



**THE HILLS**  
Sydney's Garden Shire

**THE HILLS SHIRE COUNCIL**  
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19 November 2021

Warragamba Dam Assessment Team  
Planning and Assessment  
Department of Planning, Industry and Environment  
Locked Bag 5022  
PARRAMATTA NSW 2124

EMAIL: Warragamba.DamEIS@dpie.nsw.gov.au

Your Ref: SSI-8441

Dear Sir/Madam

### **Submission - Warragamba Dam Raising Project - SSI-8441**

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Thank you for the opportunity to provide a submission to the Warragamba Dam Raising Project. The Hills Shire Council is supportive of the proposal and I note, at its meeting of 9 November 2021, the Council considered a report on the Environmental Impact Statement for the raising of Warragamba Dam wall and resolved as follows:

*Council make a submission framed around the conclusion described in the report to the Department of Planning, Industry and Environment in response to the exhibition of the Environmental Impact Statement.* The report concluded that "the raising of the Warragamba Dam wall will reduce the frequency and intensity of flooding in the Hawkesbury-Nepean Valley, with financial and social benefits to the residents and businesses of The Hills Shire." The report to Council is attached.

The Hills Shire Council was heavily impacted by the flooding of the Hawkesbury-Nepean Valley in March 2021 an event which has been described as a 1 in 10 to 1 in 20 chance per year event. Parts of the Shire affected included Maraylya, Cattai, Sackville, Lower Portland, Cliftonville, and Wisemans Ferry with roads closed for several weeks, power supply cut and water supply and on-site sewage management facilities impacted. The floodwaters left behind significant damage, with roads washed away, siltation, debris and damage to caravan parks. Council's costs alone in responding to the flood exceeded \$630,000 and over 2,000 hours of labour. Tragically, a man died after driving into flooded waters over the roadway at Cattai.

The following expenditure was recorded against the recent flood, noting that this follows the criteria of the grant bodies:

<b>REMEDIATION WORKS</b>	<b>EXPENDITURE</b>
Livestock Evacuation Centre Castle Hill Showground	\$22,231.54
Community Facilities & Recreational Assets	\$91,033.28 (Wisemans Ferry Reserve and some community building and other park assets)
Debris & Flood Waste Removal (Public Areas)	\$284,798.12
Debris & Flood Waste Removal (Skip Bins – Private Property)	\$ 23,135.27
Road Restoration Pages Wharf Road (Section 1)	\$205,745.97
Wisemans Ferry Reserve Embankment Failure	\$10,000
<b>TOTAL</b>	<b>\$636,944.18</b>

Upgrades and additional works are required for Pages Wharf Road which will incur further costs for Council into the 2022/2023 Financial Year. Execution of the clean-up process took approximately four weeks, and civil crews accrued 1683.90 normal hours and 404 overtime hours. There were other Council crews undertaking flood related jobs that have not been captured in these figures such as asset inspectors, vegetation teams and civil reactive teams. This inventory does not account for other contractors who worked in conjunction with The Hills Shire Council collecting flood debris.

As outlined, the financial, social and environmental impact of a flood is considerable given that Council's expenditure is not isolated with other LGA's significantly affected and certainly the expenditure by the NSW Government would also be considerably higher. This flood was not out of the ordinary for the Hawkesbury/Nepean catchment. Council understands the proposal has significant environmental assessments and approvals to pass through however the benefit to the greater Sydney overall means that the project has to be given significant weight. Doing nothing is not sustainable and this ought not to be left to future generations to solve. The NSW Government is right to take steps to mitigate the flood risk.

It is noted that raising the dam wall would reduce risk to life and reduce flood damage by about 75% on average.

This matter was also subject to a Mayoral Minute on 12 June 2021. Please see attachment below. Should you require any further information regarding this submission, please contact Cameron McKenzie, Group Manager Development and Compliance (02) 9843 0274.

Yours faithfully



## HISTORY

<b>2012</b>	Extensive flooding across south-eastern Australia, including the Hawkesbury-Nepean Valley leading to Warragamba Dam overflowing for first time in 14 years.
<b>2013</b>	NSW Government undertook the Hawkesbury-Nepean Valley Flood Management Review which found a significant existing and growing flood risk in the valley.
<b>2014</b>	Hawkesbury-Nepean Valley Flood Management Taskforce established with a key objective of identifying, developing and assessing potential alternatives and options for reducing flood impacts and risk to the valley and development of the Hawkesbury-Nepean Valley Risk Management Strategy.
<b>June 2016</b>	NSW Government adopted recommendations of the Taskforce, which included a range of targeted outcomes designed to reduce flood risk to life, property and social amenity from regional floods in the Hawkesbury-Nepean Valley now and in the future.
<b>5 June 2017</b>	Council staff submission to the Secretary's Environmental Assessment Requirements (SEARs) Warragamba Dam Wall Raising.
<b>5 June 2018</b>	A briefing report was provided to the Councillor's Workshop on the Flood Risk Management Strategy and the Warragamba Dam wall raising by WaterNSW.
<b>12 June 2018</b>	Mayoral Minute moved supporting the raising of the Warragamba Dam wall to provide flood storage and education of residents with a flood awareness campaign.
<b>February 2020</b>	A 1 in 5 chance in a year flood event occurred causing downstream flooding. Warragamba Dam was at 50% capacity and was able to contain all upstream flow. Downstream flood was a result of local flooding only.
<b>March 2021</b>	A 1 in 10 to 1 in 20 chance in a year flood event occurred causing widespread flooding, with flows from the Warragamba Catchment contributing around 60%.
<b>29 September 2021</b>	Warragamba Dam Raising Project Environmental Impact Statement (EIS) put on public exhibition.
<b>12 November 2021</b>	Deadline for submissions to EIS.

