



Environmental Impact Statement – Appendix D: Community consultation report

Warragamba Dam Raising

Reference No. 30012078 Prepared for WaterNSW 10 September 2021

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1 Introduction

1.1 Introduction

The Community Issues Report provides an overview of the themes and issues raised by the community and stakeholders between August 2017 and January 2020 during consultation undertaken for the Warragamba Dam Raising Project Environmental Impact Statement (EIS). The Project is the key infrastructure action of the NSW Government's Hawkesbury-Nepean Valley Flood Risk Management Strategy (Flood Strategy)¹.

This report outlines the issues and feedback provided by stakeholders and community members, the responses provided by the Project team and where the issue has been considered in the preparation of the EIS.

As a State Significant Infrastructure project, the EIS must meet the Secretary's Environmental Assessment Requirements (SEARs). SEAR 4(2) states that 'The Proponent must document the consultation process and demonstrate how the Project has responded to the inputs received.'

Since August 2017 all interactions between the Project team and the community/stakeholders have been recorded including contact details, when provided.

Issue categories and event types assigned to interactions were consistent with the structure of this EIS and the Project development. These issue categories are:

- cost of Project
- Project approvals
- Project timeline
- Aboriginal heritage
- biodiversity
- climate change risk
- flooding
- floodplain development
- health and safety
- noise and vibration
- protected and sensitive land
- socio-economic, land use and property
- soils
- sustainability
- traffic and transport
- visual amenity
- waste
- water hydrology
- water quality.

The event types recorded, and detailed in Appendix A, comprised:

- briefings
- door knocks
- emails in and out
- feedback surveys
- letters in and out
- media enquiries
- meetings

¹ Infrastructure NSW (2017) *Resilient Valley, Resilient Communities - Hawkesbury-Nepean Valley Flood Risk Management Strategy,* Infrastructure NSW, Sydney.

- phone calls in and out
- pop-up [community consultation] sessions
- websites.

Issues raised during scoping interviews with key stakeholders and phone surveys undertaken with organisations for the EIS socio-economic impact assessment (SEIA) were recorded in the consultation database and have been incorporated in the analysis in Sections 2 and 3.

Responses to web surveys and face-to-face business surveys undertaken to inform the SEIA were also recorded but excluded from the analysis in sections 2 and 3. Analysis of these surveys is provided in EIS Chapter 21 (Socio-economic, land use and property) – Section 21.6.2. Records of media coverage, social media posts, parliamentary debate documents and relevant Hansard transcripts of evidence and submissions made to parliamentary inquiries relating to the Project were also recorded. They were reviewed by the Project team during the engagement period to inform the development of engagement activities.

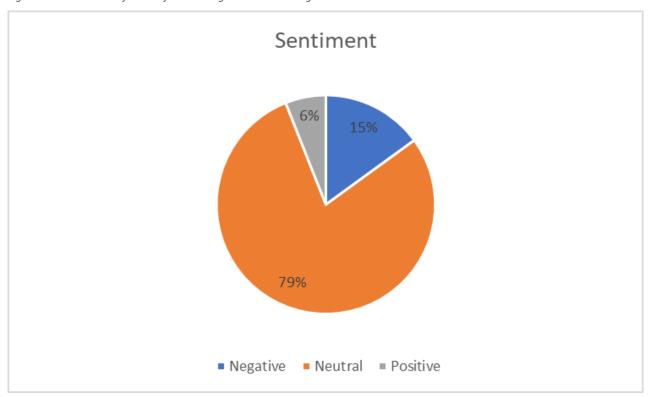
1.2 Sentiment

To support the Project development, community and stakeholder sentiment was recorded across all instances of engagement with the Project team. To help inform the Project team's understanding of public perception, one sentiment was recorded for each event; either positive, negative or neutral.

Stakeholders did not express a positive or negative sentiment towards the Project in every interaction. In this case, events were categorised as neutral. Engagement events where both positive and negative sentiment were expressed have been categorised as neutral.

Figure 1-1 shows the sentiments expressed as percentages of the total.

Figure 1-1. Sentiment of events from 11 August 2017 – 30 August 2019



While a large majority of events were recorded as neutral, a diversity of issues were raised during the engagement period. These issues are discussed in Section 2.

2 Summary of key community issues

2.1 Community and stakeholders

To adequately capture the diverse views across communities covering the broad project area, four distinct geographic consultation clusters were defined for EIS community and stakeholder engagement — upstream of the dam, downstream of the dam, estuary communities, and those adjacent to the dam potentially affected by construction. These clusters were adopted during the development of the Community and Stakeholder Engagement Plan (CSEP) for the Project. Engagement activities were targeted to each cluster to provide information relevant to the benefits and impacts that the Project may provide at each location.

Appropriate key stakeholders were identified within each cluster, including local councils. Sections 2.2 to 2.5 discuss the issues raised and benefits identified during consultation in relation to the geographic clusters.

Interest in Project development including the cost, the approvals process and the timeline for the Project was consistent across these four geographic clusters. Thematic analysis of events recorded localised benefits and impacts of the Project, and stakeholders interest in aspects outside of their location.

For example, stakeholders upstream of the dam expressed interest, both positive and negative, in the potential benefits for downstream communities, property and infrastructure. Equally, stakeholders downstream of the dam enquired about potential impacts to biodiversity and heritage upstream of the dam.

As of August 2019, 1,126 residents, community members and groups registered an interest in the project both within and outside the geographic consultation clusters.

Figure 2-1 shows the distribution of stakeholders who have engaged with the Project belonging to the following groups:

- Aboriginal stakeholders
- community groups
- directly affected properties
- interest groups
- organisations interacting with vulnerable groups
- local government
- petition senders
- residents
- service/infrastructure providers
- special interest groups
- unspecified.

Note that only stakeholders who provided their location details are shown in Figure 2-1.

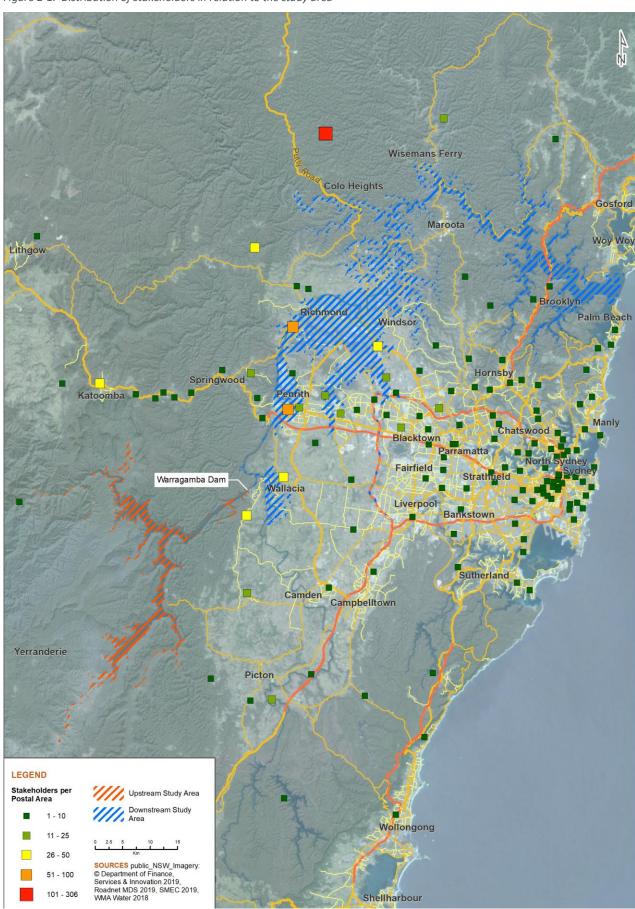


Figure 2-1. Distribution of stakeholders in relation to the study area

2.2 Community consultation cluster one – Blue Mountains, Wingecarribee, Wollondilly, Oberon local government areas (LGAs) (upstream)

The impacts of the Project upstream of the dam relate to an increase in temporary inundation and associated environmental, cultural and socio-economic impacts. As such, enquiries generated during engagement have related to these potential impacts. Figure 2-2 below shows the geographic location of this cluster in relation to Warragamba Dam.

