

Wakehurst Parkway Flood Investigations



Session Content

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Acknowledgement of Country

I would like to acknowledge the Traditional Custodians of the land on which we meet and pay respects to their elders past, present and future.

I would like to extend that respect to Aboriginal peoples present today.

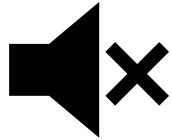
Introductions

- Northern Beaches Council Staff
- Community Attendees

Session Objectives

- provide the Northern Beaches community with a deeper understanding of the options available for reducing flooding events on the Wakehurst Parkway.
- encourage comment on the options on Council's your say page

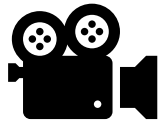
Session Etiquette



Cameras off and microphones on mute during the presentation please.



Use the chat box for questions during the presentations – to be answered at the end.



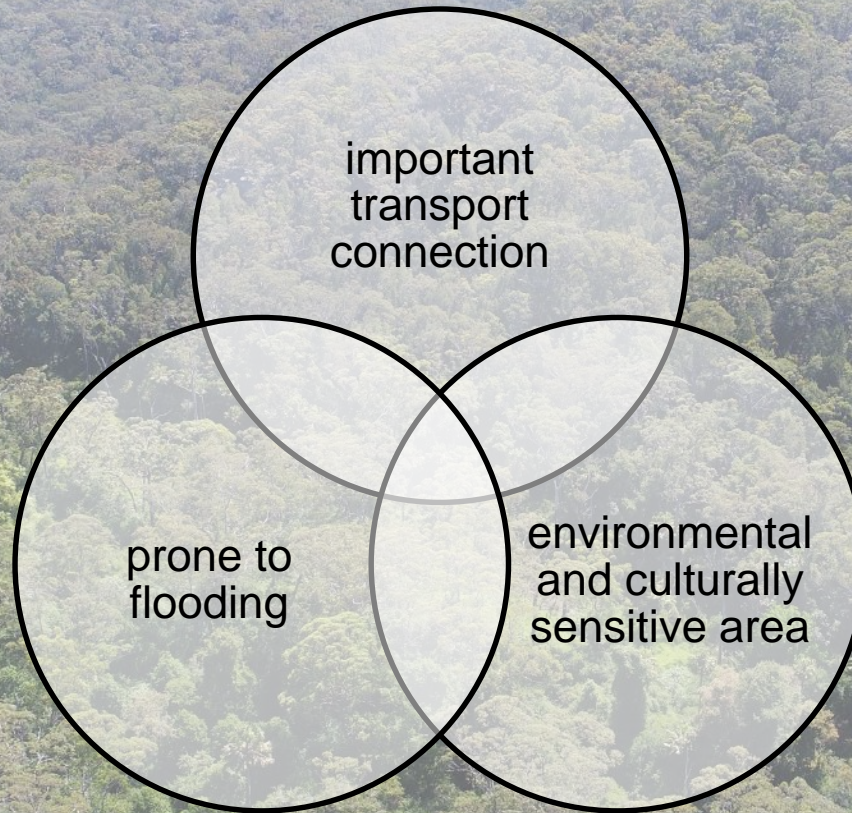
Session will be recorded

Project Introduction

Yianni Mentis

Executive Manager Environment & Climate Change

Wakehurst Parkway – overview



Timeline

- ✓ Dec 2017: Stronger Community Fund - grants awarded
- ✓ Mid 2017 - Apr 2018: Initial investigations and data collection
- ✓ Apr 2018 - Dec 2019: Detailed analysis and options development
- ✓ Dec 2019: Council wrote to TfNSW requesting additional funding
- ✓ Nov 2020: Funding announced in NSW budget
- ✓ Mar 2021: Formal funding offer received from TfNSW
- ✓ Apr 2021: Council conditionally accepts funding offer pending community consultation and extension of timeframe
- ★ May - Jun 2021: Public exhibition of the draft feasibility study
- ★ Mid-late 2021: Council meeting to determine next steps
- ★ Late 2021 and beyond: Next steps including further investigation (if endorsed)



