfill culvert excavation with imported DGS40	256	m3	$144.70		$37,043.20
Allowance for scour protection	1,856	m2	$105.00		$194,880.00
SERVICES & UTILITIES					**$50,000.00**
Provisional Allowance for adjustments to existing services & utilities in road corridor	1	PSUM	$50,000.00		$50,000.00
SIGNAGE & LINEMARKING					**$5,107.03**
Signage:					**$1,000.00**
Allowance for new road signage	4	No.	$250.00		$1,000.00
Linemarking:					**$4,107.03**

Description	Quantity	Unit	Rate	Markup	Total
Mobilise linemarker	1	No.	$2,500.00		$2,500.00
Waterborne linemarking as detailed to the following:					**$1,054.50**
Line Type BB	90	m	$1.80		$162.00
Line Type E1	595	m	$1.50		$892.50
Raised pavement markers	65.003	No.	$8.50		$552.53
FENCING & ROAD FURNITURE					**$66,985.00**
1800 high galvanised chainmesh fence	585	m	$57.00		$33,345.00
Extra Over last for double gate including lock	2	Pair	$1,800.00		$3,600.00
Supply & install Guideposts	8	No.	$55.00		$440.00
Allow to reinstate existing guardrail to site access (2No.)	12	m	$250.00		$3,000.00
New Guardrail over culverts	100	m	$150.00		$15,000.00
Allow for Melt	2	No.	$4,000.00		$8,000.00
Allow for TL2	2	No.	$1,800.00		$3,600.00
LANDSCAPING & REMEDIATION					**$434,314.50**
Road Corridor:					**$5,475.00**
Allowance for native seeding of topsoiled berms & batters	850	m2	$3.50		$2,975.00
Maintenance of last (12 months beyond practical completion)	1	Item	$2,500.00		$2,500.00
Access Tracks & Stockpile Areas:					**$30,612.00**
Cultivate subgrade	1,758	m2	$0.50		$879.00
Tube stock (2/m2)	3,516	No.	$5.50		$19,338.00
Allowance for native seeding of topsoiled areas	1,758	m2	$2.50		$4,395.00
Maintenance of last (12 months beyond practical completion)	1	Item	$6,000.00		$6,000.00
Creek:					**$394,400.00**
Cultivate subgrade	25,600	m2	$0.50		$12,800.00
Tube stock (2/m2)	51,200	No.	$5.50		$281,600.00
Allowance for native seeding of topsoiled areas	25,600	m2	$2.50		$64,000.00
Maintenance of last (12 months beyond practical completion)	1	Item	$36,000.00		$36,000.00
Culvert:					**$3,827.50**
Allowance for native seeding of topsoiled berms & batters	665	m2	$3.50		$2,327.50
Maintenance of last (12 months beyond practical completion)	1	Item	$1,500.00		$1,500.00
CONTRACTORS OVERJHEADS & MARGIN					**$1,229,454.70**

Description	Quantity	Unit	Rate	Markup	Total
Allowance for Contractors Corporate Overheads & Margin (15%)	1	Item	$1,229,454.70		$1,229,454.70
INDIRECT COSTS					**$2,685,163.88**
CONTINGENCY					**$1,413,872.91**
Allowance for Design Development Contingency (5%)	1	Item	$471,290.97		$471,290.97
Allowance for Construction Contingency (10%)	1	Item	$942,581.94		$942,581.94
PROFESSIONAL FEES					**$377,032.78**
Allowance for Design Consultants Fees (4%)	1	Item	$377,032.78		$377,032.78
AUTHORITIES FEES & CHARGES					**$94,258.19**
Allowance for Authorities Fees & Charges including liaison with RMS (1%)	1	Item	$94,258.19		$94,258.19
ENVIRONMENTAL OFFSETS					**$800,000.00**
Allowance for Environmental Offsets	1	Item	$800,000.00		$800,000.00
COST ESCALATION					
Allowance for Cost Escalation beyond March 2019 - EXCL.	1	Item			EXCL
SCHEDULE OF INFORMATION					
Concept Drawings by Royal Haskoning DHV - Sediment Removal Plan (13 B6 PLAN-2)		NOTE			
Concept Drawings by Royal Haskoning DHV - Bends Culvert Plans - 5 Sheets (BENDS CULVERT)		NOTE			
Concept Drawings by Royal Haskoning DHV - Oxford Falls Culvert Design - 4 Sheets (OXFORD FALLS)		NOTE			
Concept Drawings by Royal Haskoning DHV - Sports Centre Design - 3 Sheets (SPORTS CENTRE)		NOTE			
Concept Drawings by Royal Haskoning DHV - Wakehurst Parkway Barrier Design - 6 Sheets (WAKEHURST BARRIERS NB-SB)		NOTE			
SCHEDULE OF EXCLUSIONS					
Tendering Costs - EXCL.		NOTE			
Staging Costs - EXCL.		NOTE			
Unknown steakholder requirements - EXCL.		NOTE			
Delay costs including Inclement Weather- EXCL.		NOTE			
Testing, treatment & management of contaminated material/buried rubbish on site - EXCL.		NOTE			
Unknown ground conditions & engineers design - EXCL.		NOTE			

Description	Quantity	Unit	Rate	Markup	Total
Cost escalation beyond April 2019 - EXCL.		NOTE			

Subtotal	**$12,110,983.27**
Adjustment	$0.00
Post adjustment	$12,110,983.27
G.S.T [10%]	$1,211,098.33
Total	**$13,322,081.60**

Preliminary Budget Estimate

4/4/2019 **2019.024 Preliminary Budget Estimate Option B4**

for **Royal HaskoningDHV**

Preliminary Budget Estimate
Option B4 - New Levee, Overbank Sediment Removal, Culverts & Top Up Existing Levee

Description	Quantity	Unit	Rate	Markup	Total
DIRECT COSTS					**$10,697,175.19**
PRELIMINARIES					**$2,056,207.96**
Project Management & Supervision					**$487,350.00**
Project Manager - 100%	45	Week	$4,750.00		$213,750.00
Site Engineer - 100%	45	Week	$2,850.00		$128,250.00
Site Supervisor - 100%	45	Week	$3,230.00		$145,350.00
Site Compound, Hoardings, Accommodation & Amenities					**$72,280.15**
Construct temporary handstand	70	m2	$15.00		$1,050.00
Temporary Fence to Compound	50	m	$15.00		$750.00
Hire Site Office	45	Week	$85.46		$3,845.70
Hire Crib Shed x 2	90	Week	$132.02		$11,881.80
Hire Ablution	45	Week	$99.12		$4,460.40
Holding Tank to last	45	Week	$127.05		$5,717.25
Hire Storage Container x 1	45	Week	$35.00		$1,575.00
Hire Generator including fuel	45	Week	$900.00		$40,500.00
Allowance for bunded fuel refueling area	1	Item	$2,500.00		$2,500.00
Off Site Stockpile Area:					**$20,700.00**
Allowance for ATF fencing to area	200	m	$15.00		$3,000.00
Allowance for sediment control fence to perimeter	200	m	$12.00		$2,400.00
Allowance for shaker grid	1	No.	$1,800.00		$1,800.00
Allowance for signage	1	Item	$2,500.00		$2,500.00
Allowance to make good & revegetation area at completion of work	2,200	m2	$5.00		$11,000.00
Mobilisation & Demobilisation					**$53,850.00**
Mobilisation:					**$32,350.00**

Description	Quantity	Unit	Rate	Markup	Total
Mobilise Site Office	1	No.	$750.00		$750.00
Mobilise Crib Shed	2	No.	$750.00		$1,500.00
Mobilise Ablution & Storage Tank	1	No.	$750.00		$750.00
Mobilise Storage Container	1	No.	$250.00		$250.00
Mobilise Generator	1	No.	$400.00		$400.00
Connection of Electrical Services to compound	1	Item	$3,000.00		$3,000.00
Connection of Potable Water to compound	1	Item	$2,000.00		$2,000.00
Mobilise Plant	1	Item	$23,700.00		$23,700.00
Demobilisation:					**$21,500.00**
Demobilise Site Office	1	No.	$750.00		$750.00
Demobilise Crib Shed	2	No.	$750.00		$1,500.00
Demobilise Ablution & Storage Tank	1	No.	$750.00		$750.00
Demobilise Storage Container	1	No.	$250.00		$250.00
Disconnection of Electrical Services to compound	1	Item	$1,500.00		$1,500.00
Disconnection of Potable Water from compound	1	Item	$750.00		$750.00
Demobilise Plant	1	Item	$16,000.00		$16,000.00
Site OHS Supervision & Allowances					**$37,770.00**
Site OH& S Representative - 20%	9	Week	$3,230.00		$29,070.00
Site Induction (Allow 60 Workers)	60	Hr	$70.00		$4,200.00
PPE Equipment	1	Item	$4,500.00		$4,500.00
Site Survey & WAE					**$45,660.00**
Site Services Survey	1	Item	$3,240.00		$3,240.00
Site Survey & Setout	1	Item	$19,360.00		$19,360.00
Survey Crew Conformance	1	Item	$19,360.00		$19,360.00
Works As Executed	1	Item	$3,700.00		$3,700.00
Existing Services Location					**$3,890.00**
Services Locator	6	Hr	$95.00		$570.00
Non-Destuctive Digging Truck	6	Hr	$280.00		$1,680.00
Labourer x 2	12	Hr	$55.00		$660.00
Skid Steer Loader	7	Hr	$115.00		$805.00
Sand for Backfill	5	t	$35.00		$175.00
Environmental Monitoring					**$226,100.00**
Allowance for full time supervision of Ecologist during works	34	Week	$6,650.00		$226,100.00
Erosion & Sediment Control					**$70,877.25**
No go tape to extent of works	2,719	m	$0.75		$2,039.25
Shaker Grid	2	No.	$1,800.00		$3,600.00