Sections 2.2.1.1 to 2.2.2.5 outline the issues stakeholders and the community in this cluster have raised in relation to the Project.

2.2.1 Issues identified

2.2.1.1 Flooding

Issues raised largely relate to the impacts associated with an increase in the area of land upstream of Warragamba Dam that would be inundated during a flood event. This land includes the Greater Blue Mountains World Heritage Area (GBMWHA) and national parks, which are highly valued by the community.

2.2.1.2 Biodiversity

Blue Mountains residents are highly engaged with the natural environment and choose to live in the area because of it. Potential impacts on the biodiversity of the GBMWHA/national parks and local threatened species concerns many community stakeholders in the Blue Mountains as well as government stakeholders.

Environmental experts have formally expressed the need to conserve the threatened ecological communities of the area as well as individual endangered species, including the Regent Honeyeater, the Camden White Gum and the Kowmung Hakea among others.

2.2.1.3 World Heritage

The World Heritage listing of the GBMWHA is significant to both local and international stakeholders and is a source of pride for local communities.

The main concern is that the World Heritage listing of the GBMWHA may be threatened as a result of potential impacts resulting from increased temporary inundation upstream of the dam.

2.2.1.4 Aboriginal heritage

The potential inundation of Aboriginal cultural heritage sites in the Burragorang Valley is of significant concern to both Aboriginal and non-Aboriginal stakeholders. Sites were destroyed when the valley was flooded during the dam's construction and Aboriginal stakeholders want to ensure that remaining sites are properly recorded and protected.

2.2.1.5 Socio-economic, land use and property

Recreational groups including families, bushwalkers, climbers and bird observing groups frequent the national parks in the Blue Mountains. There is concern that the Project will result in walking trails in the national parks being restricted or closed to walkers if the Warragamba Special Area is extended. Emergency service providers have raised concerns that emergency access routes (that is, fire trails) during flooding events may be cut.

2.2.1.6 Tourism and visual amenity

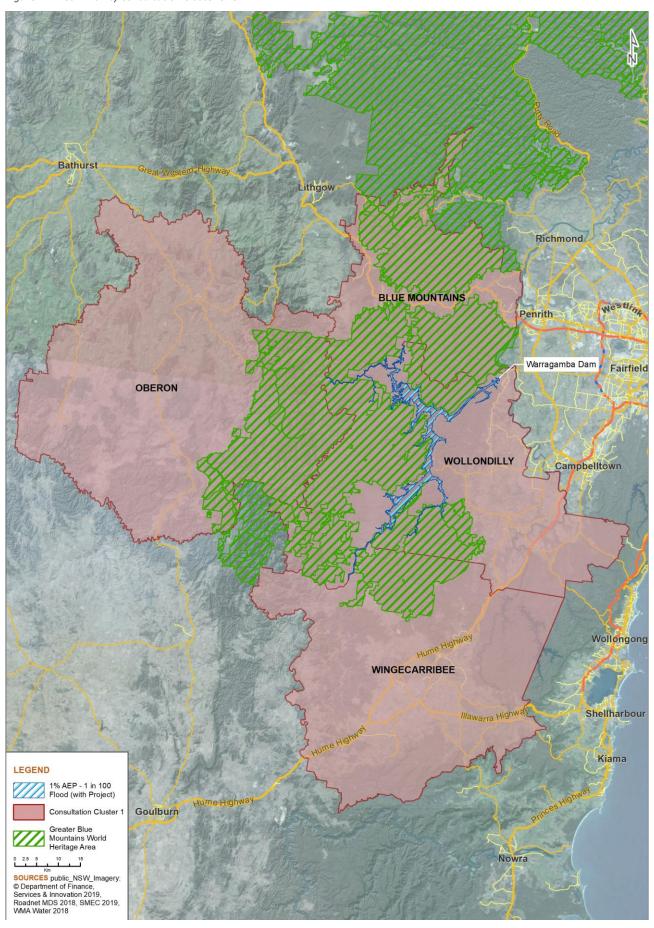
Concern has been expressed also that an increase in the duration and extent of upstream inundation would lead to a loss of vegetation and impacts on visual amenity – which could be visible from popular tourist lookouts such as Echo Point in Katoomba. In turn this would impact nature-based tourism which contributes significantly to the economy of the Blue Mountains.

2.2.1.7 Development

Residents in this area are concerned about urban sprawl and further development being allowed on the floodplain by future land use changes as a result of the Project.

Stakeholders in the Blue Mountains have also expressed negative views about the Project encouraging development in flood-prone areas because of a sense of security about protection from flood risk. Another related concern about future development decisions is that operation of the flood mitigation zone (FMZ) would be changed to permanent water supply to cater to the needs of new urban development.

Figure 2-2. Community consultation cluster one



2.2.1.8 Alternatives

Stakeholders in the Blue Mountains region have expressed support for alternative flood mitigation measures to the dam raising. In particular, they consider a viable alternative to be lowering the full supply level of the existing dam to provide for flood mitigation, with the Sydney desalination plant or alternative water storage systems making up for the loss of catchment water supply. Some stakeholders in this cluster have questioned the need for the Project, and its capacity to reduce flooding impacts downstream.

Three special interest groups have been consulted within this area: the Colong Foundation for Wilderness, the Greater Blue Mountains World Heritage Area Advisory Committee (GBMWHAAC) and the Yerranderie Management Committee.

2.2.2 Key stakeholders and communities

2.2.2.1 Colong Foundation for Wilderness

The key issues raised by the Colong Foundation during consultation are impacts to biodiversity including wild rivers and threatened species, a perceived lack of transparency in the planning process, and future development on the floodplain. The Colong Foundation has publicly campaigned against the Project on the basis of impacts to Aboriginal heritage, World Heritage wilderness, alternative flood mitigation measures and further development on the floodplain.

2.2.2.2 Greater Blue Mountains World Heritage Area Advisory Committee

The GBMWHAAC is concerned primarily with impacts related to access and recreation, impacts of siltation and weed distribution, biodiversity impacts, impacts to wild rivers, cumulative impacts and impacts to sites of Aboriginal cultural heritage. The Committee also enquired about the EIS process and approvals, environmental flow infrastructure in the design and future planning policy downstream of the dam.

2.2.2.3 Yerranderie Management Committee

The Yerranderie Management Committee raised a number of issues, including the need to provide an eel ladder at the dam to facilitate migration, inundation impacts and backup flooding impacts at Silverdale and Wallacia, impacts to Aboriginal and non-Aboriginal heritage sites around Lake Burragorang, the possible restriction of bushwalking access at the Kowmung and Coxs River crossings, and the impacts on the access to and from the historic Yerranderie silver mining town for residents' evacuation and emergency services access.

The committee is concerned about the heritage of the High Range area and concerned that there has not been a formal effort to document areas of heritage value that may be newly inundated with the Project.

2.2.2.4 Wingecarribee stakeholders

Wingecarribee stakeholders expressed interest in flood impacts to the Kowmung and Nepean rivers, alternative flood mitigation options, impacts to Aboriginal cultural heritage and the operation of the FMZ.