## BACKGROUND

Since 1790 there have been approximately 130 moderate to major floods in the Hawkesbury-Nepean Valley. The Valley experiences flood-dominated and drought-dominated cycles which last between 30 to 50 years with the current drought-dominated cycle starting in the early 1990s. Prior to the floods in February 2020 ('Moderate' flood) and March 2021 ('Major' flood), the most recent flood was in 1991.

Historically, the Warragamba Dam catchment contributes 70% of downstream flows during a flood event, with other sources including the Grose and Colo Rivers, South and Eastern Creek and local tributaries. In the March 2021 flood event, Warragamba Catchment contributed 1,200 billion litres (59%) of flows recorded at Windsor. The Colo River (which is further downstream from Windsor) significantly added to the flows in the Hawkesbury-Nepean River, with both rivers unusually peaking at the same time.

Infrastructure NSW commissioned a study in 2012 to provide data on the flood impacts in the Valley. It found that a major flood event would cause billions of dollars of damage and place tens of thousands of homes and people at risk. The impact would extend beyond the Valley and be felt across the NSW and Australian economies.

Infrastructure NSW subsequently recommended that the NSW Government review all major flood mitigation options available to significantly reduce the potential economic and social impact of flooding in the Valley.

## REPORT

In June 2016, the NSW Premier announced the proposed Project to raise Warragamba Dam to significantly reduce risk to life and damages from flooding in the Hawkesbury-Nepean Valley. The Project is a key element of the Government's 'Resilient Valley, Resilient Communities – the Hawkesbury-Nepean Valley Flood Risk Management Strategy' (Flood Strategy).

Alternatives considered to raising the height of the dam wall included:

- Opening Warragamba Dam gates more slowly to temporarily hold back inflows;
- Pre-releases from Warragamba Dam water supply to create a temporary flood mitigation zone in advance of a forecast flood;
- Lowering Warragamba Dam's water supply storage to create a dedicate flood mitigation zone;
- Construction of new flood mitigation dams upstream of Warragamba dam, on Nepean River and downstream of Warragamba Dam;
- Construction of diversion channels to improve the drainage of floodwaters;
- Dredging of Hawkesbury River to improve drainage of floodwaters; and
- Levees to provide localised flood protection to flood prone communities.

The proposal to raise the dam wall would raise the level of the central spillway crest by around 12 metres and the auxiliary spillway crest by around 14 metres, creating an airspace above the full supply level which would temporarily store around 1,000 gigalitres of flood waters. The raised dam wall does not change the permanent full water supply level of the dam. The temporarily stored water would be discharged in a controlled manner until the dam level returns to full supply level.

The controlled release of flood waters may result in a longer duration of lower-level flood flows as flood waters recede. For example, there may be limited access for road users from the extended closure of low-lying bridges during releases.

Raising the dam wall would reduce risk to life and reduce flood damages downstream by about 75% on average. Specifically for The Hills Local Government Area (LGA), it is estimated that there are 100 residential properties which would currently be affected by a 1 in 100 chance in a year event. There are a relatively large number of moveable dwellings located adjacent to the river which would be affected by even small flood events. An estimated 270 manufactured homes are predicted to be currently affected by a 1 in 5 chance in a year event, which rises to a total of 670 in a 1 in 10 chance in a year event and 850 moveable dwellings in a 1 in 20 chance in a year event.

With a raised dam wall it is predicted that there would be a 60% reduction in the number of residential and moveable dwellings affected by a 1 in 5 event; a 43% reduction for a 1 in 10 chance in a year event and a 22% reduction for a 1 in 20 chance in a year event.

There are few commercial and industrial properties vulnerable to flooding in The Hills LGA. It is predicted that 144 hectares of land for rural activities would be affected by a 1 in 5 chance in a year event and 172 hectares affected by a 1 in 10 chance in a year event. With a raised

dam wall, it is predicted that there would be a 16% reduction to the amount of rural activity land affected by a 1 in 5 and 1 in 10 chance in a year event.

Raising the dam wall will not eliminate all floods. Flooding will still occur from other sources including the Grose and Colo Rivers, South and Eastern Creek and local tributaries.

Prior to the preparation of the Environmental Impact Statement (EIS), stakeholder and community consultation was undertaken and identified a range of issues and interests, including:

- Ecological impacts on upstream areas from temporary inundation;
- Impacts of prolonged discharge and higher water velocities on riverbanks;
- Impact on Aboriginal cultural heritage upstream of the dam;
- Protecting the values and listing of the Greater Blue Mountains World Heritage Area; and
- Potential impact on downstream businesses, including fishing, boating, recreational and tourism.