Description	Quantity	Unit	Rate	Markup	Total
Sediment Control Fence including maintenance	2,850	m	$13.00		$37,050.00
Hay Bale Check Dam (3 Bale)	62	No.	$124.00		$7,688.00
Silt boom to creek	10	m	$150.00		$1,500.00
Allowance for water quality testing (Waterway)	12	Months	$750.00		$9,000.00
Construct Sediment Control basin	2	No.	$5,000.00		$10,000.00
Traffic Management					**$895,025.18**
Traffic Management Plan	9	No.	$760.00		$6,840.00
VMS board (4No.)	180	Week	$460.00		$82,800.00
Day makers	112	Day	$268.00		$30,016.00
Mobilise TL2 Barriers (Culvert Works)	360	m	$15.00		$5,400.00
Hire TL2 Barrier	5,760	m/week	$12.85		$73,987.20
Demobilise TL2 Barrier	360	m	$15.00		$5,400.00
Mobilise concrete jersery kerb	1,100	m	$18.33		$20,166.67
Hire concrete jersey kerb	35,200	m/week	$3.20		$112,522.67
Demobilise concrete jersey kerb	1,100	m	$18.33		$20,166.67
Allowance for temporary road pavements during culvert works (4No.):					**$454,625.98**
Allowance to boxout/earthworks to prepare subgrade	2,800	m2	$25.00		$70,000.00
Supply & place 200 thick subbase	2,800	m2	$22.20		$62,172.00
Supply & place 120 thick base	2,800	m2	$17.55		$49,153.98
7mm primer seal	2,800	m2	$7.36		$20,600.00
50 thick AC14 wearing course	2,800	m2	$30.25		$84,700.00
Allowance to remove temporary road pavements at completion of works	2,800	m2	$60.00		$168,000.00
Traffic Control Crew (3 Man)	38	Day	$1,950.00		$74,100.00
Allowance for Misc. Signage & Barricades	1	Item	$9,000.00		$9,000.00
Geotech Supervision & Testing					**$53,840.00**
Stripped Surface Inspections (10No.)	60	Hr	$225.00		$13,500.00
Level 1 supervision (Fill Operations)	10	Day	$1,500.00		$15,000.00
Mobilsation of Geotechnician	16	No.	$100.00		$1,600.00
Density Tests Access Ramps	48	No.	$110.00		$5,280.00
Density Tests Road Pavement	24	No.	$110.00		$2,640.00
Density Tests Culverts	112	No.	$110.00		$12,320.00
Geotech Final Report	1	Item	$3,500.00		$3,500.00
Site Office Expenses					**$13,950.00**
WIFI/Internet	45	Week	$25.00		$1,125.00
Water Supply	45	Week	$60.00		$2,700.00
Rubbish Disposal	45	Week	$25.00		$1,125.00
Office & Amenity Cleaning	45	Week	$200.00		$9,000.00

Description	Quantity	Unit	Rate	Markup	Total
Small Tools & Equipment	1	Item	$2,250.00		$2,250.00
Contract Insurances & Security					**$72,665.38**
Contractors Work Insurance	1	Item			INCL
Public & Products Liability Insurance	1	Item			INCL
Professional Indemnity Insurance	1	Item			INCL
Workers Compensation Insurance	1	Item			INCL
Security (2 x 5% Bank Guarantees)	1	Item	$72,665.38		$72,665.38
CLEARING					**$162,498.67**
Clear, grub & remove from site the following trees:					**$162,498.67**
Road Corridor:					**$67,495.96**
Small Tree	8	No.	$1,500.00		$12,000.00
Medium Tree	9	No.	$2,500.00		$22,500.00
Large Tree	7	No.	$3,500.00		$24,500.00
Clear & grub sundry vegetation	1,251	m2	$6.79		$8,495.96
Access Tracks & Stockpile Areas:					**$5,589.89**
Clear & grub sundry vegetation (excavator mounted groomer) after environmental relocation & preservation works are completed	1,758	m2	$3.18		$5,589.89
Creek:					**$81,400.00**
Clear & grub sundry vegetation (excavator mounted groomer) after environmental relocation & preservation works are completed	25,600	m2	$3.18		$81,400.00
Culverts:					**$8,012.81**
Clear & grub sundry vegetation (excavator mounted groomer) after environmental relocation & preservation works are completed	2,520	m2	$3.18		$8,012.81
DEMOLITION					**$121,999.64**
Sawcut existing AC pavement not exceeding 100 thick	980	m	$14.75		$14,455.00
Demolish & remove the following from site:					**$53,038.96**
Sealed shoulder, not exceeding 200 thick	745	m2	$47.51		$35,393.96
Chainmesh fence	935	m	$15.00		$14,025.00
Double gate	2	No.	$300.00		$600.00
Service box & post at gate	1	Item	$2,500.00		$2,500.00
Road signs	2	No.	$75.00		$150.00
Guideposts	8	No.	$15.00		$120.00
Guardrail posts	5	No.	$50.00		$250.00

Description	Quantity	Unit	Rate	Markup	Total
Take down & store on site existing guardrail for site access (2No.)	12	m	$35.00		$420.00
Demolish existing stabilised earth berm (nominal 1000 high)	110	m	$113.52		$12,487.50
Demolish & remove existing AC wearing course not exceeding 50 thick	687	m2	$28.37		$19,490.19
Demolish existing 2 x 1500 diameter RC pipe culvert	26	m	$667.28		$17,349.25
Demolish existing twin 1500 precast headwall	2	No.	$2,054.37		$4,108.74
Demolish existing scour protection to last	50	m2	$13.00		$650.00
EARTHWORKS					**$2,075,854.85**
Road Corridor:					**$128,668.33**
Strip topsoil (nominal 150 thick), windrow adjacent to work area	3,350	m2	$2.50		$8,375.00
Allowance to supply & place imported Select material to shoulder	100	m3	$156.54		$15,654.06
Allow to key in to existing shoulder for new Select fill material	250	m3	$41.50		$10,375.00
Remove existing northern Levee & use as fill to form access track adjacent	940	m3	$16.93		$15,916.67
Detailed excavation/boxout for Levee foundation (spoil to be lost on batter)	694	m3	$91.50		$63,501.00
Trim batters	1,850	m2	$3.20		$5,920.00
Spread on site topsoil to batters not exceeding 300 thick	503	m3	$17.75		$8,926.60
Access Tracks & Stockpile Areas:					**$179,130.01**
Strip mulched vegetation after clearing & stockpile on site for revegetation	1,758	m2	$4.93		$8,659.23
Strip topsoil (nominal 150 thick), windrow adjacent to work area	225	m2	$3.69		$831.20
Allowance to construct bunded stockpile area on site (2No.)	1,652	m2	$14.48		$23,920.00
Allowance to construct access ramp/roads (4No.)	1,192	m2	$70.95		$84,576.49
Allowance to remove bunded stockpile area at completion of works (2No.)	1,652	m2	$1.89		$3,125.00
Allowance to remove access ramp/roads at completion of works - PC Disposal fee $30/t (4No.)	1,192	m2	$41.74		$49,755.50
Allowance to respread mulched vegetation & topsoil on site at completion of works	1,758	m2	$4.70		$8,262.60
Creek:					**$1,173,261.76**
Strip mulched vegetation after clearing & stockpile on site for revegetation	25,600	m2	$4.93		$126,095.72
Allow to excavate sediment material & stockpile on site for off site disposal	28,200	m3	$18.28		$515,596.18

Description	Quantity	Unit	Rate	Markup	Total
Allowance to load from on site sediment & haul (3km one way to off site screening & disposal site)	28,200	m3	$14.58		$411,249.86
Allowance to screen sediment off site for reuse - EXCL.	1	Item			EXCL
Disposal of debris/waste from screening - EXCL.	1	Item			EXCL
Haulage & Disposal of screened sediment from off site screening & disposal site - EXCL.	1	Item			EXCL
Allowance to respread mulched vegetation on site at completion of works	25,600	m2	$4.70		$120,320.00
Culverts:					**$594,794.74**
Strip topsoil (nominal 150 thick) and stockpile on site	1,712	m2	$2.50		$4,280.00
Excavate in Other than Rock for culvert	4,253	m3	$5.20		$22,115.60
Extra Over last to excavate in rock - EXCL.	1	Item			EXCL
Excavate in OTR for culvert channels	2,652.003	m3	$11.38		$30,188.26
Extra Over last to excavate in rock - EXCL.	1	Item			EXCL
Allowance to Haul & dispose of spoil off site within 30km (Tip Fee PC $25/t)	6,905	m3	$74.25		$512,693.07
Trim & compact base culvert subgrade	1,740	m2	$8.20		$14,268.00
Allowance to trim batters	665	m2	$3.20		$2,128.00
Allowance to respread topsoil to batters not exceeding 300 thick	514	m3	$17.75		$9,121.82
ROADWORKS					**$268,053.97**
Road Corridor:					**$176,052.78**
Sealed Shoulder:					**$176,052.78**
Trim & compact road subgrade	745	m2	$14.00		$10,430.00
Allowance to remove & replace unsuitable material with imported Select (10% of trim area x 300 thick)	23	m3	$253.83		$5,837.98
7mm primer seal	1,203	m2	$8.98		$10,803.50
200 thick AC14 wearing course (2 courses)	925	m2	$135.90		$125,707.50
Allow to key into existing pavement	745	m	$31.24		$23,273.80
Culverts:					**$92,001.20**
Supply & place imported select layer over culverts (nominal 300 thick)	522	m3	$36.63		$19,120.86
Supply & place 200 thick subbase	755.997	m2	$22.22		$16,796.40
Supply & place 120 thick base	687	m2	$32.79		$22,529.48
7mm primer seal	687	m2	$6.65		$4,566.06
50 thick AC14 wearing course	687	m2	$30.25		$20,781.75
Allowance to construct gravel access track to existing culvert (2No.)	120	m2	$68.39		$8,206.65