Preliminary flood modelling of the catchment area upstream of the dam undertaken for the EIS identified that a small number of privately-owned properties in the High Range area, within or adjacent to the study area, are:

- not affected by flooding from the dam and its tributaries and with the Project would continue to be unaffected by flooding
- currently affected by flooding from the dam and its tributaries and with the Project would not result in an increase in flooding impacts
- currently affected by flooding from the dam and its tributaries and with the Project would result in a minor increase in flooding impacts.

Consultation with these landowners addressed their concerns about flooding impacts, biodiversity, Aboriginal cultural heritage and potential changes to the catchment exclusion zones.

2.2.2.5 Wollondilly stakeholders

Stakeholders of the wider Wollondilly LGA shared the concerns of the communities of Warragamba, Silverdale and Wallacia about construction impacts (traffic congestion, noise, vibration, and dust) in addition to the loss of tourism with the closure of the Warragamba Dam Visitor Centre during construction. The impacts of heavy construction traffic on local roads over the wider area within the shire was also a key concern. Community issues specific to Warragamba, Silverdale and Wallacia are presented in Section 2.5.

2.3 Community consultation cluster two – Blacktown, Camden, Hawkesbury, Liverpool, Penrith, The Hills LGAs (downstream)

This geographic area has a high flood risk and will benefit the most from flood mitigation. This area would also experience potential impacts relating to increases in the duration of low level flooding as a result of discharge of the FMZ. The release of environmental flows would also benefit stakeholders and the community in this area. Stakeholders and the community in this area have raised a broad range of issues during engagement. Figure 2-3 shows the geographic location of this cluster in relation to Warragamba Dam and the 1 in 100 flood of the Hawkesbury-Nepean River.

Sections 2.3.1 to 2.3.10 outline the issues stakeholders and the community in this cluster have raised in relation to the Project.

2.3.1 Flooding and health and safety

While some residents of the Hawkesbury-Nepean Valley have experienced the effects of previous flooding, social research conducted as part of the Flood Strategy demonstrated that there is generally a limited level of flood awareness in the community.

Emergency services providers advised that flood education needs to be increased in the area, especially in vulnerable communities such as those that have limited English skills or live in mobile telephone reception black spots.

Stakeholders in this area have been receptive to the potential downstream benefits associated with reducing the risk to people's lives and livelihoods, increased time for evacuation and reduced flood damages. Long-term residents of the Hawkesbury-Nepean Valley have spoken of the damage and dislocation experienced during past flood events and are generally glad to see action being taken to manage future disaster. Some stakeholders including members of the Hawkesbury-Nepean Valley Flood Mitigation Action Committee and government stakeholders strongly support the Project and are eager to see it progress quickly.

However, stakeholders in both the Penrith floodplain and the Richmond/Windsor floodplain are sceptical about the capacity of the Project to mitigate flooding downstream. Some note that previous floods have been generated by inflows from other tributaries, particularly localised flooding at South Creek, which the Project would have limited effect in reducing.

Stakeholders in Camden contacted the Project team to enquire about changes to flood levels in their area from floodwater backup in the Nepean River.

Lower house prices have led to population growth on the Hawkesbury-Nepean floodplain including many migrants whose houses contain multi-generational families. Many new residents have not made evacuation plans and would be unprepared for a major flood event.

Some communities within the area have limited English skills and are culturally isolated from others. They do not have strong internal networks which could be utilised to provide education about flood risk and/or the Project's mitigation benefits.

There is the potential for people who do not evacuate quickly enough to be stranded on flood islands in areas such as Emu Plains and North Richmond. These people would potentially lose access to power, water, and sewerage, and may be isolated without food and potable water if not adequately prepared.

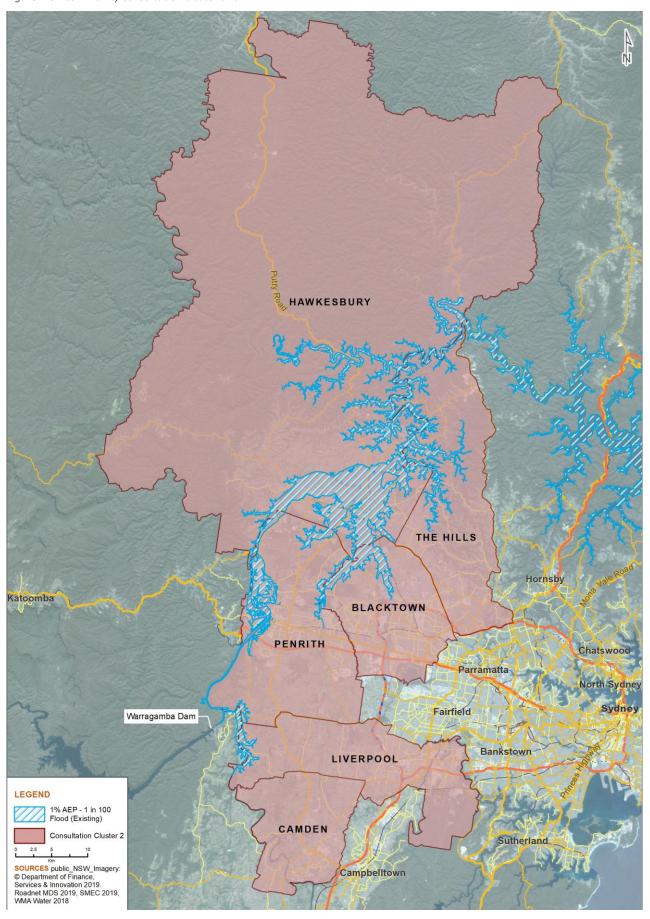
Some stakeholders support the additional time for evacuation which the Project would provide, as well as the reduced strain on emergency services during and after flood events.

2.3.2 Biodiversity and water hydrology

Stakeholders in the Hawkesbury region are passionate about the river, with several environmental and community action groups contacting the Project team regarding its protection. Some stakeholders have raised the concern that it is important for the health of the river and its tributaries for floodwaters to 'flush out' the river system, a process which may be limited by operation of the Project.

Similarly, in the Penrith region, stakeholders raised the negative impacts that the Penrith Lakes system has had on the health of the local environment and their opposition to infrastructure that would further affect the natural flow of the river.

Figure 2-3. Community consultation cluster two



2.3.3 Aboriginal heritage

Stakeholders are interested in seeing the potential impacts on Aboriginal cultural heritage minimised.

2.3.4 Development

Current and planned development on the floodplain is of high concern. Stakeholders do not think it is appropriate to allow further development on a floodplain.

The cumulative impact of infrastructure developments in Greater Sydney, such as the Western Sydney Airport, which would occur during construction of the Project has been raised by local government staff.

2.3.5 Traffic and transport

In the Penrith area, road networks are congested throughout the day, causing major problems when there is a need for an increase in cars on the roads (for example, during evacuation of a flood event). Residents have noted that the evacuation signage has improved, although they do not necessarily agree with the evacuation routes.

The current road infrastructure is inadequate to manage a large number of people who will need to evacuate if there is a major flood event. A potential mitigation method which has been raised by stakeholders is the construction of elevated roadways.

2.3.6 Socio-economic, land use and property

Turf farming and sand-based industries are a major part of the area's economy, especially in the Hawkesbury LGA. Both industries are significantly impacted by a major flood event. If the Project provided increased time to prepare for a flood event, turf farmers would be able to store their equipment safely, which is also the case for sand-based businesses such as landscaping supply companies. Cattle farmers and horse owners could also make adequate preparations to move stock to higher ground.

2.3.7 Soils

Some stakeholders are concerned that there would be other effects on agriculture in the Hawkesbury region as a result of impacts to alluvial soil from reduced low-level flooding downstream.