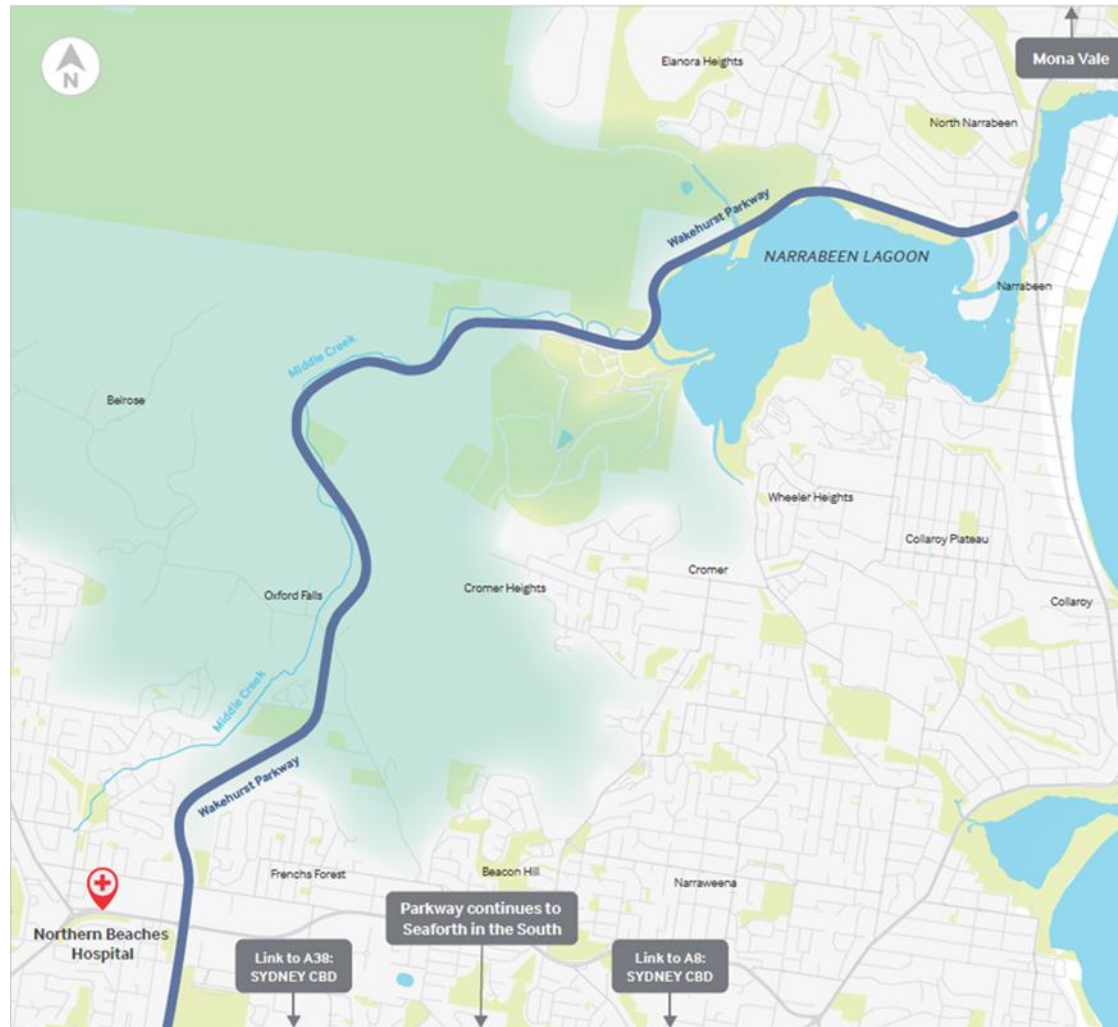
northern
beaches
council

Project Overview and Options

James Leigh

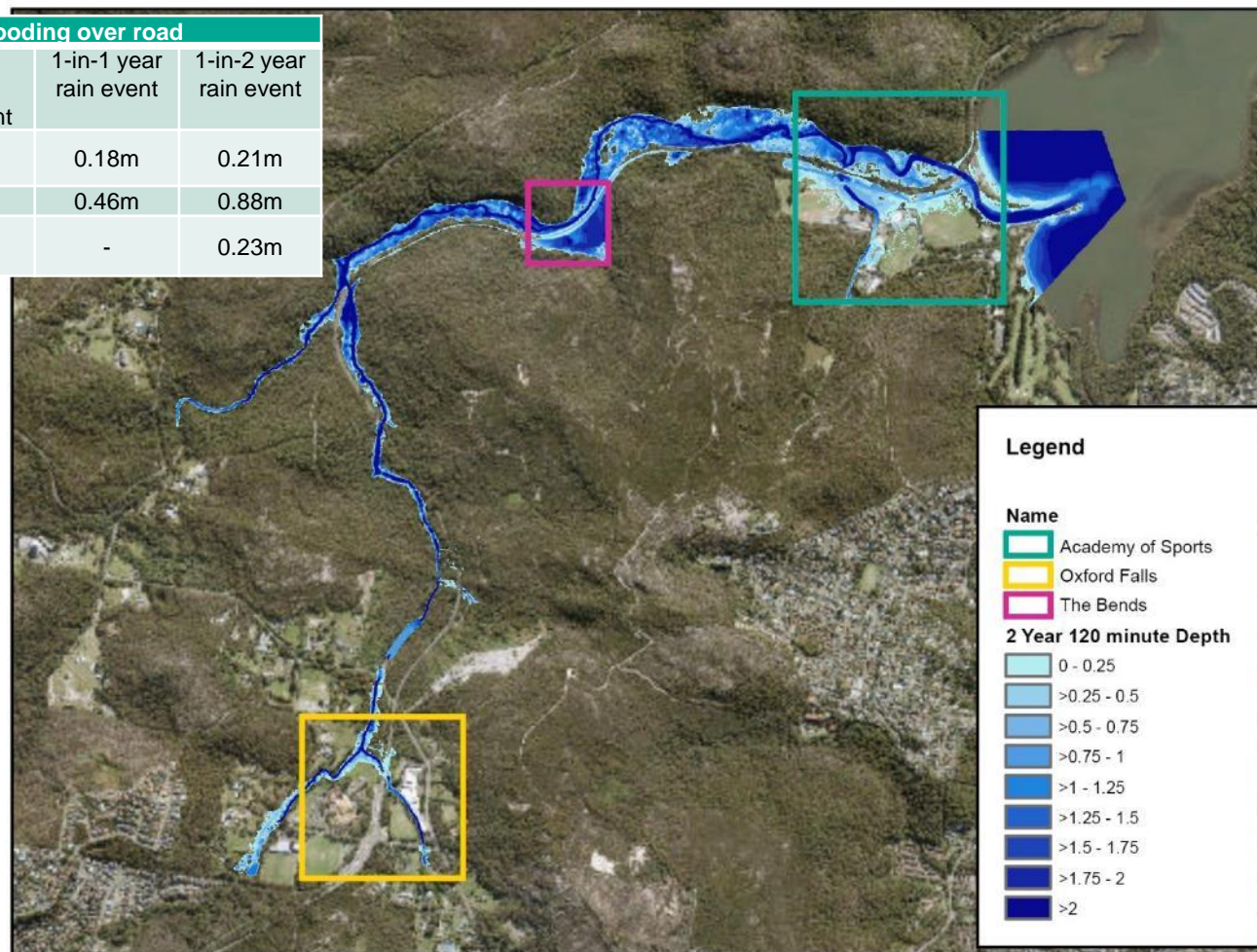
Manager Stormwater & Floodplain Engineering