Description	Quantity	Unit	Rate	Markup	Total
LEVEE WALL					**$1,566,683.16**
Form, reinforce & pour concrete Levee foundation	611	m3	$891.82		$544,903.28
Ditto concrete Levee wall (nominal 1100 high x 700 thick overall)	304	m3	$2,473.52		$751,950.87
Ditto over new culverts	100	m3	$2,683.29		$268,329.01
Allowance for offset & taper to Levee wall	2	No.	$750.00		$1,500.00
STORMWATER					**$5,000.00**
Allowance for supply & installation of flapgate to existing culvert	1	No.	$5,000.00		$5,000.00
Extension of existing culvert - EXCL.	1	Item			EXCL
Subsoil drainage adjacent to Levee footing (1 side only) - EXCL.	1	Item			EXCL
CULVERTS					**$2,487,922.71**
Allowance for 250 thick reinforced concrete base slab on & including blinding	1,740	m2	$347.50		$604,650.00
Supply 2700 x 900 x 2400 long RCBC	138	No.	$3,679.90		$507,825.65
Supply 2700 x 2400 long link slab	99	No.	$3,381.00		$334,719.00
Allowance to unload culverts & link slabs on site	1	Item	$55,440.00		$55,440.00
Installation of culverts & link slabs including taping joins & grouting legs	1	Item	$160,459.50		$160,459.50
Culvert Headwalls:					**$585,833.53**
Detailed excavation for new headwall	30.998	m3	$186.84		$5,791.69
Trim & compact subgrade	1,034	m2	$29.34		$30,339.74
Form, reinforce & pour 250 thick concrete apron slab on & including 50 thick granular blinding	258.995	m3	$1,914.58		$495,866.55
Form, reinforce & pour 250 thick wing walls (8No.)	11	m3	$2,691.27		$29,604.00
Form, reinforce & pour 500 high x 250 thick head beam (4No.)	9.004	m3	$2,691.27		$24,231.55
100 diameter Class 1000 socked agg line	128	m	$25.00		$3,200.00
Flushpoint to last	4	No.	$95.00		$380.00
Subsoil tailout drain	4	No.	$350.00		$1,400.00
Allowance for drainage aggregate to subsoil drains	12	m3	$174.32		$2,091.84
Allowance to backfill culvert excavation with imported DGS40	256	m3	$144.70		$37,043.20
Allowance for scour protection	1,856	m2	$105.00		$194,880.00
SERVICES & UTILITIES					**$50,000.00**
Provisional Allowance for adjustments to existing services & utilities in road corridor	1	PSUM	$50,000.00		$50,000.00
SIGNAGE & LINEMARKING					**$6,011.00**

Description	Quantity	Unit	Rate	Markup	Total
Signage:					**$1,000.00**
Allowance for new road signage	4	No.	$250.00		$1,000.00
Linemarking:					**$5,011.00**
Mobilise linemarker	1	No.	$2,500.00		$2,500.00
Waterborne linemarking as detailed to the following:					**$1,669.50**
Line Type BB	90	m	$1.80		$162.00
Line Type E1	1,005	m	$1.50		$1,507.50
Raised pavement markers	99	No.	$8.50		$841.50
FENCING & ROAD FURNITURE					**$63,845.00**
1800 high galvanised chainmesh fence	965	m	$57.00		$55,005.00
Extra Over last for double gate including lock	3	Pair	$1,800.00		$5,400.00
Supply & install Guideposts	8	No.	$55.00		$440.00
Allow to reinstate existing guardrail to site access (2No.)	12	m	$250.00		$3,000.00
LANDSCAPING & REMEDIATION					**$437,814.50**
Road Corridor:					**$8,975.00**
Allowance for native seeding of topsoiled berms & batters	1,850	m2	$3.50		$6,475.00
Maintenance of last (12 months beyond practical completion)	1	Item	$2,500.00		$2,500.00
Access Tracks & Stockpile Areas:					**$30,612.00**
Cultivate subgrade	1,758	m2	$0.50		$879.00
Tube stock (2/m2)	3,516	No.	$5.50		$19,338.00
Allowance for native seeding of topsoiled areas	1,758	m2	$2.50		$4,395.00
Maintenance of last (12 months beyond practical completion)	1	Item	$6,000.00		$6,000.00
Creek:					**$394,400.00**
Cultivate subgrade	25,600	m2	$0.50		$12,800.00
Tube stock (2/m2)	51,200	No.	$5.50		$281,600.00
Allowance for native seeding of topsoiled areas	25,600	m2	$2.50		$64,000.00
Maintenance of last (12 months beyond practical completion)	1	Item	$36,000.00		$36,000.00
Culvert:					**$3,827.50**
Allowance for native seeding of topsoiled berms & batters	665	m2	$3.50		$2,327.50
Maintenance of last (12 months beyond practical completion)	1	Item	$1,500.00		$1,500.00
CONTRACTORS OVERJHEADS & MARGIN					**$1,395,283.72**

Description	Quantity	Unit	Rate	Markup	Total
Allowance for Contractors Corporate Overheads & Margin (15%)	1	Item	$1,395,283.72		$1,395,283.72
INDIRECT COSTS					**$3,099,435.04**
CONTINGENCY					**$1,724,576.28**
Allowance for Design Development Contingency (5%)	1	Item	$574,858.76		$574,858.76
Allowance for Construction Contingency (10%)	1	Item	$1,149,717.52		$1,149,717.52
PROFESSIONAL FEES					**$459,887.01**
Allowance for Design Consultants Fees (4%)	1	Item	$459,887.01		$459,887.01
AUTHORITIES FEES & CHARGES					**$114,971.75**
Allowance for Authorities Fees & Charges including liaison with RMS (1%)	1	Item	$114,971.75		$114,971.75
ENVIRONMENTAL OFFSETS					**$800,000.00**
Allowance for Environmental Offsets	1	Item	$800,000.00		$800,000.00
COST ESCALATION					
Allowance for Cost Escalation beyond April 2019 - EXCL.	1	Item			EXCL
SCHEDULE OF INFORMATION					
Concept Drawings by Royal Haskoning DHV - Sediment Removal Plan (13 B6 PLAN-2)		NOTE			
Concept Drawings by Royal Haskoning DHV - Bends Culvert Plans - 5 Sheets (BENDS CULVERT)		NOTE			
Concept Drawings by Royal Haskoning DHV - Oxford Falls Culvert Design - 4 Sheets (OXFORD FALLS)		NOTE			
Concept Drawings by Royal Haskoning DHV - Sports Centre Design - 3 Sheets (SPORTS CENTRE)		NOTE			
Concept Drawings by Royal Haskoning DHV - Wakehurst Parkway Barrier Design - 6 Sheets (WAKEHURST BARRIERS NB-SB)		NOTE			
SCHEDULE OF EXCLUSIONS					
Tendering Costs - EXCL.		NOTE			
Staging Costs - EXCL.		NOTE			
Unknown steakholder requirements - EXCL.		NOTE			
Delay costs including Inclement Weather- EXCL.		NOTE			
Testing, treatment & management of contaminated material/buried rubbish on site - EXCL.		NOTE			
Unknown ground conditions & engineers design - EXCL.		NOTE			

Description	Quantity	Unit	Rate	Markup	Total
Cost escalation beyond April 2019 - EXCL.		NOTE			

Subtotal	**$13,796,610.22**
Adjustment	$0.00
Post adjustment	$13,796,610.22
G.S.T [10%]	$1,379,661.02
Total	**$15,176,271.24**

Preliminary Budget Estimate

4/4/2019 **2019.024 Preliminary Budget Estimate Option B5**

for **Royal HaskoningDHV**

Preliminary Budget Estimate
Option B5 - Overbank Sediment Removal

Description	Quantity	Unit	Rate	Markup	Total
DIRECT COSTS					**$2,919,121.07**
PRELIMINARIES					**$662,816.93**
Project Management & Supervision					**$196,840.00**
Project Manager - 50%	14	Week	$4,750.00		$66,500.00
Site Engineer - 50%	14	Week	$2,850.00		$39,900.00
Site Supervisor - 100%	28	Week	$3,230.00		$90,440.00
Site Compound, Hoardings, Accommodation & Amenities					**$39,909.32**
Construct temporary handstand	50	m2	$15.00		$750.00
Temporary Fence to Compound	30	m	$15.00		$450.00
Hire Crib Shed x 1	28	Week	$132.02		$3,696.56
Hire Ablution	28	Week	$99.12		$2,775.36
Holding Tank to last	28	Week	$127.05		$3,557.40
Hire Storage Container x 1	28	Week	$35.00		$980.00
Hire Generator including fuel	28	Week	$900.00		$25,200.00
Allowance for bunded fuel refueling area	1	Item	$2,500.00		$2,500.00
Off Site Stockpile Area:					**$20,700.00**
Allowance for ATF fencing to area	200	m	$15.00		$3,000.00
Allowance for sediment control fence to perimeter	200	m	$12.00		$2,400.00
Allowance for shaker grid	1	No.	$1,800.00		$1,800.00
Allowance for signage	1	Item	$2,500.00		$2,500.00
Allowance to make good & revegetation area at completion of work	2,200	m2	$5.00		$11,000.00
Mobilisation & Demobilisation					**$44,300.00**
Mobilisation:					**$25,500.00**
Mobilise Crib Shed	1	No.	$750.00		$750.00

Generated by Cubit (Buildsoft Pty Ltd)

Description	Quantity	Unit	Rate	Markup	Total
Mobilise Ablution & Storage Tank	1	No.	$750.00		$750.00
Mobilise Storage Container	1	No.	$250.00		$250.00
Mobilise Generator	1	No.	$400.00		$400.00
Connection of Electrical Services to compound	1	Item	$2,500.00		$2,500.00
Connection of Potable Water to compound	1	Item	$1,800.00		$1,800.00
Mobilise Plant	1	Item	$19,050.00		$19,050.00
Demobilisation:					**$18,800.00**
Demobilise Crib Shed	1	No.	$750.00		$750.00
Demobilise Ablution & Storage Tank	1	No.	$750.00		$750.00
Demobilise Storage Container	1	No.	$250.00		$250.00
Disconnection of Electrical Services to compound	1	Item	$1,500.00		$1,500.00
Disconnection of Potable Water from compound	1	Item	$750.00		$750.00
Demobilise Plant	1	Item	$14,800.00		$14,800.00
Site OHS Supervision & Allowances					**$21,728.00**
Site OH& S Representative - 20%	5.6	Week	$3,230.00		$18,088.00
Site Induction (Allow 12 Workers)	12	Hr	$70.00		$840.00
PPE Equipment	1	Item	$2,800.00		$2,800.00
Site Survey & WAE					**$10,095.00**
Site Services Survey	1	Item	$1,065.00		$1,065.00
Site Survey & Setout	1	Item	$3,960.00		$3,960.00
Survey Crew Conformance	1	Item	$3,960.00		$3,960.00
Works As Executed	1	Item	$1,110.00		$1,110.00
Existing Services Location					**$2,585.00**
Services Locator	4	Hr	$95.00		$380.00
Non-Destuctive Digging Truck	4	Hr	$280.00		$1,120.00
Labourer x 2	8	Hr	$55.00		$440.00
Skid Steer Loader	5	Hr	$115.00		$575.00
Sand for Backfill	2	t	$35.00		$70.00
Environmental Monitoring					**$186,200.00**
Allowance for full time supervision of Ecologist during works	28	Week	$6,650.00		$186,200.00
Erosion & Sediment Control					**$54,587.25**
No go tape to extent of works	2,719	m	$0.75		$2,039.25
Shaker Grid	2	No.	$1,800.00		$3,600.00
Sediment Control Fence including maintenance	2,750	m	$13.00		$35,750.00
Hay Bale Check Dam (3 Bale)	52	No.	$124.00		$6,448.00