2.3.8 Non-Aboriginal heritage

European heritage items are located near the river at many points downstream, such as on the Nepean River at Greendale and Luddenham and the Windsor Bridge over the Hawkesbury River at Windsor. Downstream communities are interested in heritage preservation and therefore concerned about potential impacts from the increased duration in low level flooding from the discharge of the FMZ.

2.3.9 Design

Concern has been raised about the structural integrity of the dam after Project completion, especially if the full supply level of the dam was raised along with the dam itself — as some stakeholders incorrectly assume. The perception of potential dam wall instability may stem from the fact that stakeholders are not aware that it will be buttressed, or strengthened, as well as raised.

The fault-line under the dam has also been mentioned by multiple stakeholders, who would like mitigation measures to reduce the risk it could present to be considered in the Project design.

Stakeholders, including water industry experts and council staff, have raised concerns about water security for the Greater Sydney region. There remains a misconception that the wall raising is intended for permanent water storage rather than flood mitigation. Some people would like to see the raised dam used for additional water storage. This sentiment is partly attributable to the ongoing drought in NSW.

2.3.10 Health and safety

Security of the raised dam, including in the potential for a terrorist attack, has been raised by members of the public in this cluster.

2.4 Community consultation cluster three – Central Coast, Hornsby, Northern Beaches LGAs (estuary communities)

In this area, the effects of flooding are mainly on the river with a large number of river-based businesses such as ski gardens and mooring services. Stakeholders in the Hawkesbury-Nepean estuary support the flood mitigation benefits

the Project would provide. However, concern has been raised about the effects of increased duration of flood events, and the potential isolation which could occur. Figure 2-4 shows this area in relation to the 1 in 100 chance in a year flood of the Hawkesbury-Nepean River.

Sections 2.4.1 to 2.4.4 outline the issues stakeholders and the community in this cluster have raised in relation to the Project.

2.4.1 Flooding

Hornsby Shire Council is developing infrastructure at Brooklyn and Dangar Island, and has expressed interest in the flood impacts to this area. The downstream extent of the Study Area for the Flood Strategy was the Brooklyn Bridge and does not extend to the areas in question.

2.4.2 Socio-economic, land use and property

A significant proportion of income in Wisemans Ferry is generated from river-based businesses such as caravan parks and ski gardens. Debris washed down the river during flood events can cause ferry services to be unavailable, which increases isolation.

Located closer to the Pacific Ocean is a commercial estuary prawn industry as well as smaller-scale fish farms. These industries are sensitive to altered turbidity and algal blooms resulting from sediment and nutrients flowing into the Hawkesbury River after a flood event.

Prawns are also reliant on regular flushing from the river, although an alteration to the flushing regime is not necessarily detrimental. Some species of fish that are farmed benefit from more turbid water. Residents are concerned about impacts to water quality in the Hawkesbury River from the discharge of the FMZ.

A large mooring industry in the area, estimated to be worth \$1 billion, could be extremely impacted in a flood event if watercraft are damaged or lost.

2.4.3 Development

In contrast to the Hawkesbury-Nepean Valley, there has been very little residential growth in the past couple of decades, especially along the river. This is possibly due to the limited number of roads available to the riverfront.

The incorrect perception that the full supply level of the dam will be raised after Project construction has also caused concern that a raised full supply level will deprive the Hawkesbury River of fresh water, intensifying mangrove colonisation which is already occurring.

2.4.4 Health and safety

Wisemans Ferry, Sackville and St Albans have aging populations and mobile telephone coverage is limited, raising concern emergency notifications may not reach some residents to inform them to evacuate.

Figure 2-4. Community consultation cluster three



2.5 Community consultation cluster four – Warragamba, Silverdale and Wallacia (construction zone communities)

Warragamba village and its surrounds – primarily Silverdale and Wallacia in the Wollondilly LGA – are not expected to be permanently affected in any major way if the Project is undertaken. The primary effects would occur during construction which would have positive and negative effects on the economy and social amenity. Figure 2-5 shows these towns in relation to the construction zone and upstream and downstream flooding.

Sections 2.5.1 to 2.5.3 outline the issues stakeholders and the community in this cluster have raised in relation to the Project.

2.5.1 Tourism

The residents of Warragamba are passionate about the village and proud of its history. According to local stakeholders, the community relies upon the dam, especially the Warragamba Dam Visitor Centre, to draw tourists and help maintain its economy. They say that when the dam was closed to the public during the construction of the auxiliary spillway, the commercial area lost many businesses.

However, some business owners report that visitors to the dam tend to bypass the commercial area and make limited contributions to the local economy.

To compensate for perceived negative impacts, stakeholders, including Wollondilly Shire Council, have suggested mitigation measures including tourism initiatives, local employment schemes, opportunities for local businesses to provide goods and services and increased marketing of the dam as an attraction during and after construction.

Another suggested mitigation or construction legacy is the rebuilding of the suspension bridge which was previously located above the Warragamba River gorge downstream of the dam. The bridge, a popular tourist destination, was in a state of deterioration when it was further damaged by the Warragamba bushfires of December 2001 and needed to be demolished. Local stakeholders believe that if it were rebuilt and opened to the public, it would draw tourists to the area, providing an economic boost to Warragamba and its surrounds.

Other stakeholders have expressed interest in the establishment of a commercial zip line (cableway) in this location as an alternative tourism attraction.

2.5.2 Traffic and transport

Local resident feedback suggest there may be a lack of sufficient parking in the residential streets and commercial areas adjacent to the dam. The community is concerned about traffic and transport impacts attributed to dam construction.

2.5.3 Construction

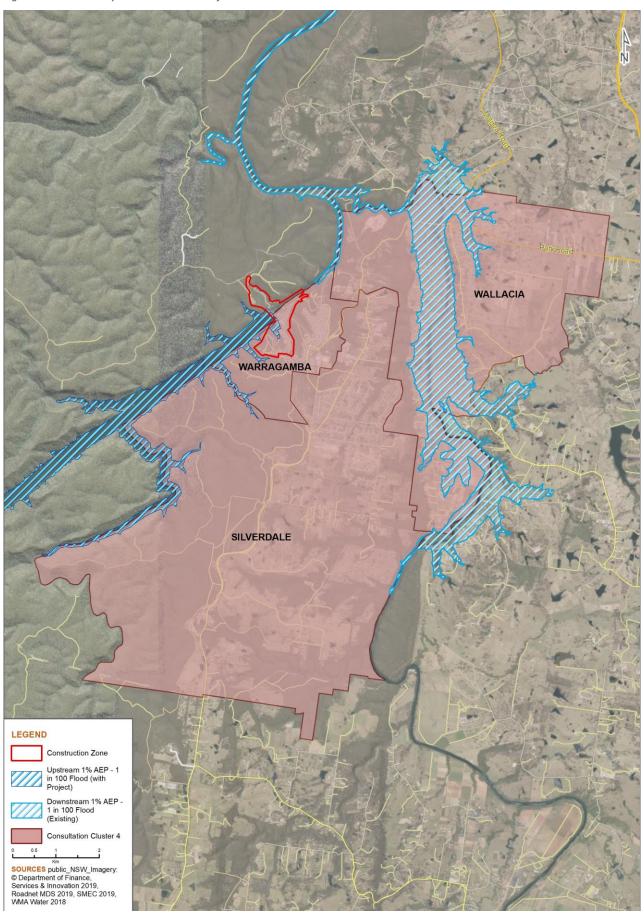
Warragamba residents enjoy the quietness and relative isolation of the area and are concerned about the disruptive effects of construction. These relate to noise and vibration, air quality, water quality, health and safety and general amenity of the area during the construction period. Both positive and negative economic impacts are associated with Project construction. These are detailed in EIS Chapter 21 (Socio-economic, land use and property, Section 21.7).