Important connection



Prone to flooding

Case	Depth of flooding over road			
	1-in-3 month rain event	1-in-6 month rain event	1-in-1 year rain event	1-in-2 year rain event
Oxford Falls	0.06m	0.09m	0.18m	0.21m
The Bends	0.08m	0.35m	0.46m	0.88m
Academy of Sport	-	-	-	0.23m



Prone to flooding



Environmentally sensitive



Assessing the Options

Options Assessment Process

2017

The long list

Identified and refined by Cardno, Soil Conservation Service and Haskoning over 2017 and 2018, with preliminary assessment of benefits and impacts. Considered previous studies from 2009 and 2015.



Road upgrade options

- Culvert upgrades
- Improve road drainage
- Bunds
- Raise the road alignment
- New levees
- Upgrade to existing levees

Creek treatment options

- Top sand extraction (removal of overbank sediment) at specific areas of Middle Creek
- Sediment control
- Vegetation removal
- Creek restoration
- a detention basin
- Dredging
- Stabilisation of fire trails

2018

Shortlisting

The long list initially assessed for: site by site suitability and feasibility, and unacceptable risks, constraints (environmental or otherwise, and effectiveness.



Road upgrade options

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Creek treatment options

- Top sand extraction (removal of overbank sediment) at specific areas of Middle Creek
- Sediment control
- Vegetation removal
- Creek restoration
- a detention basin
- Dredging
- Stabilisation of fire trails

Reasons for exclusion

- Sediment control and fire trail stabilisation considered small-creek catchment management approach would not see direct improvement to flooding.
- Creek restoration
- A detention basin the size needed not considered feasible due to size, location and other constraints.

Options grouped for flood protection for entire road: 1-in-3-month, 1-in-6-month, 1-in-1-year and 1-in-2-year flood events.

2019

Final shortlist

Work undertaken to further understand the feasibility of remaining options from the shortlist, and refine them for better comparison.



Road upgrade options

- Culvert upgrades
- Improve road drainage
- Bunds
- Raise the road alignment
- New levees
- Upgrade to existing levees

