

What happens next?

Following completion of the public exhibition, the reports will be updated based on community feedback and presented to Council for adoption. This will include a description of community consultation activities, including the topics and issues raised during the exhibition period as well as how they were addressed.

Once adopted, the recommended options for flood management will be subjected to further investigation through feasibility assessments.

Where can I learn more?

The Narrabeen Lagoon Floodplain Risk Management Study and Plan reports can be found on Council's Your Say page.

The Study can also be accessed in hard copy at:

- All Customer Service Centres
- All Council Libraries

If you would like further information, Council will be holding information sessions in the Lakeview Hall at the Tramshed on the following days:

- 4-7pm Tuesday 4 December
- 12-3pm Wednesday 5 December
- 1-4pm Thursday 6 December
- 1-4pm Saturday 19 January
- 5-8pm Tuesday 22 January
- 1-4pm Wednesday 23 January

Bookings are essential.

To make a booking, please contact Valerie Tulk on 9942 2915 or email floodplain@northernbeaches.nsw.gov.au

How can I make a comment?

Community input is an important part of the draft Study and Plan, particularly people's views on the preferred way to manage flooding.

The Draft Floodplain Risk Management Study and Plan will be on public exhibition from 1 December 2018 to 1 February 2019.

Comments can be made online via the Council webpage.

Written submissions marked 'Submission – Draft Narrabeen Lagoon Floodplain Risk Management Study and Plan', should be addressed to Northern Beaches Council, PO Box 82, MANLY NSW 1655.

Comments may also be emailed to council@northernbeaches.nsw.gov.au

Comments close 1 February 2019

Acknowledgements

The draft Narrabeen Lagoon Floodplain Risk Management Study and Plan were prepared with financial assistance from the NSW Government through its Floodplain Management Program. These documents do not necessarily represent the opinions of the NSW Government.



Flooding at
Narrabeen Shops, 1942

Narrabeen Lagoon Catchment Draft Floodplain Risk Management Study and Plan – Summary Document December 2018



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What are these reports for?

Northern Beaches Council is continually reviewing the management of flooding in the Narrabeen Lagoon catchment so that the flood risk is reduced for our community. As part of this process, we've prepared a new Floodplain Risk Management Study and Plan on which we'd like your feedback.

This project follows on from the Narrabeen Lagoon Flood Study which was adopted in 2013, and replaces the previous Floodplain Risk Management Plan from 2002. A range of potential options has been developed which take into account the economic, environmental and social impacts of flooding. The study also looked at what to do in an emergency and the potential impacts of climate change.

These options have been ranked in the draft Floodplain Risk Management Study, with the best ranked options put into the draft Floodplain Risk Management Plan. Based on community feedback, the reports will be finalised and the Plan will be used to prioritise options for design and implementation.

What options have been investigated?

Both structural and non-structural options were considered when selecting ways to manage flooding.

Structural options

The types of structural options considered include:

- Entrance management works, including sand clearance
- Levees to redirect flood water
- Drainage upgrades and channel works
- Road raising
- Detention basins to hold back flood water

The structural options assessed and their draft rankings are shown opposite. There are numerous potential options, and we want to know which ones are most preferred by the community.

Non-structural options:

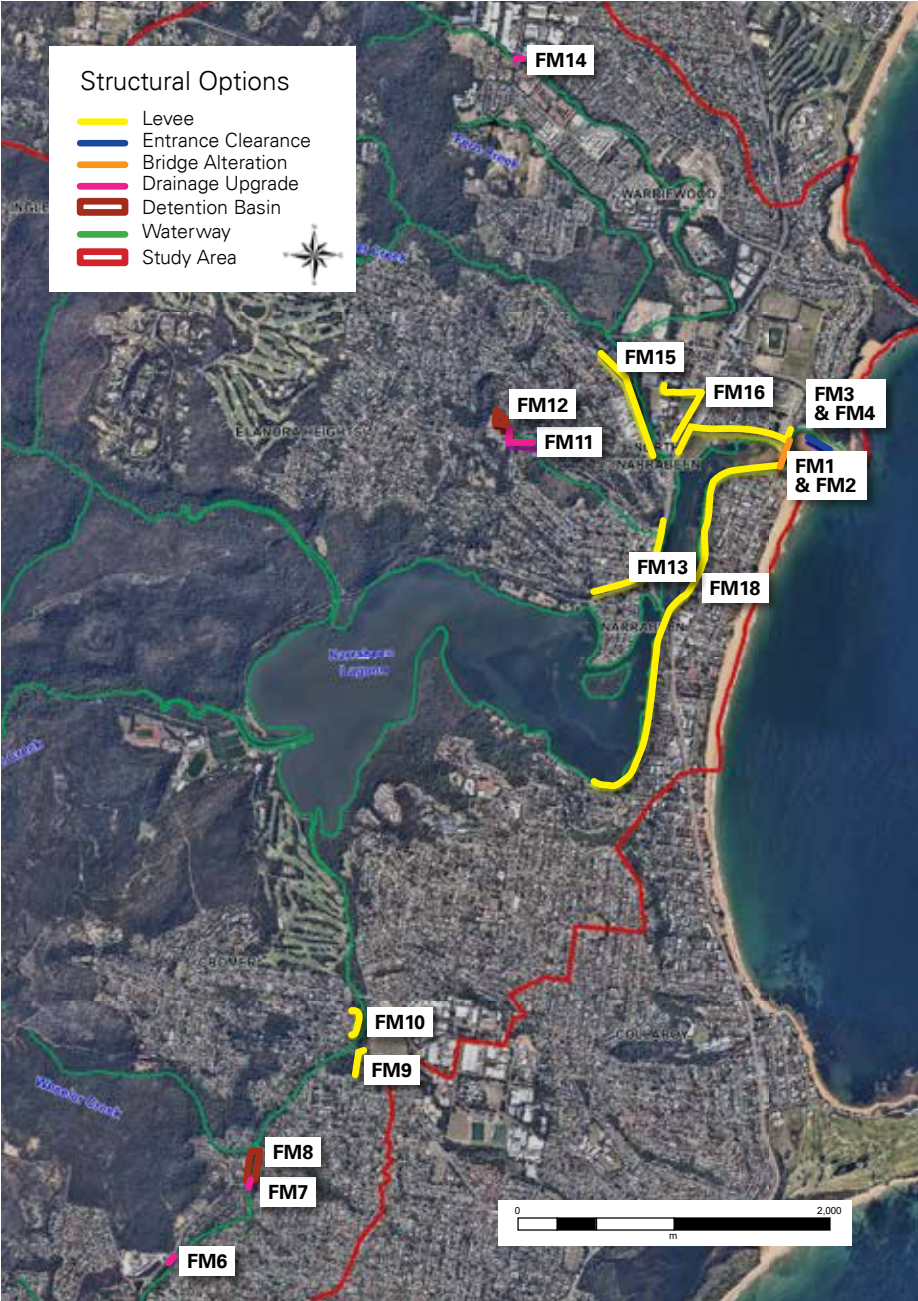
Non-structural options fall into the following three categories:

- Emergency response
- Property modification
- Planning and Policy

The following non-structural options were recommended:

- Preparation of an Entrance Management Strategy
- Data collection after floods
- Flood planning level revision
- Local evacuation measures
- Public awareness and education
- Flood warning systems
- School education programs
- Flood markers and signage

Other options such as voluntary purchase and voluntary house raising were assessed but found to be not financially feasible.



| Option | Potential Structural Options | Draft Ranking |
|---------|--|---------------|
| FM4 | Extraction of Entrance Shoals upstream and downstream of the Ocean St Bridge – Clearing accumulated sand masses upstream and downstream of the entrance bridge, to reduce build-up. This is the current entrance management technique. | 1 |
| FM9 | Waroon Road Levee – Construction of a levee at the rear of properties along Dalpura Street to protect them from flooding. | 2 |
| FM10 | Wabash Avenue Levee – Construction of a levee from Wabash Ave to Washington Ave to protect residential properties from flooding. | 2 |
| FM6 | Alkira Circuit Drainage Upgrade – Upgrading the stormwater drainage network under the low-lying Alkira Circuit crossing to prevent overland flow from entering residential properties downstream. The network can cater for frequent events and would be enlarged to cater for infrequent events. | 4 |
| FM14 | Ponderosa Parade Drainage Upgrade – Upgrading the stormwater drainage network o contain flows within Narrabeen Creek. The network can cater for frequent events and would be enlarged to cater for infrequent events. | 5 |
| FM11 | Tatiara By-pass Overland Flowpath – Lowering of Tatiara Crescent and Nareen Parade to divert flows away from residential properties. | 6 |
| FM2 | Reconstruction of Ocean Street Bridge – Replacement of the existing bridge with an extended bridge to remove flow obstruction in the event of floods up to infrequent events. | 7 |
| FM1 | Ocean Street Bridge Extension – Removal of the 42 m long embankment on the northern side of the Ocean Street bridge and extension of the existing bridge to provide additional flow area. | 8 |
| FM15 | Garden Street Levee – Construction of levee on the eastern side of Garden Street in Progress Park to the west of Mullet Creek to protect commercial and residential areas to the west from infrequent flood events. | 9 |
| FM12 | Basin at Narrabeen RSL, Pipe Diversion along Tatiara Cres and Nareen Parade to Open Channel – Construction of a detention basin near the Narrabeen RSL, in conjunction with an additional culvert under Tatiara Crescent. | 10 |
| FM5 | Ocean Street Bridge Extension combined with Upstream & Downstream Sand Removal – Extracting accumulated sand masses west of the entrance bridge in conjunction with the bridge extension option (FM1) to reduce the constriction around the entrance bridge and locally reduce flood levels. | 11 |
| FM4a | Dry Earth Sand Winning with Beach Cut and Cover Pipeline – Mechanical excavation of sand. This sand is then mixed with water before being pumped to beach replenishment locations. | 12 |
| FM7 | Willandra Road Reserve Culvert Upgrade and Lowering / Detention Basin – Lowering the public reserve and upgrading culverts under Willandra Road to reduce flooding of neighbouring residential properties to the east. | 13 |
| FM8 | Willandra Road Culvert Upgrade and Vegetation Removal – Upgrading the culverts under Willandra Road and vegetation clearance downstream of the roadway. | 13 |
| FM3 | Entrance Bed Rock Removal – Removal of bed-rock at the Lagoon entrance to increase entrance scour during flood events. The bed-rock would need to be blasted out, or sawn using rock cutters. | 15 |
| FM16/17 | Pittwater Road Levee Bank and Lakeside Levee – Construction of two levees in North Narrabeen to protect a large residential area from infrequent flood events. | 16 |
| FM18 | East Bank Levee – Construction of a long levee along the eastern bank of Narrabeen Lagoon to protect large areas of commercial and residential properties from infrequent flood events. | 17 |

Note: Very frequent flood events occur on average every 2 years or more; Frequent flood events every 2- 10 years; Infrequent flood events every 10 - 100 years and Rare flood events every 100 to 2000 years.