Description	Quantity	Unit	Rate	Markup	Total
Silt boom to creek	10	m	$150.00		$1,500.00
Allowance for water quality testing (Waterway)	7	Months	$750.00		$5,250.00
Construct Sediment Control basin - EXCL.	1	Item			EXCL
Traffic Management					**$63,054.67**
Traffic Management Plan	1	No.	$760.00		$760.00
VMS board (2No.)	56	Week	$460.00		$25,760.00
Mobilise concrete jersery kerb	200	m	$18.33		$3,666.67
Hire concrete jersey kerb	5,600	m/week	$3.20		$17,901.33
Demobilise concrete jersey kerb	200	m	$18.33		$3,666.67
Traffic Control Crew (3 Man)	4	Day	$1,950.00		$7,800.00
Allowance for Misc. Signage & Barricades	1	Item	$3,500.00		$3,500.00
Geotech Supervision & Testing					**$10,880.00**
Stripped Surface Inspections (2No.)	12	Hr	$225.00		$2,700.00
Mobilsation of Geotechnician	4	No.	$100.00		$400.00
Density Tests Access Ramps	48	No.	$110.00		$5,280.00
Geotech Final Report	1	Item	$2,500.00		$2,500.00
Site Office Expenses					**$8,680.00**
WIFI/Internet	28	Week	$25.00		$700.00
Water Supply	28	Week	$60.00		$1,680.00
Rubbish Disposal	28	Week	$25.00		$700.00
Office & Amenity Cleaning	28	Week	$200.00		$5,600.00
Small Tools & Equipment	1	Item	$1,400.00		$1,400.00
Contract Insurances & Security					**$1,857.69**
Contractors Work Insurance	1	Item			INCL
Public & Products Liability Insurance	1	Item			INCL
Professional Indemnity Insurance	1	Item			INCL
Workers Compensation Insurance	1	Item			INCL
Security (2 x 5% Bank Guarantees)	1	Item	$1,857.69		$1,857.69
CLEARING					**$86,989.89**
Clear, grub & remove from site the following trees:					**$86,989.89**
Access Tracks & Stockpile Areas:					**$5,589.89**
Clear & grub sundry vegetation (excavator mounted groomer) after environmental relocation & preservation works are completed	1,758	m2	$3.18		$5,589.89
Creek:					**$81,400.00**

Description	Quantity	Unit	Rate	Markup	Total
Clear & grub sundry vegetation (excavator mounted groomer) after environmental relocation & preservation works are completed	25,600	m2	$3.18		$81,400.00
DEMOLITION					**$420.00**
Take down & store on site existing guardrail for site access (2No.)	12	m	$35.00		$420.00
EARTHWORKS					**$1,352,391.78**
Access Tracks & Stockpile Areas:					**$179,130.01**
Strip mulched vegetation after clearing & stockpile on site for revegetation	1,758	m2	$4.93		$8,659.23
Strip topsoil (nominal 150 thick), windrow adjacent to work area	225	m2	$3.69		$831.20
Allowance to construct bunded stockpile area on site (2No.)	1,652	m2	$14.48		$23,920.00
Allowance to construct access ramp/roads (4No.)	1,192	m2	$70.95		$84,576.49
Allowance to remove bunded stockpile area at completion of works (2No.)	1,652	m2	$1.89		$3,125.00
Allowance to remove access ramp/roads at completion of works - PC Disposal fee $30/t (4No.)	1,192	m2	$41.74		$49,755.50
Allowance to respread mulched vegetation & topsoil on site at completion of works	1,758	m2	$4.70		$8,262.60
Creek:					**$1,173,261.76**
Strip mulched vegetation after clearing & stockpile on site for revegetation	25,600	m2	$4.93		$126,095.72
Allow to excavate sediment material & stockpile on site for off site disposal	28,200	m3	$18.28		$515,596.18
Allowance to load from on site sediment & haul (3km one way to off site screening & disposal site)	28,200	m3	$14.58		$411,249.86
Allowance to screen sediment off site for reuse - EXCL.	1	Item			EXCL
Disposal of debris/waste from screening - EXCL.	1	Item			EXCL
Haulage & Disposal of screened sediment from off site screening & disposal site - EXCL.	1	Item			EXCL
Allowance to respread mulched vegetation on site at completion of works	25,600	m2	$4.70		$120,320.00
ROAD PAVEMENT					**$2,735.55**
Culvert Access Track:					**$2,735.55**
Allowance to construct gravel access track to existing culvert (1No.)	40	m2	$68.39		$2,735.55
STORMWATER					**$5,000.00**

Description	Quantity	Unit	Rate	Markup	Total
Allowance for supply & installation of flapgate to existing culvert	1	No.	$5,000.00		$5,000.00
Extension of existing culvert - EXCL.	1	Item			EXCL
Subsoil drainage adjacent to Levee footing (1 side only) - EXCL.	1	Item			EXCL
SERVICES & UTILITIES					
Adjustments to existing services & utilities in road corridor - EXCL.	1	Item			EXCL
FENCING & ROAD FURNITURE					**$3,000.00**
Allow to reinstate existing guardrail to site access (2No.)	12	m	$250.00		$3,000.00
LANDSCAPING & REMEDIATION					**$425,012.00**
Access Tracks & Stockpile Areas:					**$30,612.00**
Cultivate subgrade	1,758	m2	$0.50		$879.00
Tube stock (2/m2)	3,516	No.	$5.50		$19,338.00
Allowance for native seeding of topsoiled areas	1,758	m2	$2.50		$4,395.00
Maintenance of last (12 months beyond practical completion)	1	Item	$6,000.00		$6,000.00
Creek:					**$394,400.00**
Cultivate subgrade	25,600	m2	$0.50		$12,800.00
Tube stock (2/m2)	51,200	No.	$5.50		$281,600.00
Allowance for native seeding of topsoiled areas	25,600	m2	$2.50		$64,000.00
Maintenance of last (12 months beyond practical completion)	1	Item	$36,000.00		$36,000.00
CONTRACTORS OVERJHEADS & MARGIN					**$380,754.92**
Allowance for Contractors Corporate Overheads & Margin (15%)	1	Item	$380,754.92		$380,754.92
INDIRECT COSTS					**$1,206,341.51**
CONTINGENCY					**$422,294.53**
Allowance for Design Development Contingency (2%)	1	Item	$70,382.42		$70,382.42
Allowance for Construction Contingency (10%)	1	Item	$351,912.11		$351,912.11
PROFESSIONAL FEES					**$140,764.84**
Allowance for Design Consultants Fees (4%)	1	Item	$140,764.84		$140,764.84
AUTHORITIES FEES & CHARGES					**$43,282.14**
Allowance for Authorities Fees & Charges including liaison with RMS (1%)	1	Item	$43,282.14		$43,282.14
ENVIRONMENTAL OFFSETS					**$600,000.00**

Description	Quantity	Unit	Rate	Markup	Total
Allowance for Environmental Offsets	1	Item	$600,000.00		$600,000.00
COST ESCALATION					
Allowance for Cost Escalation beyond March 2019 - EXCL.	1	Item			EXCL
SCHEDULE OF INFORMATION					
Concept Drawings by Royal Haskoning DHV - Sediment Removal Plan (13 B6 PLAN-2)		NOTE			
Concept Drawings by Royal Haskoning DHV - Bends Culvert Plans - 5 Sheets (BENDS CULVERT)		NOTE			
Concept Drawings by Royal Haskoning DHV - Oxford Falls Culvert Design - 4 Sheets (OXFORD FALLS)		NOTE			
Concept Drawings by Royal Haskoning DHV - Sports Centre Design - 3 Sheets (SPORTS CENTRE)		NOTE			
Concept Drawings by Royal Haskoning DHV - Wakehurst Parkway Barrier Design - 6 Sheets (WAKEHURST BARRIERS NB-SB)		NOTE			
SCHEDULE OF EXCLUSIONS					
Tendering Costs - EXCL.		NOTE			
Staging Costs - EXCL.		NOTE			
Unknown steakholder requirements - EXCL.		NOTE			
Delay costs including Inclement Weather- EXCL.		NOTE			
Testing, treatment & management of contaminated material/buried rubbish on site - EXCL.		NOTE			
Unknown ground conditions & engineers design - EXCL.		NOTE			
Cost escalation beyond April 2019 - EXCL.		NOTE			

Subtotal	**$4,125,462.58**
Adjustment	$0.00
Post adjustment	$4,125,462.58
G.S.T [10%]	$412,546.26
Total	**$4,538,008.84**