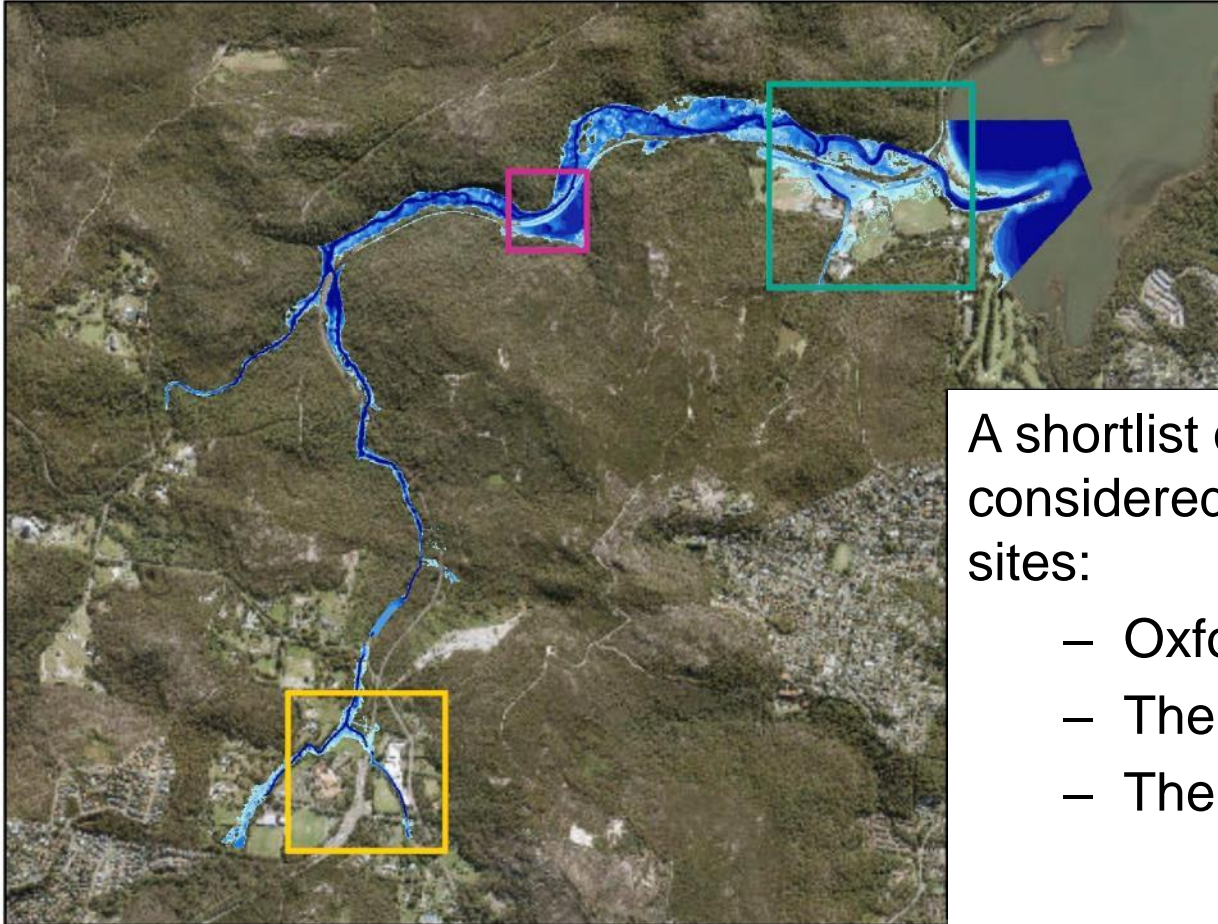
Creek treatment options

- Top sand extraction (removal of 1m overbank sediment) at targeted locations (depending on site).
- Top sand extraction (removal of 2m overbank sediment)
- New levees

Reasons for exclusion

- 2m of top sand extraction considered unfeasible: as creek is typically 1m below the overbank area, removing 2m of sediment would effectively lower the creek, with aquatic and hydraulic impacts.

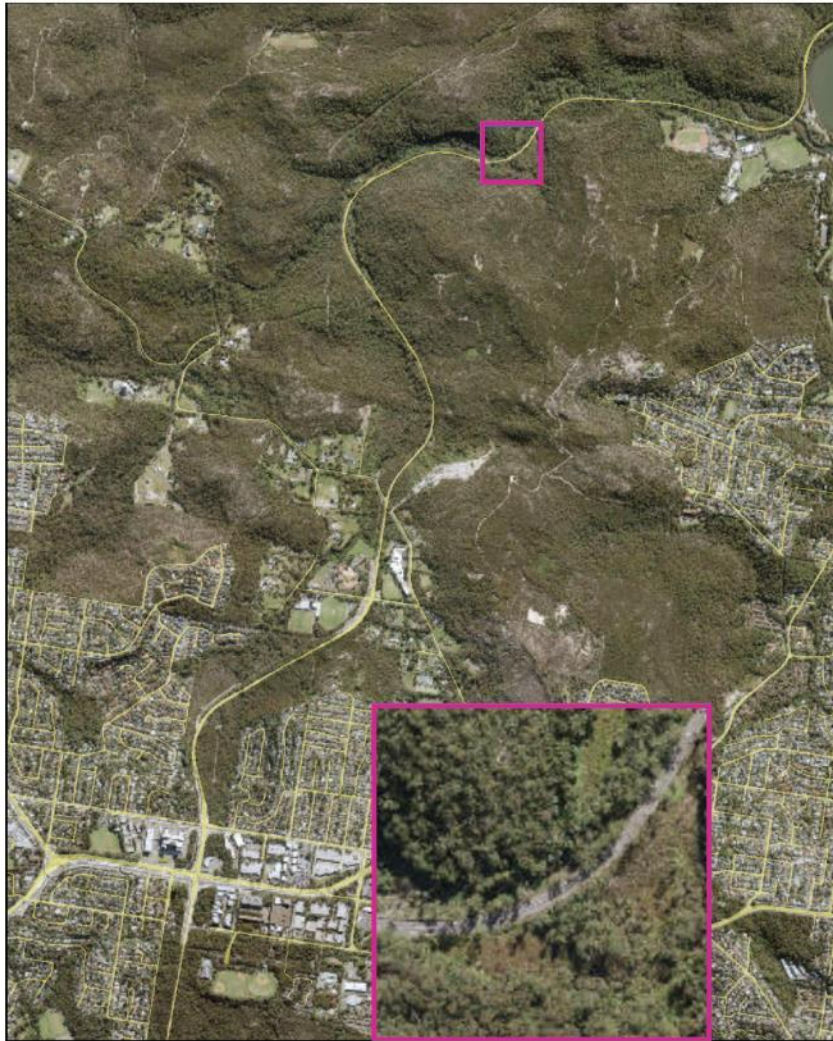
Final Shortlist



A shortlist of options were considered across 3 key sites:

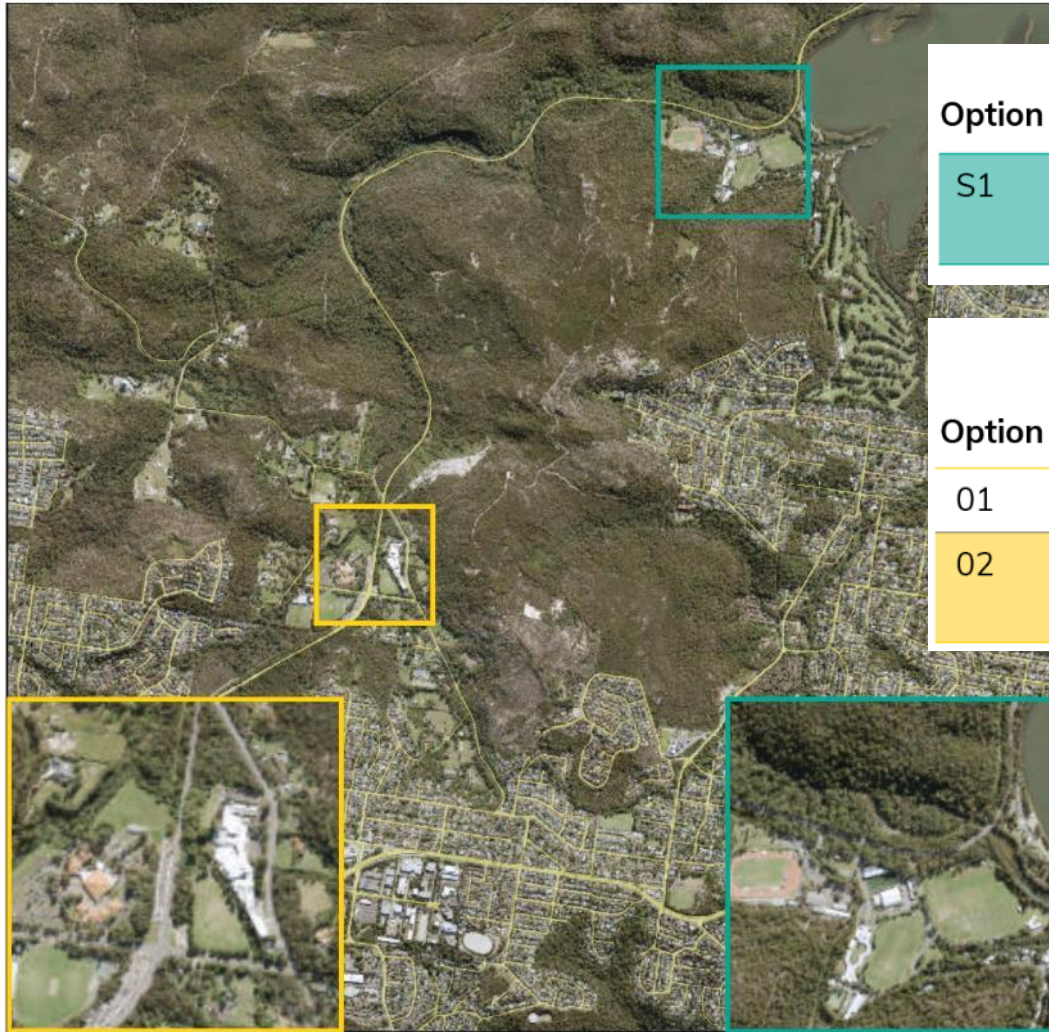
- Oxford fall
- The bends
- The academy

Shortlisted Options – The Bends



Option	Description	Flood protection offered
B1	New levee	1-in-3 month (1EY)
B2	New levee and removal of 1m depth of overbank sediment	1-in-6 month (2EY)
B3	New levee, removal of 1m depth of overbank sediment and under-road culverts	1-1 year (1EY)
B4	New levee, removal of 1m depth of overbank sediment, under road culverts, and top up of existing levee	1-in-2 year (0.5EY)
B5	Removal of overbank sediment (1m depth)	1-in-3 month (4EY)
B7	New levee, under road culverts	1-in-1 year (1EY)











Shortlisted Options – Academy of Sports & Oxford Falls



Option	Description	Flood protection offered
S1	Bunds and localised low point drainage	1-in-2 year (0.5EY)

Option	Description	Flood protection offered
01	Culvert capacity increase	1-in-1 year (1EY)
02	Culvert capacity increase (addition to A1)	1-in-2 year (0.5EY)