The EIS covers a broad range of issues in 24 chapters, including biodiversity, heritage, socioeconomic impacts, health and safety, flooding and hydrology and water quality.

During a flood event, an additional 304 hectares surrounding Lake Burragorang (the body of water upstream of the dam) will be inundated around 10.3 metres above the full supply level, including 0.03% within the Greater Blue Mountains World Heritage Area. The impacts of this will be an increase in the native vegetation temporarily inundated and for a longer extent, resulting in potential loss or damage to vegetation. Surveys indicate that there are up to 76 threatened flora species and up to 16 threatened fauna species that could potentially be impacted.

Flooding of downstream environments will continue to occur, however the extent of flooding relative to existing conditions will be reduced and alter flood inundation timeframes.

To mitigate these impacts, the Warragamba Offset Strategy will purchase suitable land and retire biodiversity credits to achieve no net loss and other supplementary measures, such as actions within specific threatened species recovery plans.

Decreased flooding may also impact on native vegetation downstream as some plant community types, individual species and threatened species may require flooding as part of their life cycle or to remain healthy. However it is also noted that there has not been any major floods for 30 years until recently and that any such species would be sustained by localised flooding events.

Twenty-two organisations and individuals were consulted with regards to potential impacts on Aboriginal Cultural and archaeological values. The study identified 334 archaeological sites in the upstream area and adjoining land. A potential 174 archaeological sites and 19 dreamtime story sites may be impacted. To address these impacts, an Aboriginal cultural heritage management plan is to be developed which will include documentation of artefacts and sites that will be harmed.

Other environmental impacts associated raising the wall, such as noise and vibration, air quality and soil and water quality will be subject to management plans.

The EIS concludes that other alternatives considered would not achieve the same flood mitigation, would be too costly, have higher environmental/social impacts, have impacts on water supply and/or would not deliver regional benefits.

## CONCLUSION

The raising of the Warragamba Dam wall will reduce the frequency and intensity of flooding in the Hawkesbury-Nepean Valley, with financial and social benefits to the residents and businesses of The Hills Shire.

## IMPACTS

### Financial

This matter has no direct financial impact upon Council's adopted budget or forward estimates.

## RECOMMENDATIONS

1. Council make a submission to the Department of Planning, Industry and Environment in response to the exhibition of the Environmental Impact Statement in accordance with the comments in the report.

**ATTACHMENT 2**



## MAYORAL MINUTE NO. 08/2018

### FLOOD RISK MANAGEMENT STRATEGY AND RAISING WARRAGAMBA DAM WALL

**12 JUNE 2018**

Councillors,

Next week marks the 151st anniversary of the "Great Flood" of 1867, which remains one of the most significant natural disasters to hit the Hawkesbury-Nepean Valley. During this catastrophic event, 20 people lost their lives, livestock was swept away in flood waters and many people lost their homes and livelihood. Given the development since, that same event today would have enormous impact on our region.

Across Australia, floods continue to cause loss of life, damage to property, business dislocation and social trauma. Yet our resources that are directed to flood mitigation and education are nothing in comparison to the money spent cleaning up the devastation and destruction of this natural event.

As The Hills continues to grow, it remains highly vulnerable to the impact of a great flood. That's because our region is located in the Hawkesbury-Nepean Valley – an area labelled by the NSW Government to have the greatest flood risk of anywhere in NSW.

To prepare for a flood event on the scale of the 1867 disaster, Council recently met with Infrastructure NSW and WaterNSW to discuss the Hawkesbury-Nepean Valley Flood Risk Management Strategy (Flood Strategy). The Strategy aims to reduce and manage flood risk in the Valley by raising Warragamba Dam by approximately 14 metres. This would make airspace behind the dam wall to temporarily hold back extra water in a rain event and allow for the slow release of floodwaters back into our waterways when they are able to cope.

The Strategy also includes a range of other infrastructure and non-infrastructure outcomes to manage ongoing flood risk in the region, as well as educating residents on effective flood preparation and evacuation procedures.

The Hawkesbury-Nepean Valley has not experienced significant flooding since the early 1990s. That means there are literally thousands of new residents and children that have not seen nor experienced the Valley in flood. It's time to address the risks and to educate the community about flood behaviour and what residents should do in the unlikely event.

I commend the NSW Government for their research into finding the best possible solution to minimising the risk posed by floodwaters.

#### **MOTION**

Accordingly, I move that:

1. This Mayoral Minute be received.
2. Council write to Stuart Ayres, Minister for Western Sydney and Member for Penrith, to give our support for the Hawkesbury-Nepean Valley Flood Risk Management Strategy (Flood Strategy) to raise Warragamba Dam wall to provide flood storage and to educate residents with a flood awareness campaign.
3. Council write to the Mayors of Blacktown, Hawkesbury and Penrith to seek support for the Hawkesbury-Nepean Valley Flood Risk Management Strategy.



Dr Michelle Byrne  
**MAYOR**