Preliminary Budget Estimate

4/4/2019 **2019.024 Preliminary Budget Estimate Option B7**

for **Royal HaskoningDHV**

Preliminary Budget Estimate
Option B7 - New Levee & Culverts

Description	Quantity	Unit	Rate	Markup	Total
DIRECT COSTS					**$6,614,741.67**
PRELIMINARIES					**$1,423,891.30**
Project Management & Supervision					**$314,070.00**
Project Manager - 100%	29	Week	$4,750.00		$137,750.00
Site Engineer - 100%	29	Week	$2,850.00		$82,650.00
Site Supervisor - 100%	29	Week	$3,230.00		$93,670.00
Site Compound, Hoardings, Accommodation & Amenities					**$51,201.43**
Construct temporary handstand	70	m2	$15.00		$1,050.00
Temporary Fence to Compound	50	m	$15.00		$750.00
Hire Site Office	45	Week	$85.46		$3,845.70
Hire Crib Shed x 2	90	Week	$132.02		$11,881.80
Hire Ablution	29	Week	$99.12		$2,874.48
Holding Tank to last	29	Week	$127.05		$3,684.45
Hire Storage Container x 1	29	Week	$35.00		$1,015.00
Hire Generator including fuel	29	Week	$900.00		$26,100.00
Mobilisation & Demobilisation					**$24,350.00**
Mobilisation:					**$16,850.00**
Mobilise Site Office	1	No.	$750.00		$750.00
Mobilise Crib Shed	2	No.	$750.00		$1,500.00
Mobilise Ablution & Storage Tank	1	No.	$750.00		$750.00
Mobilise Storage Container	1	No.	$250.00		$250.00
Mobilise Generator	1	No.	$400.00		$400.00
Connection of Electrical Services to compound	1	Item	$3,000.00		$3,000.00
Connection of Potable Water to compound	1	Item	$2,000.00		$2,000.00

Description	Quantity	Unit	Rate	Markup	Total
Mobilise Plant	1	Item	$8,200.00		$8,200.00
Demobilisation:					**$7,500.00**
Demobilise Site Office	1	No.	$750.00		$750.00
Demobilise Crib Shed	2	No.	$750.00		$1,500.00
Demobilise Ablution & Storage Tank	1	No.	$750.00		$750.00
Demobilise Storage Container	1	No.	$250.00		$250.00
Disconnection of Electrical Services to compound	1	Item	$1,500.00		$1,500.00
Disconnection of Potable Water from compound	1	Item	$750.00		$750.00
Demobilise Plant	1	Item	$2,000.00		$2,000.00
Site OHS Supervision & Allowances					**$24,434.00**
Site OH& S Representative - 20%	5.8	Week	$3,230.00		$18,734.00
Site Induction (Allow 40 Workers)	40	Hr	$70.00		$2,800.00
PPE Equipment	1	Item	$2,900.00		$2,900.00
Site Survey & WAE					**$38,250.00**
Site Services Survey	1	Item	$3,240.00		$3,240.00
Site Survey & Setout	1	Item	$15,840.00		$15,840.00
Survey Crew Conformance	1	Item	$15,840.00		$15,840.00
Works As Executed	1	Item	$3,330.00		$3,330.00
Existing Services Location					**$3,890.00**
Services Locator	6	Hr	$95.00		$570.00
Non-Destuctive Digging Truck	6	Hr	$280.00		$1,680.00
Labourer x 2	12	Hr	$55.00		$660.00
Skid Steer Loader	7	Hr	$115.00		$805.00
Sand for Backfill	5	t	$35.00		$175.00
Environmental Monitoring					**$39,900.00**
Allowance for full time supervision of Ecologist during works	6	Week	$6,650.00		$39,900.00
Erosion & Sediment Control					**$29,778.00**
Sediment Control Fence including maintenance	850	m	$13.00		$11,050.00
Hay Bale Check Dam (3 Bale)	22	No.	$124.00		$2,728.00
Allowance for water quality testing (Waterway)	8	Months	$750.00		$6,000.00
Construct Sediment Control basin	2	No.	$5,000.00		$10,000.00
Traffic Management					**$807,335.18**
Traffic Management Plan	5	No.	$760.00		$3,800.00
VMS board (4No.)	116	Week	$460.00		$53,360.00
Day makers	112	Day	$268.00		$30,016.00

Description	Quantity	Unit	Rate	Markup	Total
Mobilise TL2 Barriers (Culvert Works)	360	m	$15.00		$5,400.00
Hire TL2 Barrier	5,760	m/week	$12.85		$73,987.20
Demobilise TL2 Barrier	360	m	$15.00		$5,400.00
Mobilise concrete jersey kerb	800	m	$18.33		$14,666.67
Hire concrete jersey kerb	23,200	m/week	$3.20		$74,162.67
Demobilise concrete jersey kerb	800	m	$18.33		$14,666.67
Allowance for temporary road pavements during culvert works (4No.):					**$454,625.98**
Allowance to boxout/earthworks to prepare subgrade	2,800	m2	$25.00		$70,000.00
Supply & place 200 thick subbase	2,800	m2	$22.20		$62,172.00
Supply & place 120 thick base	2,800	m2	$17.55		$49,153.98
7mm primer seal	2,800	m2	$7.36		$20,600.00
50 thick AC14 wearing course	2,800	m2	$30.25		$84,700.00
Allowance to remove temporary road pavements at completion of works	2,800	m2	$60.00		$168,000.00
Traffic Control Crew (3 Man)	35	Day	$1,950.00		$68,250.00
Allowance for Misc. Signage & Barricades	1	Item	$9,000.00		$9,000.00
Geotech Supervision & Testing					**$44,510.00**
Stripped Surface Inspections (7No.)	42	Hr	$225.00		$9,450.00
Level 1 supervision (Fill Operations)	10	Day	$1,500.00		$15,000.00
Mobilsation of Geotechnician	16	No.	$100.00		$1,600.00
Density Tests Road Pavement	24	No.	$110.00		$2,640.00
Density Tests Culverts	112	No.	$110.00		$12,320.00
Geotech Final Report	1	Item	$3,500.00		$3,500.00
Site Office Expenses					**$8,990.00**
WIFI/Internet	29	Week	$25.00		$725.00
Water Supply	29	Week	$60.00		$1,740.00
Rubbish Disposal	29	Week	$25.00		$725.00
Office & Amenity Cleaning	29	Week	$200.00		$5,800.00
Small Tools & Equipment	1	Item	$1,450.00		$1,450.00
Contract Insurances & Security					**$35,732.69**
Contractors Work Insurance	1	Item			INCL
Public & Products Liability Insurance	1	Item			INCL
Professional Indemnity Insurance	1	Item			INCL
Workers Compensation Insurance	1	Item			INCL
Security (2 x 5% Bank Guarantees)	1	Item	$35,732.69		$35,732.69
CLEARING					**$75,508.78**
Clear, grub & remove from site the following trees:					**$75,508.78**
Road Corridor:					**$67,495.96**

Description	Quantity	Unit	Rate	Markup	Total
Small Tree	8	No.	$1,500.00		$12,000.00
Medium Tree	9	No.	$2,500.00		$22,500.00
Large Tree	7	No.	$3,500.00		$24,500.00
Clear & grub sundry vegetation	1,251	m2	$6.79		$8,495.96
Culverts:					**$8,012.81**
Clear & grub sundry vegetation (excavator mounted groomer) after environmental relocation & preservation works are completed	2,520	m2	$3.18		$8,012.81
DEMOLITION					**$89,401.08**
Sawcut existing AC pavement not exceeding 100 thick	480	m	$14.75		$7,080.00
Demolish & remove the following from site:					**$28,235.40**
Sealed shoulder, not exceeding 200 thick	335	m2	$47.51		$15,915.40
Chainmesh fence	600	m	$15.00		$9,000.00
Double gate	1	No.	$300.00		$300.00
Service box & post at gate	1	Item	$2,500.00		$2,500.00
Road signs	2	No.	$75.00		$150.00
Guideposts	8	No.	$15.00		$120.00
Guardrail posts	5	No.	$50.00		$250.00
Demolish existing stabilised earth berm (nominal 1000 high)	110	m	$113.52		$12,487.50
Demolish & remove existing AC wearing course not exceeding 50 thick	687	m2	$28.37		$19,490.19
Demolish existing 2 x 1500 diameter RC pipe culvert	26	m	$667.28		$17,349.25
Demolish existing twin 1500 precast headwall	2	No.	$2,054.37		$4,108.74
Demolish existing scour protection to last	50	m2	$13.00		$650.00
EARTHWORKS					**$646,753.89**
Road Corridor:					**$51,959.14**
Strip topsoil (nominal 150 thick), windrow adjacent to work area	850	m2	$2.50		$2,125.00
Allowance to supply & place imported Select material to shoulder	100	m3	$156.54		$15,654.06
Detailed excavation/boxout for Levee foundation (spoil to be lost on batter)	319	m3	$91.50		$29,188.50
Trim batters	850	m2	$3.20		$2,720.00
Spread on site topsoil to batters not exceeding 300 thick	128	m3	$17.75		$2,271.58
Culverts:					**$594,794.74**
Strip topsoil (nominal 150 thick) and stockpile on site	1,712	m2	$2.50		$4,280.00
Excavate in Other than Rock for culvert	4,253	m3	$5.20		$22,115.60

Description	Quantity	Unit	Rate	Markup	Total
Extra Over last to excavate in rock - EXCL.	1	Item			EXCL
Excavate in OTR for culvert channels	2,652.003	m3	$11.38		$30,188.26
Extra Over last to excavate in rock - EXCL.	1	Item			EXCL
Allowance to Haul & dispose of spoil off site within 30km (Tip Fee PC $25/t)	6,905	m3	$74.25		$512,693.07
Trim & compact base culvert subgrade	1,740	m2	$8.20		$14,268.00
Allowance to trim batters	665	m2	$3.20		$2,128.00
Allowance to respread topsoil to batters not exceeding 300 thick	514	m3	$17.75		$9,121.82
ROADWORKS					**$177,688.92**
Road Corridor:					**$85,687.73**
Sealed Shoulder:					**$85,687.73**
Trim & compact road subgrade	425	m2	$14.00		$5,950.00
Allowance to remove & replace unsuitable material with imported Select (10% of trim area x 300 thick)	13	m3	$253.83		$3,299.73
7mm primer seal	553	m2	$9.77		$5,403.50
200 thick AC14 wearing course (2 courses)	425	m2	$135.90		$57,757.50
Allow to key into existing pavement	425	m	$31.24		$13,277.00
Culverts:					**$92,001.20**
Supply & place imported select layer over culverts (nominal 300 thick)	522	m3	$36.63		$19,120.86
Supply & place 200 thick subbase	755.997	m2	$22.22		$16,796.40
Supply & place 120 thick base	687	m2	$32.79		$22,529.48
7mm primer seal	687	m2	$6.65		$4,566.06
50 thick AC14 wearing course	687	m2	$30.25		$20,781.75
Allowance to construct gravel access track to existing culvert (2No.)	120	m2	$68.39		$8,206.65
LEVEE WALL					**$717,388.07**
Form, reinforce & pour concrete Levee foundation	281	m3	$891.82		$250,602.00
Ditto concrete Levee wall (nominal 1100 high x 700 thick overall)	132	m3	$2,473.52		$326,504.98
Ditto over new culverts	52	m3	$2,683.29		$139,531.08
Allowance for offset & taper to Levee wall	1	No.	$750.00		$750.00
STORMWATER					**$5,000.00**
Allowance for supply & installation of flapgate to existing culvert	1	No.	$5,000.00		$5,000.00
Extension of existing culvert - EXCL.	1	Item			EXCL
Subsoil drainage adjacent to Levee footing (1 side only) - EXCL.	1	Item			EXCL
CULVERTS					**$2,487,922.71**