Options Comparison table page

	Do Nothing	1-in-3-month protection	1-in-6-month protection	1-in-1-year protection	1-in-2-year protection
Option Description	No construction options	The Bends <ul style="list-style-type: none"> sediment removal 	The Bends <ul style="list-style-type: none"> sediment removal new levee Oxford Falls <ul style="list-style-type: none"> upgrade existing culverts 	The Bends <ul style="list-style-type: none"> sediment removal new levee new culverts Oxford Falls <ul style="list-style-type: none"> upgrade existing culverts 	The Bends <ul style="list-style-type: none"> sediment removal new levee new under-road culverts Oxford Falls <ul style="list-style-type: none"> significantly upgrade existing culverts Sports Academy <ul style="list-style-type: none"> bunds and localised low point drainage
Vegetation Cleared	none	~27,360m ²	~29,700m ²	~32,250m ²	~34,700m ²
Average road closures	6 to 7 a year	4 a year	2 a year	1 a year	1 every 2 years
Indicative cost	\$0.05M	\$4.5M 	\$7.0M  	\$13.3M   	\$17.5M    

1-in-2-year protection option

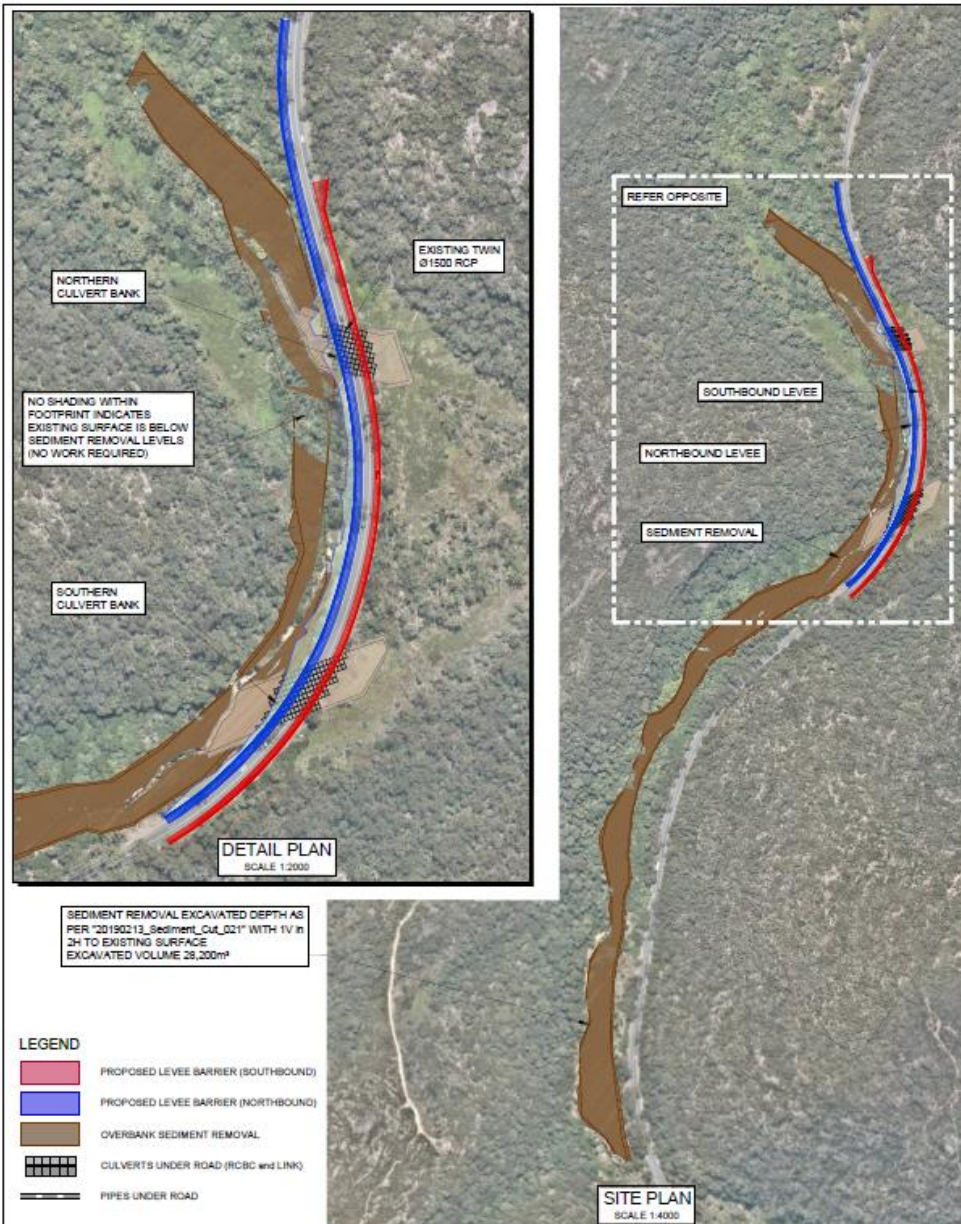
More details

What is the 1-in-2-year protection option?

