



12.4 Nattai River Floodplain Risk Management Study & Plan- Stage 2 Report

Reference: 8100/17
Report Author: Floodplain and Stormwater Engineer
Authoriser: Manager Assets
Link to Delivery Program: Conserve the key natural resources of the Shire water catchments, arable land, key wildlife corridors, vegetation and scenic landscapes

PURPOSE

The purpose of this report is to advise Council on the outcomes of the Nattai River Floodplain Risk Management Study & Plan-Stage 2 and recommend its adoption.

RECOMMENDATION

1. **THAT** the Nattai River Floodplain Risk Management Study & Plan Report be adopted
2. **THAT** Council proceed to the implementation stage of the risk management plan.

REPORT

BACKGROUND

For many years, Council has been developing Floodplain Risk Management Study & Plans for various catchments across the shire in accordance with the NSW Government's Flood Policy and Floodplain Development Manual.

Under the policy, the management of flood liable land is the responsibility of Local Government. The State Government may provide 2/3 funding for approved projects through the Office of Environment & Heritage (OEH). The floodplain risk management study & plan is the second stage in the floodplain management process. The risk management study considers various flood mitigation options and suggests their implementation considering the benefits and costs. The floodplain management process is outlined below:

AGENDA FOR THE ORDINARY MEETING OF COUNCIL

Wednesday 26 April 2017

REPORT DEPUTY GENERAL MANAGER OPERATIONS, FINANCE & RISK



Stage	Description
1. Flood Study	Determines the nature & extent of the flooding problem
2. Floodplain Risk Management Study	Evaluates management options for existing & future development of the floodplain, taking into consideration the social, economic & environmental costs & benefits
3. Floodplain Risk Management Plan	Management plan for the risks identified in the risk management study
4. Plan Implementation	Implementation of actions identified in the plan

The stages 2 & 3 are undertaken together.

REPORT

Council commissioned WMA Water Pty Ltd to undertake the Nattai River Floodplain Risk Management Study & Plan. The study was prepared in consultation with the residents and property owners, Council's Floodplain Risk Management Advisory Committee (WFRMAC), Council staff and the Office of Environment & Heritage.

In accordance with the recommendations of the WFRMAC the draft report was publicly exhibited from 15 July to 22 August 2016 for 38 days. Two submissions were received during the exhibition period and the main issues raised in the submissions were:

- Vegetation and weir removal from the river,
- Increase the size of the culvert under the swimming pool,
- Deepen and widen the river,
- Concern over financial loss when the swimming pool is flooded,
- Environmental impact of the flooding of the swimming pool,
- What measures required to prevent disaster due to a Probable Maximum Flood,
- Whether Council is going to increase the capacity of the drains
- Objections to 0.5m freeboard,
- The weir and swimming pool are a problem to flooding of the surrounding areas
- The swimming pool be removed and put outside the flood zone
- The effect of new bridge on Colo Street

The points included in the submissions were addressed and are included in the final report. The executive summary of the Nattai River Floodplain Risk Management Study & Plan is included in **Attachment 1** and a full copy of the report has been made available in the Councillors' Room. The catchment plan is included in Attachment 2.

IMPACT ON COUNCIL'S FIT FOR THE FUTURE IMPROVEMENT PLAN

The Nattai River Floodplain Risk Management Study & Plan meet the objectives of Fit For The Future Improvement Plan.

CONSULTATION

Community Engagement

Community consultation was undertaken in 3 phases.

Phase 1: At the beginning of the study, a community information brochure and questionnaire were distributed to 50 flood affected properties identified in the flood study. A total of 7 responses were received.

Phase 2: After phase 1 consultations, a community meeting was held in Mittagong RSL Club where 7 residents attended.

Phase 3: The draft report on the Nattai River Floodplain Risk Management Study and Plan was placed on Public Exhibition from 15 July to 22 August 2016. The public exhibition period was advertised in the local newspapers. The draft report was made available on Council's website and hard copies were made available at the following locations:

- Bowral Library
- Mittagong Library
- Moss Vale Library
- Moss Vale Civic Centre

Two submissions were received on the draft report and are described in the report section of this report and addressed in the final study report.

Internal Consultation

Staff from Council's Development Services, Strategic Planning & Asset branches were consulted.

External Consultation

The Office of Environment & Heritage and Wingecarribee Floodplain Risk Management Advisory Committee were consulted.

SUSTAINABILITY ASSESSMENT

• Environment

There are no environmental issues in relation to this report.

• Social

There are no social issues in relation to this report.

• Broader Economic Implications

There are no broader economic implications in relation to this report.

• Culture

There are no cultural issues in relation to this report.

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- **Governance**

There are no governance issues in relation to this report.

COUNCIL BUDGET IMPLICATIONS

There are no budget implications to this report.

RELATED COUNCIL POLICY

Nil.

OPTIONS

The options available to Council are:

Option 1

Council adopt the final report on the Nattai River Floodplain Risk Management Study & Plan-Stage 2.

Option 2

Council not adopt the final report on the Nattai River Floodplain Risk Management Study & Plan-Stage 2.