Description	Quantity	Unit	Rate	Markup	Total
Allowance for 250 thick reinforced concrete base slab on & including blinding	1,740	m2	$347.50		$604,650.00
Supply 2700 x 900 x 2400 long RCBC	138	No.	$3,679.90		$507,825.65
Supply 2700 x 2400 long link slab	99	No.	$3,381.00		$334,719.00
Allowance to unload culverts & link slabs on site	1	Item	$55,440.00		$55,440.00
Installation of culverts & link slabs including taping joins & grouting legs	1	Item	$160,459.50		$160,459.50
Culvert Headwalls:					**$585,833.53**
Detailed excavation for new headwall	30.998	m3	$186.84		$5,791.69
Trim & compact subgrade	1,034	m2	$29.34		$30,339.74
Form, reinforce & pour 250 thick concrete apron slab on & including 50 thick granular blinding	258.995	m3	$1,914.58		$495,866.55
Form, reinforce & pour 250 thick wing walls (8No.)	11	m3	$2,691.27		$29,604.00
Form, reinforce & pour 500 high x 250 thick head beam (4No.)	9.004	m3	$2,691.27		$24,231.55
100 diameter Class 1000 socked agg line	128	m	$25.00		$3,200.00
Flushpoint to last	4	No.	$95.00		$380.00
Subsoil tailout drain	4	No.	$350.00		$1,400.00
Allowance for drainage aggregate to subsoil drains	12	m3	$174.32		$2,091.84
Allowance to backfill culvert excavation with imported DGS40	256	m3	$144.70		$37,043.20
Allowance for scour protection	1,856	m2	$105.00		$194,880.00
SERVICES & UTILITIES					**$50,000.00**
Provisional Allowance for adjustments to existing services & utilities in road corridor	1	PSUM	$50,000.00		$50,000.00
SIGNAGE & LINEMARKING					**$5,107.03**
Signage:					**$1,000.00**
Allowance for new road signage	4	No.	$250.00		$1,000.00
Linemarking:					**$4,107.03**
Mobilise linemarker	1	No.	$2,500.00		$2,500.00
Waterborne linemarking as detailed to the following:					**$1,054.50**
Line Type BB	90	m	$1.80		$162.00
Line Type E1	595	m	$1.50		$892.50
Raised pavement markers	65.003	No.	$8.50		$552.53
FENCING & ROAD FURNITURE					**$63,985.00**
1800 high galvanised chainmesh fence	585	m	$57.00		$33,345.00
Extra Over last for double gate including lock	2	Pair	$1,800.00		$3,600.00
Supply & install Guideposts	8	No.	$55.00		$440.00

Description	Quantity	Unit	Rate	Markup	Total
New Guardrail over culverts	100	m	$150.00		$15,000.00
Allow for Melt	2	No.	$4,000.00		$8,000.00
Allow for TL2	2	No.	$1,800.00		$3,600.00
LANDSCAPING & REMEDIATION					**$9,302.50**
Road Corridor:					**$5,475.00**
Allowance for native seeding of topsoiled berms & batters	850	m2	$3.50		$2,975.00
Maintenance of last (12 months beyond practical completion)	1	Item	$2,500.00		$2,500.00
Culvert:					**$3,827.50**
Allowance for native seeding of topsoiled berms & batters	665	m2	$3.50		$2,327.50
Maintenance of last (12 months beyond practical completion)	1	Item	$1,500.00		$1,500.00
CONTRACTORS OVERJHEADS & MARGIN					**$862,792.39**
Allowance for Contractors Corporate Overheads & Margin (15%)	1	Item	$862,792.39		$862,792.39
INDIRECT COSTS					**$1,562,948.33**
CONTINGENCY					**$1,022,211.25**
Allowance for Design Development Contingency (5%)	1	Item	$340,737.08		$340,737.08
Allowance for Construction Contingency (10%)	1	Item	$681,474.17		$681,474.17
PROFESSIONAL FEES					**$272,589.67**
Allowance for Design Consultants Fees (4%)	1	Item	$272,589.67		$272,589.67
AUTHORITIES FEES & CHARGES					**$68,147.42**
Allowance for Authorities Fees & Charges including liaison with RMS (1%)	1	Item	$68,147.42		$68,147.42
ENVIRONMENTAL OFFSETS					**$200,000.00**
Allowance for Environmental Offsets	1	Item	$200,000.00		$200,000.00
COST ESCALATION					
Allowance for Cost Escalation beyond April 2019 - EXCL.	1	Item			EXCL
SCHEDULE OF INFORMATION					
Concept Drawings by Royal Haskoning DHV - Sediment Removal Plan (13 B6 PLAN-2)		NOTE			
Concept Drawings by Royal Haskoning DHV - Bends Culvert Plans - 5 Sheets (BENDS CULVERT)		NOTE			
Concept Drawings by Royal Haskoning DHV - Oxford Falls Culvert Design - 4 Sheets (OXFORD FALLS)		NOTE			

Description	Quantity	Unit	Rate	Markup	Total
Concept Drawings by Royal Haskoning DHV - Sports Centre Design - 3 Sheets (SPORTS CENTRE)		NOTE			
Concept Drawings by Royal Haskoning DHV - Wakehurst Parkway Barrier Design - 6 Sheets (WAKEHURST BARRIERS NB-SB)		NOTE			

SCHEDULE OF EXCLUSIONS

Tendering Costs - EXCL.		NOTE			
Staging Costs - EXCL.		NOTE			
Unknown steakholder requirements - EXCL.		NOTE			
Delay costs including Inclement Weather- EXCL.		NOTE			
Testing, treatment & management of contaminated material/buried rubbish on site - EXCL.		NOTE			
Unknown ground conditions & engineers design - EXCL.		NOTE			
Cost escalation beyond April 2019 - EXCL.		NOTE			

Subtotal	**$8,177,690.00**
Adjustment	$0.00
Post adjustment	$8,177,690.00
G.S.T [10%]	$817,769.00
Total	**$8,995,459.00**

Preliminary Budget Estimate

5/4/2019 **2019.024 Preliminary Budget Estimate Option O1**

for **Royal HaskoningDHV**

Preliminary Budget Estimate
Amplification of 2 x Existing Road Pipe Crossings Under the Parkway at Oxford Falls

Description	Quantity	Unit	Rate	Markup	Total
DIRECT COSTS					**$991,437.14**
PRELIMINARIES					**$376,333.62**
Project Management & Supervision					**$101,460.00**
Project Manager - 50%	6	Week	$4,750.00		$28,500.00
Site Engineer - 100%	12	Week	$2,850.00		$34,200.00
Site Supervisor - 100%	12	Week	$3,230.00		$38,760.00
Site Compound, Hoardings, Accommodation & Amenities					**$19,843.80**
Construct temporary handstand	70	m2	$15.00		$1,050.00
Temporary Fence to Compound	50	m	$15.00		$750.00
Hire Site Office	12	Week	$85.46		$1,025.52
Hire Crib Shed x 1	12	Week	$132.02		$1,584.24
Hire Ablution	12	Week	$99.12		$1,189.44
Holding Tank to last	12	Week	$127.05		$1,524.60
Hire Storage Container x 1	12	Week	$35.00		$420.00
Hire Generator including fuel	12	Week	$900.00		$10,800.00
Allowance for bunded fuel refueling area	1	Item	$1,500.00		$1,500.00
Mobilisation & Demobilisation					**$18,700.00**
Mobilisation:					**$12,800.00**
Mobilise Site Office	1	No.	$750.00		$750.00
Mobilise Crib Shed	1	No.	$750.00		$750.00
Mobilise Ablution & Storage Tank	1	No.	$750.00		$750.00
Mobilise Storage Container	1	No.	$250.00		$250.00
Mobilise Generator	1	No.	$400.00		$400.00
Connection of Electrical Services to compound	1	Item	$2,500.00		$2,500.00

Description	Quantity	Unit	Rate	Markup	Total
Connection of Potable Water to compound	1	Item	$1,800.00		$1,800.00
Mobilise Plant	1	Item	$5,600.00		$5,600.00
Demobilisation:					**$5,900.00**
Demobilise Site Office	1	No.	$750.00		$750.00
Demobilise Crib Shed	1	No.	$750.00		$750.00
Demobilise Ablution & Storage Tank	1	No.	$750.00		$750.00
Demobilise Storage Container	1	No.	$250.00		$250.00
Disconnection of Electrical Services to compound	1	Item	$1,200.00		$1,200.00
Disconnection of Potable Water from compound	1	Item	$600.00		$600.00
Demobilise Plant	1	Item	$1,600.00		$1,600.00
Site OHS Supervision & Allowances					**$10,352.00**
Site OH& S Representative - 20%	2.4	Week	$3,230.00		$7,752.00
Site Induction (Allow 20 Workers)	20	Hr	$70.00		$1,400.00
PPE Equipment	1	Item	$1,200.00		$1,200.00
Site Survey & WAE					**$11,390.00**
Site Services Survey	1	Item	$3,240.00		$3,240.00
Site Survey & Setout	1	Item	$3,520.00		$3,520.00
Survey Crew Conformance	1	Item	$3,520.00		$3,520.00
Works As Executed	1	Item	$1,110.00		$1,110.00
Existing Services Location					**$3,145.00**
Services Locator	4	Hr	$95.00		$380.00
Non-Destuctive Digging Truck	6	Hr	$280.00		$1,680.00
Labourer x 2	8	Hr	$55.00		$440.00
Skid Steer Loader	5	Hr	$115.00		$575.00
Sand for Backfill	2	t	$35.00		$70.00
Environmental Monitoring					**$19,950.00**
Allowance for supervision of Ecologist during works	3	Week	$6,650.00		$19,950.00
Erosion & Sediment Control					**$14,480.00**
Shaker Grid	2	No.	$1,800.00		$3,600.00
Sediment Control Fence including maintenance	300	m	$13.00		$3,900.00
Hay Bale Check Dam (3 Bale)	20	No.	$124.00		$2,480.00
Allowance for water quality testing (Waterway)	6	Months	$750.00		$4,500.00
Construct Sediment Control basin	1	Item			EXCL
Traffic Management					**$124,992.82**
Traffic Management Plan	2	No.	$760.00		$1,520.00