Two Warragamba, Silverdale and Wallacia workshops held in April 2019 for representative community stakeholders and the agencies that serve the area (for example, council, education and emergency services) placed the development of construction-based tourism opportunities high on their list of priorities.

Other key issues attributed to construction included traffic congestion, the poor condition of roads and bridges along the routes that construction traffic would take, community safety and the need for the Project to consider the sports masterplan currently being developed by Wollondilly Shire Council.

The specific issues raised for reach of these categories, and the Project's response, are provided in the following section.

Figure 2-5. Community consultation cluster four



3 Summary of engagement issues and responses

3.1 Key concerns and interests

Community and stakeholder consultation has identified a broad range of issues concerning communities and organisations across the dam's catchment and tributaries.

The issues raised during consultation from 11 August 2017 (when the first consultation activity was recorded) to 13 January 2020 are listed in Table 3-1 below, with reference to where they are addressed in the EIS. These issues are listed in order of most enquiries to the least. This prioritisation of issues is identified in the first column of the table, the second column identifies the category and geographic cluster reference above, while the third details the issue raised, and the last column provides the Project's response.

Table 3-1. Key concerns and interests

Priority	Category and where discussed in this report	Issue raised	Response
1.	Flooding Section 2.3.1 and Section 2.4.1	Benefits for downstream communities, property and infrastructure (including suggestions that there would be no benefit)	The proposal to raise Warragamba Dam for flood mitigation would significantly reduce the existing risk to people's lives and livelihoods downstream, provide more time for evacuation and reduce flood damages by 75% on average (Infrastructure NSW 2017).
2.	Flooding Section 2.2.1.1	Changes to the area of land upstream that would be inundated during flood events	The duration and depth of temporary flooding would vary as it relates to the specific location, the size of the flood, the level of the dam storage at that time, the inflows from the dam's tributaries and the rate of the managed release of the captured inflows. The design of the Project has been optimised to reduce environmental impacts upstream.
3.	Biodiversity Section 2.2.1.2 and Section 2.3.2	Impacts to flora and fauna, including endangered species, from upstream inundation and changes to downstream river flows	Comprehensive biodiversity studies assessed impacts on threatened plants, animals and ecosystems and identified measures to mitigate impacts where possible. A Biodiversity Offset Strategy (BOS) has been prepared and contains mitigation measures and funding to mitigate biodiversity impacts.
4.	World Heritage Section 2.2.1.3	The impacts of temporary inundation of the GBMWHA	The upstream area of the GBMWHA that would experience potentially increased temporary inundation is small. A detailed assessment of potential impacts on the GBMWHA has been prepared (refer Appendix J).
5.	Water hydrology Section 2.3.2	Changes to the catchment's tributaries, including wild rivers, and waterflow downstream of the dam	A detailed water hydrology assessment has been undertaken to assess the potential impacts to the dam catchment and the rivers downstream. There would be minor changes to the level or extent of inundation for the Kowmung River, its streams or tributaries. The impact of temporary inundation on other rivers and streams is presented in Chapter 15 – Flooding and hydrology.

Priority	Category and where discussed in this report	Issue raised	Response
6.	Aboriginal heritage Section 2.2.1.4 and Section 2.3.3	Impacts to sites of Aboriginal cultural heritage from increased upstream inundation	A detailed Aboriginal cultural heritage assessment (ACHA) including survey has been undertaken as part of the environmental assessment process.
7.	Development Section 2.2.1.7, Section 2.3.4 and Section 2.4.3	The Project would facilitate further development on the floodplain	The Flood Strategy will ensure that the benefits of the Project are maintained, and the Project does not result in the development of currently flood prone areas.
8.	Project timeline Section 2.1	Enquiring about the current stages of the Project and the next steps	Technical studies and surveys have been undertaken to inform the environmental impact statement which has been placed on public exhibition. The Project development stages are presented in: Chapter 5 - Project description
9.	Design Section 2.2.1.8 and Section 2.3.9	Using the raised dam for additional water storage	The Project will be designed for flood mitigation and will not increase the full supply level of the Dam.
10.	Non-Aboriginal heritage Section 2.2.2.3 and Section 2.3.8	Potential impacts to items of non-Aboriginal heritage value from upstream inundation	The EIS assesses the potential impacts and benefits to items of historical significance and identifies management measures. Heritage items downstream of the dam would generally experience benefits from the Project with a reduction in the extent and duration of flooding.
11.	Health and safety Section2.3.1 and Section 2.4.1	The Project would/would not reduce the risk to life from floods	The Project would reduce the existing risk to people's lives and livelihoods and would reduce flood damage by an estimated 75% on average (Infrastructure NSW 2017).
12.	Traffic and transport Section 2.5.2	Potential impacts of construction traffic on the road network	The road network in and around the Project area has substantial capacity. A Construction Traffic Management Plan would be developed to manage vehicle movements and safety.
13.	Project development Section 2.1	How would the Project be approved?	Approval from both the NSW Minister for Planning and Public Spaces and the Commonwealth Minister for the Environment would be required.
14.	Project development Section 2.1	There are better ways to use the government funding allocated to the Project	The Project was found to have the highest net benefit in comparison to other alternatives.
15.	Traffic and transport Section 2.3.5	The need for improved evacuation routes on the floodplain	A key element of the Flood Strategy is the upgrade of local and regional roads to support flood evacuations. The Project would result in most bridge river crossings being open for longer during flood events and result in shorter closure times.

Priority	Category and where discussed in this report	Issue raised	Response
			Some bridges would no longer be closed in certain flood events.
16.	Health and safety Section 2.3.10 and Section 2.4.4	The ability of the raised dam to hold additional water and vulnerability to security threats	The design, construction and operation of the Project will comply with State, national and international dam safety guidelines and these are being applied to the Project.
17.	Soils Section 2.3.7	Sedimentation and erosion of river banks upstream and downstream	The potential impacts of sedimentation and erosion are presented in Chapter 22 – Soils. Many of the agricultural enterprises in Hawkesbury-Nepean Valley do not rely on floods to replenish soils and consider the reduction in flooding to be a benefit.
18.	Socio-economic, land use and property Section 2.2.1.6 and Section 2.5.1	Effects on tourism in Warragamba and the Blue Mountains	The potential impacts on tourism are assessed and presented in: Chapter 21 – Socio-economic, land use and property.
19.	Water quality Section 2.5.3	Water quality in the catchment would be impacted by construction and the retention of inflows	There would be negligible impact on downstream water quality attributed to construction activities. The Project operational impact on existing water quality would be minimal.
20.	Protected and sensitive land Section 2.2.2.3	Potential adjustment of the exclusion zone around the catchment	The Project would not result in any changes to the boundaries of the Warragamba Special Area and there is no intention to change them. Impacts on catchment access during construction and operation of the Project are discussed in Chapter 20 – Protected and sensitive lands.
21.	Socio-economic, land use and property Section 2.3.6	Insurability of properties on the floodplain	Insurance premiums are determined independently by the insurance companies. A reduction in flood risk may influence flood insurance premiums.
22.	Noise and vibration Section2.5.3	There would be considerable noise generated during construction	Noise will be generated during construction works and some out of hours works are likely to be required. Predicted noise levels and mitigation measures are presented in Chapter 19 (Noise and vibration).
23.	Visual amenity Section 2.2.1.6	Environmental impacts including vegetation loss and bank erosion visible from the Echo Point lookout in the Blue Mountains would have a negative effect on tourism	Potential visual impacts from loss or change in vegetation due to the Project would not be visible from Echo Point.