Option 1 is the recommended option to this report.

CONCLUSION

Councils are responsible for determining the extent of flooding within Council areas to determine future works, strategies to minimise the impacts of flooding and control developments on flood affected lands. The completion of the risk management study and plan will help Council to achieve the above.

ATTACHMENTS

1. Executive Summary - Nattai River FRMSP
2. Nattai River Catchment Plan



ATTACHMENT 1

EXECUTIVE SUMMARY

This Floodplain Risk Management Study assesses floodplain management issues in the Nattai River catchment, and investigates potential management options for the area. The study, which follows on from the Nattai River Flood Study (Reference 3), has been undertaken in accordance with the NSW Government's Flood Prone Land Policy. A full assessment of the existing flood risk in the catchment has been carried out, including flood hazard across the catchment, over floor flooding of residential, commercial and industrial properties, road flooding and emergency response during a flood event. A range of mitigation options aimed at managing this flood risk were also assessed for their efficacy across a range of criteria, which allowed certain options to be recommended, forming the basis of the Floodplain Risk Management Plan for the area. Mitigation options included upgraded culvert works, emergency management measures, and various property modification measures including Development Control Planning. The mitigation options investigated are outlined in Table 1.

Table 1 Nattai River Management Options for Investigation

Option	Description
FM01	Removal of weir upstream of Swimming Pool
FM02	Removal of weir and Swimming Pool
FM03	Removal of weir at Maltings
FM04	Increase channel at Evans Street Waterway
FM05	Upgrade Colo Street
FM06	Combination of FM04 and FM05
PM01	Changes to FPL and FPA
PM02	Amendments to s149 Certificates
PM03	Changes to Floodplain Risk Precincts (FPRs)
RM01	Amendments to Wingecarribee Shire Local Flood Plan (Volume 2)
RM02	Installation of Flood Signs and Depth Indicators to frequently inundated roads

Background

The Nattai River catchment in the suburb of Mittagong is located in Wingecarribee Shire in the Southern Highlands of NSW about 130 km south west of Sydney. The Nattai River catchment drains to Lake Burragorang as part of the Hawkesbury/Nepean catchment. The Nattai River drains in a northerly direction through the eastern section of Mittagong until it flows beneath the Old Hume Highway and the swimming pool. Further downstream it is joined by Gibbergunyah Creek.

The Nattai River Flood Study (2013) was carried out to define existing flood behaviour for the catchment in terms of flood levels, depth, velocities, flows, hydraulic categories and provisional hazard. An XP-RAFTS hydrological model was adopted to convert rainfall into runoff hydrographs



to be applied as input boundaries into the hydraulic model. The TUFLOW model consisted of a linked 1D/2D hydraulic model of the creek, floodplain, stormwater network and overland flow path. The model was used to define flood depths and levels for the 5 year ARI, 10%, 5%, 2%, 1%, 0.2% AEP design flood and PMF events. Several flooding hot spots were also identified in the study. In addition, a desktop floor level survey and damages assessment were undertaken to identify properties that are liable to over floor inundation.

Existing Flood Environment

Flooding across the Nattai River catchment can occur as a result of major watercourses overtopping their banks, as well as from overland flooding when the capacity of the stormwater system is exceeded. A number of locations within the catchment have been identified as flood liable, including Evans St between Payten and Colo Street (along which houses back on to a natural waterway), the Mittagong Swimming Centre and Oxley Drive between Bracken and Reservoir Street.

Four residential properties within the catchment are liable to inundation on the property in the 1% AEP event, while 2 properties are liable in the 5 year ARI event. Of these, 2 properties are liable to over floor inundation in the 1% AEP event, and 1 in the 5 year ARI event. A flood damages assessment for existing development was undertaken, with the average annual damages (for residential properties) estimated to be approximately \$52,000 for the catchment. With a small number of commercial properties in the catchment, the damages were also calculated for non-residential properties. The 1% AEP event would cause inundation of 2 properties (only 1 above floor level). No commercial properties are flood affected in the 5 year ARI event. The annual average damages was calculated to be approximately \$11,000 for the catchment.

Flood Risk Management Options

The Floodplain Risk Management Study also included an investigation of possible options for the management of flood risk in the area. These included structural works such as drainage and culvert upgrades, as well as planning measures and SES-related actions. The measures were assessed for their ability to reduce flood risk while also considering their economic, social and environmental impact. A multi-criteria matrix assessment was used to directly compare the options. Of the seven flood mitigation options considered, none offered any reduction in over-floor damages and hence have not been included for implementation. Two property modification measures and one response modification measure were however included, as shown in Table 2.

Table 2 Nattai River Management Options for Implementation

Ref	Options	Priority
PM01	Changes to FPL and FPA [Food Planning Level and Flood Planning Area]	High
PM02	Amendments to s149 Certificates	Medium
PM03	Changes to Floodplain Risk Precincts (FPRs)	Medium
RM01	Amendments to Wingecarribee Shire Local Flood Plan (Volume 2)	High
RM02	Installation of Flood Signs and Depth Indicators to frequently inundated roads	High