Description	Quantity	Unit	Rate	Markup	Total
VMS board (2No.)	16	Week	$460.00		$7,360.00
Mobilise TL2 Barriers (Culvert Works)	240	m	$15.00		$3,600.00
Hire TL2 Barrier	2,880	m/week	$12.85		$36,993.60
Demobilise TL2 Barrier	240	m	$15.00		$3,600.00
Mobilise concrete jersery kerb	48	m	$18.33		$880.00
Hire concrete jersey kerb	576	m/week	$3.20		$1,841.28
Demobilise concrete jersey kerb	48	m	$18.33		$880.00
Allowance for temporary road pavement during culvert works (2No.):					**$38,967.94**
Allowance to boxout/earthworks to prepare subgrade	240	m2	$25.00		$6,000.00
Supply & place 200 thick subbase	240	m2	$22.20		$5,329.03
Supply & place 120 thick base	240	m2	$17.55		$4,213.20
7mm primer seal	240	m2	$7.36		$1,765.71
50 thick AC14 wearing course	240	m2	$30.25		$7,260.00
Allowance to remove temporary road pavements at completion of works	240	m2	$60.00		$14,400.00
Traffic Control Crew (3 Man)	13	Day	$1,950.00		$25,350.00
Allowance for Misc. Signage & Barricades	1	Item	$4,000.00		$4,000.00
Geotech Supervision & Testing					**$45,900.00**
Stripped Surface Inspections (8No.)	48	Hr	$225.00		$10,800.00
Mobilsation of Geotechnician	8	No.	$100.00		$800.00
Density Tests Road Pavement	24	No.	$110.00		$2,640.00
Density Tests Culverts	256	No.	$110.00		$28,160.00
Geotech Final Report	1	Item	$3,500.00		$3,500.00
Site Office Expenses					**$3,720.00**
WIFI/Internet	12	Week	$25.00		$300.00
Water Supply	12	Week	$60.00		$720.00
Rubbish Disposal	12	Week	$25.00		$300.00
Office & Amenity Cleaning	12	Week	$200.00		$2,400.00
Small Tools & Equipment	1	Item	$600.00		$600.00
Contract Insurances & Security					**$1,800.00**
Contractors Work Insurance	1	Item			INCL
Public & Products Liability Insurance	1	Item			INCL
Professional Indemnity Insurance	1	Item			INCL
Workers Compensation Insurance	1	Item			INCL
Security (2 x 5% Bank Guarantees)	1	Item	$1,800.00		$1,800.00
CLEARING					**$10,154.47**
Culvert (Ch250):					**$5,194.47**
Clear & grub sundry vegetation	576	m2	$9.02		$5,194.47

Description	Quantity	Unit	Rate	Markup	Total
Culvert (Ch350):					**$4,960.00**
Clear & grub sundry vegetation	550	m2	$9.02		$4,960.00
DEMOLITION					**$31,179.71**
Culvert (Ch250):					**$24,583.25**
Sawcut existing AC pavement not exceeding 100 thick	22	m	$24.19		$532.28
Demolish & remove the following from site:					**$3,040.55**
Demolish & remove existing AC wearing course not exceeding 50 thick	64	m2	$47.51		$3,040.55
Demolish existing 2 x 1800 diameter RC pipe culvert	19	m	$776.97		$14,762.50
Demolish existing twin 1800 precast headwall	2	No.	$2,798.96		$5,597.92
Demolish existing scour protection to last	50	m2	$13.00		$650.00
Culvert (Ch350):					**$6,596.46**
Sawcut existing AC pavement not exceeding 100 thick	18	m	$24.19		$435.50
Demolish & remove the following from site:					**$2,210.31**
Demolish & remove existing AC wearing course not exceeding 50 thick	36	m2	$47.51		$1,710.31
Guardrail posts	10	No.	$50.00		$500.00
Take down & store on site existing guardrail for site access (2No.)	24	m	$35.00		$840.00
Demolish existing 375 diameter RC pipe culvert	14	m	$147.20		$2,060.75
Demolish existing 375 diameter precast headwall	2	No.	$342.95		$685.90
Demolish existing scour protection to last	28	m2	$13.00		$364.00
EARTHWORKS					**$78,803.07**
Culvert (Ch250):					**$57,467.27**
Creek:					**$24,058.96**
Strip topsoil/mulched vegetation after clearing & stockpile on site for revegetation (nominal 200 thick)	314	m2	$3.13		$981.25
Allow to excavate in Other Than rock & stockpile on site for off site disposal	212	m3	$26.18		$5,549.41
Allowance to Haul & dispose of spoil off site within 30km (Tip Fee PC $25/t)	212	m3	$74.25		$15,740.90
Trim batters	162	m2	$3.20		$518.40
Allowance to respread mulched vegetation on site at completion of works	162	m2	$7.83		$1,269.00
Culverts:					**$33,408.30**

Description	Quantity	Unit	Rate	Markup	Total
Excavate in OTR for culvert	334	m3	$23.49		$7,846.36
Extra Over last to excavate in rock - EXCL.	1	Item			EXCL
Allowance to Haul & dispose of spoil off site within 30km (Tip Fee PC $25/t)	334	m3	$74.25		$24,799.35
Trim & compact base culvert subgrade	93	m2	$8.20		$762.60
Culvert (Ch350):					**$21,335.80**
Creek:					**$8,552.98**
Strip topsoil/mulched vegetation after clearing & stockpile on site for revegetation (nominal 200 thick)	188	m2	$3.13		$587.50
Allow to excavate in Other Than rock & stockpile on site for off site disposal	68.001	m3	$26.18		$1,780.02
Allowance to Haul & dispose of spoil off site within 30km (Tip Fee PC $25/t)	68.001	m3	$74.25		$5,049.02
Trim batters	103	m2	$3.20		$329.60
Allowance to respread mulched vegetation on site at completion of works	103	m2	$7.83		$806.83
Culverts:					**$12,782.82**
Excavate in OTR for culvert	125.999	m3	$23.49		$2,959.98
Extra Over last to excavate in rock - EXCL.	1	Item			EXCL
Allowance to Haul & dispose of spoil off site within 30km (Tip Fee PC $25/t)	126	m3	$74.25		$9,355.44
Trim & compact base culvert subgrade	57	m2	$8.20		$467.40
ROADWORKS					**$45,296.54**
Culvert (Ch250):					**$28,069.04**
Culverts:					**$28,069.04**
Supply & place imported select layer over culverts (nominal 600 thick)	56	m3	$91.19		$5,106.64
Supply & place 200 thick subbase	70	m2	$22.22		$1,555.23
Supply & place 120 thick base	64	m2	$32.79		$2,098.82
7mm primer seal (In conjunction with other priming elsewhere)	64	m2	$9.92		$634.59
50 thick AC14 wearing course	64	m2	$249.03		$15,938.22
Allowance to construct gravel access track to existing culvert (1No.)	40	m2	$68.39		$2,735.55
Culvert (Ch350):					**$17,227.50**
Culverts:					**$17,227.50**
Supply & place imported select layer over culverts (nominal 600 thick)	34	m3	$91.19		$3,100.46
Supply & place 200 thick subbase	40	m2	$22.22		$888.70

Description	Quantity	Unit	Rate	Markup	Total
Supply & place 120 thick base	36	m2	$32.79		$1,180.58
7mm primer seal (In conjunction with other priming elsewhere)	36	m2	$9.92		$356.95
50 thick AC14 wearing course	36	m2	$249.03		$8,965.25
Allowance to construct gravel access track to existing culvert (1No.)	40	m2	$68.39		$2,735.55
STORMWATER					
Subsoil drainage to new road pavement - EXCL.	1	Item			EXCL
CULVERTS					**$234,070.83**
Culvert (Ch250):					**$174,551.34**
Supply, bed, lay, haunch & backfill the following:					**$115,927.56**
3 x 1800 Diameter Class 4 RC pipe including stabilised sand backfill to road corridor	16	m	$7,245.47		$115,927.56
Culvert Headwalls:					**$58,623.78**
Detailed excavation for new headwall	3	m3	$186.84		$560.53
Supply & install precast triple 1800 diameter headwall	2	No.	$21,051.63		$42,103.25
Allowance for scour protection	152	m2	$105.00		$15,960.00
Culvert (Ch350):					**$59,519.49**
Supply, bed, lay, haunch & backfill the following:					**$41,161.47**
3 x 600 Diameter Class 4 RC pipe including stabilised sand backfill to road corridor	17	m	$2,421.26		$41,161.47
Culvert Headwalls:					**$18,358.03**
Detailed excavation for new headwall	3	m3	$186.84		$560.53
Supply & install precast triple 600 diameter headwall	2	No.	$4,436.25		$8,872.50
Allowance for scour protection	85	m2	$105.00		$8,925.00
SERVICES & UTILITIES					**$45,000.00**
Culvert (Ch250):					**$25,000.00**
Allowance to relocate existing street light next to culvert	1	No.	$5,000.00		$5,000.00
Provisional Allowance for adjustments to existing services & utilities in road corridor	1	PSUM	$20,000.00		$20,000.00
Culvert (Ch350):					**$20,000.00**
Provisional Allowance for adjustments to existing services & utilities in road corridor	1	PSUM	$20,000.00		$20,000.00