A combination of site specific options which provide flood protection from a 1-in-2-year rain event

- **The Bends - Option B4** : New levee, removal of overbank sediment, under road culverts and top up of existing levee
- **Oxford Falls - Option O2** : Culvert capacity increase
- **Sydney Academy - Option S1** : Bunds and localised low drainage point

A key finding of the feasibility study was that environmental impacts are likely to be similar across all investigated levels of flood protection.



Title: Option B4 - New Levee's, Sediment Removal, Culverts

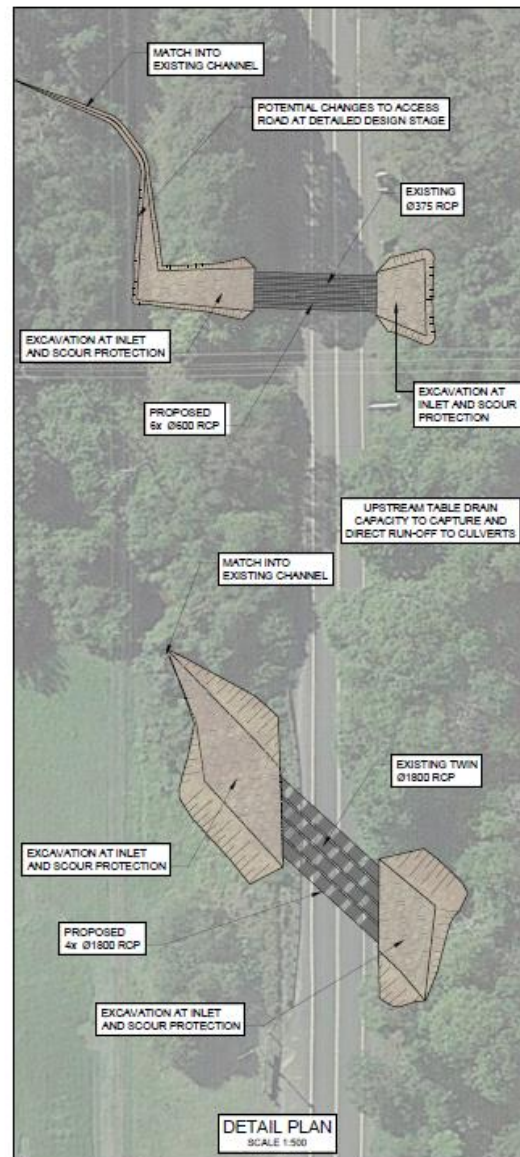
Project: Wakehurst Parkway - Option Feasibility (The Bends)

Figure:

B4

Rev:

1



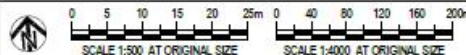
Title: Option O2 - Culvert Capacity Increase (2 Year Immunity)

Project: Wakehurst Parkway - Option Feasibility (Oxford Falls)

Figure:
O2

Rev:
1

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Title: Option S1 - Bunds and Localised Low Point Drainage

Project: Wakehurst Parkway - Option Feasibility (Sports Centre)

Figure:

S1

Rev:

1

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0 10 20 30 40 50m
SCALE 1:1000 AT ORIGINAL SIZE