Priority	Category and where discussed in this report	Issue raised	Response
24.	Design Section 2.2.2.2 and Section 2.3	Flows would need to be managed to consider both the environment and river users	The Project would include an environmental flow structure to provide controlled flows to improve river health.
25.	Climate change risk Section 2.3	The need to be prepared for increased flood events and droughts from climate change conditions	With the projected climate change, the flood risk is predicted to increase and is a further consideration for the dam raising Project.
26.	Air quality Section 2.5.3	Dust generated from construction activities would have a negative effect on air quality	Predicted levels for construction dust emissions are low and well below their respective air quality assessment criteria.

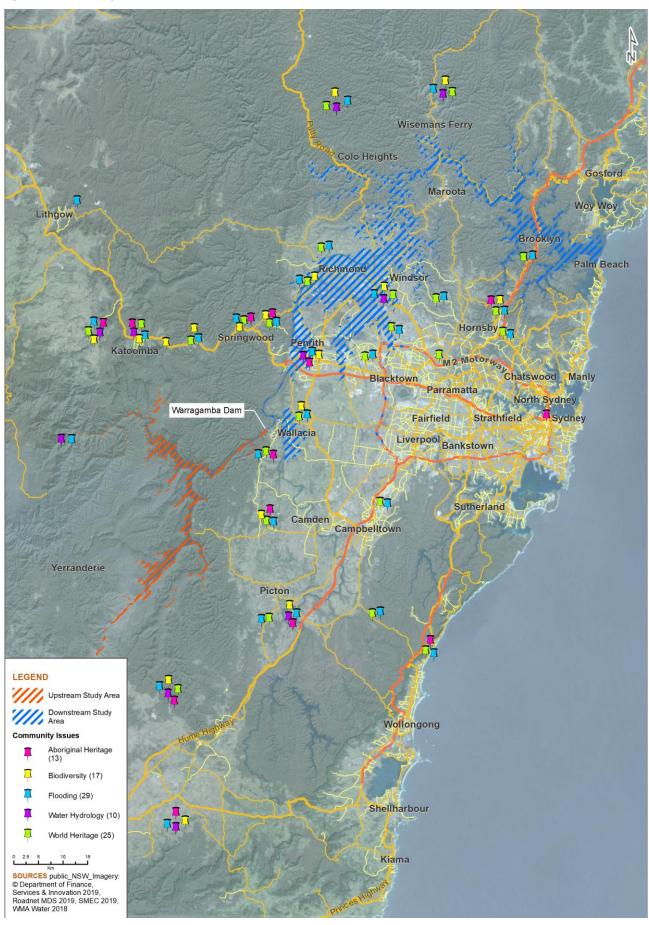
Section 3.2 provides further representation of issues raised in relation to geographic location.

3.2 Location of events where issues were raised

The community and stakeholder issues register captured themes from stakeholders in and outside of the four geographic consultation clusters. Five themes emerged repeatedly: flooding, Aboriginal heritage, biodiversity, world heritage, and water hydrology. Figure 3-1 shows the geographic distribution of locations of events where the top five issues were recorded.

A weighting was not given to issues recorded in the consultation database and has not been incorporated into this analysis.

Figure 3-1. Location of events where issues were raised



4 Conclusion

Over 25 issues were captured across four geographic consultation clusters. The frequency of issues raised across all four locations led to a priority table where the top five recurring concerns from all communities engaged featured:

- 1) An increase in temporary upstream inundation, and reduction in downstream flooding
- 2) Impacts on Aboriginal heritage from increased upstream inundation
- 3) Impacts on biodiversity from increased upstream inundation
- 4) Impacts on protected and sensitive land and on the GBMWHA from increased upstream inundation
- 5) Changes in upstream hydrology and the Hawkesbury River downstream.

This summary of issues informs key priorities within the EIS as representative of local communities and stakeholders concerns, issues and need in relation to the dam raising proposal.

Appendix A Flood Strategy engagement – in support of the Project

Since 2014, the Warragamba Dam Raising Project has been a key feature of the Flood Strategy. Engagement with stakeholders and the community has been led by the Hawkesbury-Nepean Valley Flood Management Taskforce and more recently by the Hawkesbury-Nepean Valley Flood Risk Management Directorate.

The Directorate undertook engagement activities that promoted an understanding of the Project and provided feedback opportunities. This provided a solid foundation for community understanding of the Project within the catchment and other affected areas, and to understand the context for the Environmental Impact Statement (EIS).

Table A-1 details completed and ongoing communication and engagement activities for *Resilient Valley, Resilient Communities – Hawkesbury-Nepean Valley Flood Risk Management Strategy* from November 2017 to mid-2019.

Table A-1. Flood Strategy communication and engagement activities

Event/activity	Date/s & venue/s	Stakeholders/ audience	Materials	Matters covered
Liaison with education providers	November to December 2017	NSW Department of Education, peak school organisations	Presentation	Supporting development of an education and engagement program
Hawkesbury City Council's Floodplain Risk Management Advisory Committee meeting	7 December 2017 Windsor	Floodplain Risk Management Advisory Committee members	Presentation	Flood Strategy implementation and the role and status of the Warragamba Dam Raising project
Briefing for officers of Ministers Harwin and Blair	19 January 2018	Policy and media officers from the Ministers' offices	Presentation	Flood Strategy implementation and the role and status of the Warragamba Dam Raising project
Greater Blue Mountains World Heritage Area Advisory Committee meeting	2 February 2018	Advisory Committee members	Presentation	Presentation on the Warragamba Dam Raising EIS process. Covering issues related to the upstream impacts of temporary inundation
Warragamba Dam Raising project EIS Newsletter #1	February 2018	Warragamba Dam Raising newsletter subscribers, community members	Newsletter – online and hard copy	Announcing the project within the context of the Flood Strategy and explain the EIS process
Community information sessions Static displays to raise awareness of the proposal and upcoming Environmental Impact Assessment (EIA) process	February- April 2018 Warragamba Dam Visitor Centre, shopping centres, council offices, libraries, Hawkesbury Show	Floodplain communities, other areas of interest (dam neighbours, broader community)	Displays - fact sheets, maps	Flood Strategy background and context, Warragamba Dam Raising proposal and EIS process, and how people can find out more
Biodiversity and heritage surveys	Jan-March 2018	Downstream properties (300+)	Letters followed by site visits	Surveys to support EIA process
Key stakeholder interviews	March-April 2018	Councils, NSW SES, peak groups	Interview guide	Feedback to inform next steps in social impact assessment

Event/activity	Date/s & venue/s	Stakeholders/ audience	Materials	Matters covered
Aboriginal engagement	Ongoing	Registered Aboriginal Parties Gundungurra ILUA Consultative Committee	Presentations	Presenting the Flood Strategy and Warragamba Dam Raising proposal
Field visit to the Kedumba Valley in the Warragamba Special Area	5 February 2018	Colong Foundation for Wilderness, Gundungurra representatives, local MPs, community representatives	Field trip guided by WaterNSW Catchment Officer	WaterNSW and Infrastructure NSW inspected the Camden White Gums and other ecological and heritage features
Meetings with council communication officers	9 February 2018	Penrith City Council, Hawkesbury City Council	Flood Strategy	Meeting with council communication managers
Liaison with local schools, councils and youth groups	February to March 2018	Hawkesbury-Nepean Valley school principals, teachers, council youth officers and youth groups	Presentation	Infrastructure NSW liaison with local schools and youth program providers to support development of education and engagement program for young people
Liaison with education providers	April 2018 and ongoing	NSW Department of Education, peak school organisations, Western Sydney University	Presentation	Curriculum support development – Year 9 Geography - school emergency planning
Hawkesbury City Council and Penrith City Council Floodplain Risk Management Advisory Committee meetings	Regular quarterly meetings (March/April 2018)	Floodplain Risk Management Advisory Committee members	Presentation	Infrastructure NSW presented an update on implementation of the Flood Strategy
Field visit to Warragamba Dam and floodplain	27 April 2018	Government Ministers and staff	Site visit and presentations	Infrastructure NSW and WaterNSW briefing on the implementation of the Flood Strategy and the Warragamba Dam Raising project
Briefings for Ministers Ayres and officers	Early May 2018	Minister, policy and media officers from the Ministers' offices	Presentation	Flood Strategy implementation Proposed legislative amendment Status and budget of the Warragamba Dam Raising project
Briefings for regional Councils: Hawkesbury City Blacktown City Wollondilly Shire	2 April 2018 2 May 2018 8 May 2018	Elected Councillors and senior council officers	Presentations	Infrastructure NSW presented a refresh and update of the Flood Strategy WaterNSW outlined status and issues related to Warragamba Dam Raising