Description	Quantity	Unit	Rate	Markup	Total
SIGNAGE & LINEMARKING					**$6,656.00**
Culvert (Ch250):					**$3,246.00**
Signage:					**$500.00**
Allowance for new road signage	2	No.	$250.00		$500.00
Linemarking:					**$2,746.00**
Mobilise linemarker	1	No.	$2,500.00		$2,500.00
Waterborne linemarking as detailed to the following:					**$144.00**
Line Type BB	30	m	$1.80		$54.00
Line Type E1	60	m	$1.50		$90.00
Raised pavement markers	12	No.	$8.50		$102.00
Culvert (Ch350):					**$3,410.00**
Signage:					**$500.00**
Allowance for new road signage	2	No.	$250.00		$500.00
Linemarking:					**$2,910.00**
Mobilise linemarker	1	No.	$2,500.00		$2,500.00
Waterborne linemarking as detailed to the following:					**$240.00**
Line Type BB	50	m	$1.80		$90.00
Line Type E1	100	m	$1.50		$150.00
Raised pavement markers	20	No.	$8.50		$170.00
FENCING & ROAD FURNITURE					**$23,000.00**
Culvert (Ch250):					**$17,000.00**
Allowance to supply & install guardrail	36	m	$150.00		$5,400.00
Allowance for MELT	2	No.	$4,000.00		$8,000.00
Allowance to ET2000	2	No.	$1,800.00		$3,600.00
Culvert (Ch350):					**$6,000.00**
Allow to reinstate existing guardrail (2No.)	24	m	$250.00		$6,000.00
LANDSCAPING & REMEDIATION					**$11,625.00**
Culvert (Ch250):					**$6,550.00**
Creek:					**$6,550.00**
Cultivate subgrade	162	m2	$0.50		$81.00
Tube stock (4/m2)	648	No.	$5.50		$3,564.00
Allowance for native seeding of topsoiled areas	162	m2	$2.50		$405.00
Maintenance of last (12 months beyond practical completion)	1	Item	$2,500.00		$2,500.00

Description	Quantity	Unit	Rate	Markup	Total
Culvert (Ch350):					**$5,075.00**
Creek:					**$5,075.00**
Cultivate subgrade	103	m2	$0.50		$51.50
Tube stock (4/m2)	412	No.	$5.50		$2,266.00
Allowance for native seeding of topsoiled areas	103	m2	$2.50		$257.50
Maintenance of last (12 months beyond practical completion)	1	Item	$2,500.00		$2,500.00
CONTRACTORS OVERJHEADS & MARGIN					**$129,317.89**
Allowance for Contractors Corporate Overheads & Margin (15%)	1	Item	$129,317.89		$129,317.89
INDIRECT COSTS					**$237,944.91**
CONTINGENCY					**$148,715.57**
Allowance for Design Development Contingency (5%)	1	Item	$49,571.86		$49,571.86
Allowance for Construction Contingency (10%)	1	Item	$99,143.71		$99,143.71
PROFESSIONAL FEES					**$59,486.23**
Allowance for Design Consultants Fees (6%)	1	Item	$59,486.23		$59,486.23
AUTHORITIES FEES & CHARGES					**$29,743.11**
Allowance for Authorities Fees & Charges including liaison with RMS (3%)	1	Item	$29,743.11		$29,743.11
ENVIRONMENTAL OFFSETS					
Allowance for Environmental Offsets - EXCL.	1	Item			EXCL
COST ESCALATION					
Allowance for Cost Escalation beyond April 2019 - EXCL.	1	Item			EXCL
SCHEDULE OF INFORMATION					
Concept Drawings by Royal Haskoning DHV - Sediment Removal Plan (13 B6 PLAN-2)		NOTE			
Concept Drawings by Royal Haskoning DHV - Bends Culvert Plans - 5 Sheets (BENDS CULVERT)		NOTE			
Concept Drawings by Royal Haskoning DHV - Oxford Falls Culvert Design - 4 Sheets (OXFORD FALLS)		NOTE			
Concept Drawings by Royal Haskoning DHV - Sports Centre Design - 3 Sheets (SPORTS CENTRE)		NOTE			
Concept Drawings by Royal Haskoning DHV - Wakehurst Parkway Barrier Design - 6 Sheets (WAKEHURST BARRIERS NB-SB)		NOTE			
SCHEDULE OF EXCLUSIONS					

Description	Quantity	Unit	Rate	Markup	Total
Tendering Costs - EXCL.		NOTE			
Staging Costs - EXCL.		NOTE			
Unknown steakholder requirements - EXCL.		NOTE			
Delay costs including Inclement Weather- EXCL.		NOTE			
Testing, treatment & management of contaminated material/buried rubbish on site - EXCL.		NOTE			
Unknown ground conditions & engineers design - EXCL.		NOTE			
Cost escalation beyond April 2019 - EXCL.		NOTE			

Subtotal	**$1,229,382.05**
Adjustment	$0.00
Post adjustment	$1,229,382.05
G.S.T [10%]	$122,938.21
Total	**$1,352,320.26**

Preliminary Budget Estimate

5/4/2019 **2019.024 Preliminary Budget Estimate Option O2**

for **Royal HaskoningDHV**

Preliminary Budget Estimate
Further amplification of 2 x Existing Road Pipe Crossings Under the Parkway at Oxford Falls

Description	Quantity	Unit	Rate	Markup	Total
DIRECT COSTS					**$1,323,314.19**
PRELIMINARIES					**$447,197.91**
CLEARING					**$11,092.36**
DEMOLITION					**$34,695.36**
EARTHWORKS					**$106,452.70**
ROADWORKS					**$63,193.91**
STORMWATER					
CULVERTS					**$395,789.74**
SERVICES & UTILITIES					**$49,000.00**
SIGNAGE & LINEMARKING					**$6,786.00**
FENCING & ROAD FURNITURE					**$24,800.00**
LANDSCAPING & REMEDIATION					**$11,700.00**
CONTRACTORS OVERJHEADS & MARGIN					**$172,606.20**
INDIRECT COSTS					**$317,595.41**
CONTINGENCY					**$198,497.13**
PROFESSIONAL FEES					**$79,398.85**
AUTHORITIES FEES & CHARGES					**$39,699.43**
ENVIRONMENTAL OFFSETS					
COST ESCALATION					

Description	Quantity	Unit	Rate	Markup	Total
SCHEDULE OF INFORMATION					
Concept Drawings by Royal Haskoning DHV - Sediment Removal Plan (13 B6 PLAN-2)		NOTE			
Concept Drawings by Royal Haskoning DHV - Bends Culvert Plans - 5 Sheets (BENDS CULVERT)		NOTE			
Concept Drawings by Royal Haskoning DHV - Oxford Falls Culvert Design - 4 Sheets (OXFORD FALLS)		NOTE			
Concept Drawings by Royal Haskoning DHV - Sports Centre Design - 3 Sheets (SPORTS CENTRE)		NOTE			
Concept Drawings by Royal Haskoning DHV - Wakehurst Parkway Barrier Design - 6 Sheets (WAKEHURST BARRIERS NB-SB)		NOTE			
SCHEDULE OF EXCLUSIONS					
Tendering Costs - EXCL.		NOTE			
Staging Costs - EXCL.		NOTE			
Unknown steakholder requirements - EXCL.		NOTE			
Delay costs including Inclement Weather- EXCL.		NOTE			
Testing, treatment & management of contaminated material/buried rubbish on site - EXCL.		NOTE			
Unknown ground conditions & engineers design - EXCL.		NOTE			
Cost escalation beyond April 2019 - EXCL.		NOTE			

Subtotal	**$1,640,909.59**
Adjustment	$0.00
Post adjustment	$1,640,909.59
G.S.T [10%]	$164,090.96
Total	**$1,805,000.55**

Preliminary Budget Estimate

6/4/2019 **2019.024 Preliminary Budget Estimate Option S1**

for **Royal HaskoningDHV**

Preliminary Budget Estimate
Option S1 - 2 x No. Bunds Adjacent to Sydney Academy of Sport & Recreation

Description	Quantity	Unit	Rate	Markup	Total
DIRECT COSTS					**$1,738,439.22**
PRELIMINARIES					**$432,083.77**
CLEARING					**$4,960.00**
DEMOLITION					**$82,627.14**
EARTHWORKS					**$41,080.70**
ROAD PAVEMENT					**$101,274.09**
LEVEE WALL					**$794,345.08**
STORMWATER					
SERVICES & UTILITIES					**$30,000.00**
SIGNAGE & LINEMARKING					**$5,697.00**
FENCING & ROAD FURNITURE					**$15,120.00**
LANDSCAPING & REMEDIATION					**$4,498.50**
CONTRACTORS OVERJHEADS & MARGIN					**$226,752.94**
INDIRECT COSTS					**$382,456.63**
CONTINGENCY					**$295,534.67**
PROFESSIONAL FEES					**$69,537.57**
AUTHORITIES FEES & CHARGES					**$17,384.39**
ENVIRONMENTAL OFFSETS					
COST ESCALATION					

Description	Quantity	Unit	Rate	Markup	Total
SCHEDULE OF INFORMATION					
Concept Drawings by Royal Haskoning DHV - Sediment Removal Plan (13 B6 PLAN-2)		NOTE			
Concept Drawings by Royal Haskoning DHV - Bends Culvert Plans - 5 Sheets (BENDS CULVERT)		NOTE			
Concept Drawings by Royal Haskoning DHV - Oxford Falls Culvert Design - 4 Sheets (OXFORD FALLS)		NOTE			
Concept Drawings by Royal Haskoning DHV - Sports Centre Design - 3 Sheets (SPORTS CENTRE)		NOTE			
Concept Drawings by Royal Haskoning DHV - Wakehurst Parkway Barrier Design - 6 Sheets (WAKEHURST BARRIERS NB-SB)		NOTE			
SCHEDULE OF EXCLUSIONS					
Tendering Costs - EXCL.		NOTE			
Staging Costs - EXCL.		NOTE			
Unknown steakholder requirements - EXCL.		NOTE			
Delay costs including Inclement Weather- EXCL.		NOTE			
Testing, treatment & management of contaminated material/buried rubbish on site - EXCL.		NOTE			
Unknown ground conditions & engineers design - EXCL.		NOTE			
Cost escalation beyond April 2019 - EXCL.		NOTE			

Subtotal	**$2,120,895.84**
Adjustment	$0.00
Post adjustment	$2,120,895.84
G.S.T [10%]	$212,089.58
Total	**$2,332,985.42**