0 40 80 120 160 200m
SCALE 1:4000 AT ORIGINAL SIZE

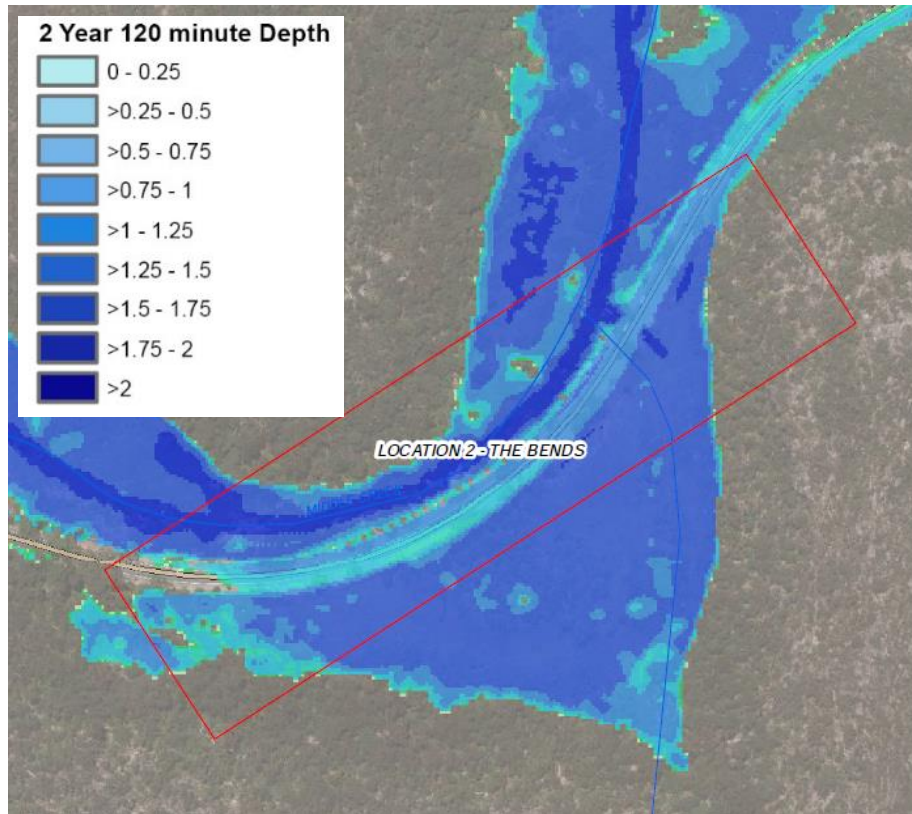
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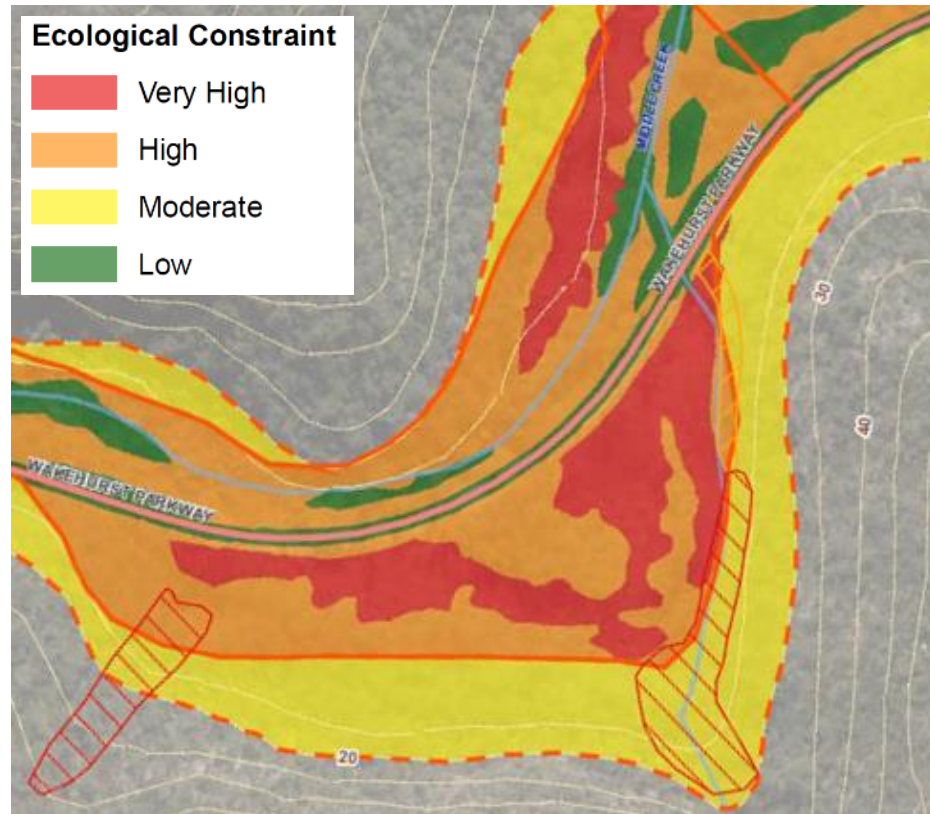
Environmental Impacts

Environmental Impacts

Flood Depth Map



Ecological Constraint Map



Environmental Impacts

- Oxford Falls Valley highly valuable environmental area
- Much of the high value ecological land is in the floodplain
- Road acts as a 'levee' which retains water in a large wetland on the eastern side of the bends
- Likely impacts:
 - Removal of over 3ha of bushland/wetlands including Threatened Ecological Communities and Threatened species
 - Environmental impact assessment required
 - Expensive offsetting
- Opportunity for best practice restoration



Questions



use the chat box

or



use the “raise your hand” function if you would like to be asked to speak

or



unmute your microphone with camera on and ask a question

Community and stakeholder consultation

Mel Dunn
Community Engagement

Engagement activities

- Key stakeholder: calls / emails / briefings
- Resident letter box drop
- Stakeholder newsletters
- Signage
- Email blasts
- Your Say and Website
- FAQs
- VMS
- Online sessions: 17 June and 8 July
- Face to face sessions: 19 and 22 June
- Media

Next steps

While a lot of work has been completed, there are a number of steps to come:

- feedback collected during this consultation period will be collated, assessed and reported back to Council
- if the elected Council decides to proceed, further designs and environmental approvals are required
- future stages of any flood reduction project would include, but not be limited to:
 - community consultation
 - design and approvals
 - procurement
 - construction and ensuring the rehabilitation of the impacted area.
- Thorough community and stakeholder engagement would be completed across all future project stages.

Have your say

No commitment has been made at this stage to pursue any specific option or combination of options and we want to hear from our community prior to making a decision.



<https://yoursay.northernbeaches.nsw.gov.au/wakehurst-parkway-flood-mitigation>



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'Wakehurst Parkway Flood Mitigation',
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NSW 1655.