Event/activity	Date/s & venue/s	Stakeholders/ audience	Materials	Matters covered
Youth Week events Hawkesbury and Penrith	13 April 2018 and 19 April 2018	Young people and their families, youth groups and networks	Display, maps, catchment model, printed collateral	Establishing contact with youth groups/associations, young people and their families
Media event featuring Evacuation Signage Strategy with Ministers Ayres and Davies	Penrith 20 April 2018	Floodplain communities	Display, signs, media release	With Roads and Maritime Services (RMS) and NSW SES – update on signage strategy with focus on user testing
Hawkesbury Show	20-22 April 2018	Visitors to the show	Display, maps, collateral,	Broad range of issues raised and discussed with attendees
Testing of draft designs and sign system for new flood evacuation signage	March/April 2018 University of Sydney	Community participants drawn from floodplain area	Phone survey User testing Technical field testing	Concept designs for the RMS Flood Evacuation Signage Strategy were tested with the community through a phone survey
Briefings for officers of Ministers Upton and Blair	Early May 2018	Policy officers from the Ministers' offices	Presentation	Flood Strategy implementation Proposed legislative amendment Status of Warragamba Dam Raising project
Greater Blue Mountains World Heritage Area Advisory Committee meeting and Blue Mountains Regional Advisory Committee	Combined meeting 12 May 2018	Members of both Committees	Presentation	Flood Strategy – refresh and update and Warragamba Dam Raising EIS process
Blue Mountains City Council briefing Liverpool City Council briefing The Hills Shire Council	22 May 2018 24 May 2018 5 June 2018	Councillors and senior Council officers	Presentation followed by question & answer (Q&A) session	Infrastructure NSW and WaterNSW brief Councils on Flood Strategy and the EIS for the Warragamba Dam Raising Project
Local Government Advisory Group meeting	13 June 2018	Infrastructure NSW, local councils, Department of Planning & Environment (DP&E), Office of Environment and Heritage, RMS, NSW SES, Floodplain Management Australia, Greater Sydney Commission, Western Sydney Regional Organisation of Councils	Presentations	Detailed presentations to Council officers on: Emergency management for the Hawkesbury-Nepean Valley (NSW SES and Police) Flood Evacuation Signage Strategy (RMS)

Event/activity	Date/s & venue/s	Stakeholders/ audience	Materials	Matters covered
Hawkesbury City Council Floodplain Committee	26 June 2018	Councillors and community representatives	Presentation	Update on Flood Strategy and Warragamba Dam Raising EIS
Council briefings – Flood Strategy and Warragamba Dam Raising Proposal Liverpool City Council Penrith City Council	July/August 2018 Council offices	Liverpool City – council officers Penrith City – Councillors, senior staff	Presentations followed by Q&A sessions	Upstream impacts Local impacts and benefits Impacts on floodplain development (Penrith) Construction impacts of WDR Concerns re adequacy of evacuation capacity and planning (Penrith) Future use of WDR for water supply Adequacy of evacuation roads
Briefing to Greater Blue Mountains World Heritage Advisory Committee	10 August 2018 Penrith	Chair and committee members	Presentations and Q&A session by Infrastructure NSW, DP&E, & NSW SES	Update on the Flood Strategy Impacts on floodplain development Emergency planning and response Integration of Flood Strategy outcomes WDR upstream impacts
Media briefings	July/August 2018	Selected print and broadcast media	Presentation Q&A session	Flood Strategy context, drivers, research and investigations, key outcomes, status WDR rationale, proposal, assessment, status
Flood Strategy community update	September 2018	Floodplain communities, other stakeholders	Printed and online versions	The first Flood Strategy community update was distributed in the week beginning 24 September 2018 via The Western Weekender, Hawkesbury Gazette, Hawkesbury Courier, and Wollondilly, as well as via information stalls in Windsor and Penrith and also made available online
Warragamba Dam Raising - community update #2	September 2018	WaterNSW website and emailed to stakeholder database	Printed and online versions	WaterNSW update on what they have heard from the community during consultation to date and clarifying misinformation
Attendance at community events – Windsor Markets, Nepean Village Shopping Centre, Dam Fest	Sept/Oct 2018	Floodplain communities, other stakeholders	Pullup banners Fact sheets Community updates	Infrastructure NSW and WaterNSW – provided the opportunity for members of the community to learn more about the Flood Strategy and the Warragamba Dam Raising Proposal

Event/activity	Date/s & venue/s	Stakeholders/ audience	Materials	Matters covered
Council engagement on the regional flood study	Sept/Oct 2018	Floodplain councils		Engagement on the regional flood study
Communities of Concern workshops (round one)	October 2018	Service providers in Penrith and Hawkesbury	Workshop	The first in the series of Communities of Concern workshops was delivered to service providers by the University of Sydney and NSW SES. Workshops were focused on building flood awareness and emergency preparedness
Briefings with Floodplain Councils - Flood Evacuation Signage Strategy implementation (RMS and Infrastructure NSW)	October - November 2018	Relevant council officers – roads and comms staff Relevant council Floodplain Committees	Presentation, and maps Discussions	Discussed with council officers and floodplain committees the implementation process, operational and maintenance issues regarding signage on local roads
Hornsby Shire Council	1 November 2018	Councillors and senior council officers	Presentation Q&A session	WaterNSW provided a briefing on the Flood Strategy and the EIS
Camden Shire Council	21 November 2018	Councillors and senior council officers	Presentation Q&A session	WaterNSW provided briefing on Flood Strategy and the EIS
Workshops with Government agencies and floodplain councils regarding proposed regional land use planning framework	October – November 2018	Relevant agency and council staff	Presentation and maps Discussion	Covered proposed regional land use management framework
Briefings with Floodplain councils – Regional Land Use Planning Framework	Late 2018	Relevant council officers	Large map	Covered context and future framework for land use planning on the floodplain
Person Centred Emergency Preparedness workshops (round two)	December 2018	In-home care workers that support people with disabilities and the aged	Presentation, discussion and University of Sydney's Person Centred Emergency Toolkit	Delivered flood awareness and emergency preparedness training in conjunction with the University of Sydney, NSW SES, Office for Emergency Management and local councils
Warragamba Dam Raising - next phase social impact assessment	December 2018 – April 2019	310 stakeholders contacted by phone, 69 phone surveys completed 197 web survey invitations sent, 61 surveys completed	Phone & online surveys	Surveyed representatives from identified stakeholder groups to inform social impact assessment

Event/activity	Date/s & venue/s	Stakeholders/ audience	Materials	Matters covered
New flood signage complete	December 2018	Floodplain communities, other stakeholders	Signage	As part of the Flood Strategy, new signs have been installed across the Hawkesbury-Nepean Valley to help guide people out of the floodplain in a flood event
High school geography resource	December 2018	Floodplain schools and communities	Resources	Western Sydney University has progressed resources
Warragamba Dam Raising - Community Update #3	January 2019	WaterNSW website and email to stakeholder database	Printed and online versions	Outlining the current operation of Warragamba Dam and the potential upstream and downstream impacts of the proposal to raise Warragamba Dam
Media/social media responses	Ongoing	Floodplain communities, other stakeholders	Responses provided to media as required	Media and social media coverage about the proposal to raise Warragamba Dam has continued
Nepean River Floodplain Risk Management Study and Plan Technical Working Group	1 February 2019	Penrith City Council	Discussion	Nepean River floodplain risk management
South Creek Floodplain Risk Management Study and Plan Technical Working Group	1 February 2019	Penrith City Council	Discussion	South Creek floodplain risk management
Hawkesbury Floodplain Risk Management Advisory Committee	14 February 2019 and ongoing	Hawkesbury City Council	Discussion	Updates to the Hawkesbury Floodplain Risk Management Committee on all Flood Strategy outcomes
Greater Blue Mountains World Heritage Advisory Committee meeting combined with Blue Mountains Region Advisory Committee	16 February 2019	Members of both Committees	Presentation and discussion and Q&A session	Flood Strategy implementation Update on status of EIS and associated studies for the Warragamba Dam Raising proposal
Red Cross Beyond the Assembly Point emergency preparedness workshop	6 March 2019	Early childcare providers in the Hawkesbury	Presentation and discussion	Infrastructure NSW and NSW SES partnered with the Red Cross to deliver Beyond the Assembly Point workshops for childcare providers in conjunction with the Red Cross
High school geography curriculum resource expert briefing School emergency planning briefing	22 March 2019	Writing team for the geography curriculum resource Stakeholders in school emergency planning	Presentation and discussion	An information sharing day was delivered to upskill the writing team for the Geography school resource and brief key stakeholders in the school emergency planning project

Event/activity	Date/s & venue/s	Stakeholders/ audience	Materials	Matters covered
Western Sydney University Hawkesbury Campus – Peri-urban Greenhouse and Masterplan Project	25 March 2019	Hawkesbury City Council	Discussion	Preliminary discussion of flood risk with Hawkesbury City Council
NSW Health Residential Aged Care Flood Awareness and Emergency Preparedness training	26 March 2019	Residential aged care providers on the floodplain	Presentation and discussion	Infrastructure NSW, NSW SES and NSW Health delivered a workshop to build flood awareness and emergency preparedness for residential aged care facilities on the floodplain
Media/social media responses	Ongoing	Floodplain communities, other stakeholders	Responses provided to media as required	Media and social media coverage about the Flood Strategy and the proposal to raise Warragamba Dam

Appendix B Project communications and engagement activities

To address the SEARs, the project team has carried out consultation activities to meet adequacy requirements of the EIS prior to the public exhibition period. The table below provides details of each activity from October 2017 to January 2020.

Table B-1. Communication and engagement activities

Activity	Outcome	Timing		
Communication collateral				
Community update (January 2018)	2,500 copies were distributed via 10 regional council and library outlets (static display locations), during door-knocking, at community information events and emailed to subscribers	January 2018		
Frequently Asked Questions fact sheet	Copies were distributed alongside January 2018 Community Update via 10 regional council and library outlets (static display locations), during door-knocking and at community information events	January 2018		
Community update (September 2018)	2,500 copies were distributed at static display locations, during door-knocking, at community events and emailed to subscribers	September 2018		
Community update (January 2019)	106,000 copies were published - 98,000 copies were distributed in local newspapers and the remainder were distributed at community events and static display locations. A copy was emailed to subscribers	January 2019		
Project web pages	The web pages share Community updates, answer frequently asked questions and add new sections as EIS study data became available. There were over 4,700 visits to the web pages.	Ongoing		
Static displays				
Static displays and/or outlets for Community Updates	Sixteen information outlets have supported, or plan to support displays at: Blacktown City Council Blue Mountains Theatre and Community Hub Camden Council Hawkesbury Central Library Hawkesbury City Council The Hills Shire Council Hornsby Central Library Liverpool Library Liverpool Library Penrith City Council Richmond Library Warragamba Dam Visitor Centre Warragamba/Silverdale Neighbourhood Centre Wingecarribee Shire Council Wollondilly Shire Council	Ongoing		

Activity	Outcome	Timing		
Engagement events				
Community consultation sessions	Eight community consultation sessions were held in early 2018. These were advertised in local papers during January and February 2018 and at 10 Council offices and libraries.	February and April 2018		
	Around 300 community members visited these events with more than 50 requests to register for further information			
Interviews with key stakeholders	16 interviews were conducted to inform the SEIA in assessing effects on the quality of life, livelihood and economic indicators, vulnerable groups and reduction of flood damages relative to different stakeholder groups	March – June 2018		
Briefing government agencies	 Briefings were held and contact maintained with: 10 local councils – Hawkesbury, Blacktown, Wollondilly, Blue Mountains, The Hills, Liverpool, Penrith, Wingecarribee, Hornsby, Camden Penrith Local Emergency Management Committee NSW National Parks and Wildlife Services NSW Office of Environment and Heritage NSW Department of Planning, Industry and Environment NSW Department of Primary Industries – Fisheries NSW Department of Primary Industries – Crown Land Greater Sydney Commission Commonwealth Department of the Environment and Energy 	August 2017 – November 2019		
Engaging with infrastructure and service providers	Emergency service providers engaged through surveys and a workshop held to inform the SEIA as well as ongoing contact via phone and email include: NSW State Emergency Services NSW Police NSW Ambulance NSW Rural Fire Service NSW Fire and Rescue	Surveys – November 2018 Workshop - April 2019		
Engaging with businesses and the community	Scoping interviews and surveys to inform the SEIA were conducted with: heritage and conservation groups Western Sydney University Hawkesbury-Nepean Flood Mitigation Action Committee businesses and downstream farming interests including Turf NSW aqua culturalists and commercial fishermen in the river and estuary system other key river users including river transport and tourism operators and gravel/sand resource extractors	March – November 2018		
Engaging with special interest groups	The Project met with and maintained contact via email and phone with: The Colong Foundation for Wilderness	August 2017 - ongoing		

Activity	Outcome	Timing		
	 The Yerranderie Management Committee The Greater Blue Mountains World Heritage Area Advisory Committee 			
Engaging with affected landowners	Door-knocking occurred for more than 220 targeted properties in the EIS Study Area. 356 personally addressed letters were produced seeking access for downstream noise monitoring, geomorphology and biodiversity field studies	January-February, July-August, November 2018		
Engaging with impacted landowners	3 private property owners upstream of the dam were visited by the Project team to discuss potential changes to inundation of the property as a result of the Project	July 2018		
	13 letters were sent to private property owners upstream of the Dam advising of current inundation and potential changes (or no changes) to inundation as a result of the Project	December 2018		
Workshops	Two targeted construction zone workshops were held in Warragamba with emergency service providers, Councillors, local government officers, business operators, community groups and residents.	April 2019		
Enquiry management [as of 13 January 2020]				
Email enquiries	812 email enquiries responded to	Ongoing		
Phone calls	225 phone calls received			
Subscribers	595 people registered to receive email updates			
	32 people registered to receive Project updates via mail			
Campaigns	661 form letter emails opposing the Project were received and responded to.			
	877 emails addressed to state and federal members were received and recorded but not responded to as they were not addressed directly to the Project.			

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