

EPBC Act referral



Australian Government
Department of Agriculture, Water and the Environment

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Title of proposal	2020/8652 - Macquarie River Re-regulating Storage
Section 1	
Summary of your proposed action	
1.1 Project industry type	Water Management and Use
1.2 Provide a detailed description of the proposed action, including all proposed activities	<p>The NSW Government identified the Macquarie River valley as a priority for improved water management and critical water infrastructure projects. WaterNSW is proposing the construction of a new re-regulating storage on the Macquarie River (the project) on behalf of the Department of Planning, Industry & Environment (DPIE) for the NSW Government. The project will improve water security, reliability and delivery efficiency in the Macquarie River valley. The project will be located downstream of Burrendong Dam, between the townships of Narromine and Warren.</p> <p>The Macquarie River is located in the Murray-Darling Basin with its headwaters near Oberon, NSW. The river passes through the towns of Bathurst, Wellington, Dubbo, Narromine and Warren before joining the Barwon River near Brewarrina. West of Dubbo the land flattens and the Macquarie River provides flows to tributary creeks, wetlands and rich alluvial river flats associated with braided channels. Two major storages, Windamere Dam on the Cudgegong River, and Burrendong Dam on the Macquarie River, regulate catchment water supplies. Water users in the Macquarie River valley include major urban centres, permanent plantings, stock and domestic water supply schemes, industry and other uses such as the Western Plains Zoo.</p> <p>The catchment includes the Macquarie Marshes complex on the lower reaches of the Macquarie River. Parts of the Marshes are listed as a Wetland of International Importance under the Ramsar Convention. The Ramsar site contain habitats including core areas of semi-permanent wetlands, including forests and woodlands, reed beds, marshes, rushlands and open lagoons, which provide habitat for migratory bird species and large numbers of waterbirds, including colonial nesting birds (Commonwealth Environmental Water Office, 2018).</p> <p>The Macquarie River valley experiences relatively low water reliability and security compared to other water systems in NSW. The purpose of the project is to increase the security of the supply of water, to realise the full potential of water intensive agricultural operations and improve town water security in the region.</p> <p>The project's objectives are to:</p> <ul style="list-style-type: none">• Achieve long-term water security strategic objectives in the Macquarie River catchment• Improve delivery efficiency to water customers downstream of Gin Gin Weir• Reduce transmission losses when transferring and delivering water through the river system on an annual basis• Maximise available water for general security water customers within the sustainable diversion limits set under the Murray-Darling Basin Plan. <p>The project involves constructing, operating and maintaining a re-regulating storage on the Macquarie River downstream of Narromine. The project would temporarily store part of operational surplus flow events and regulate them as required, and thus reduce operational losses. The project will also provide operational flexibility to more efficiently deliver water to water users. No such storage is currently available on the Macquarie River downstream of the major upper catchment dams.</p> <p>The preferred option for the project is a new 6,000 megalitre (ML) re-regulating storage around 200m downstream of the existing Gin Gin Weir, approximately 6km upstream of Gin Gin and 18km northeast of Trangie. Gin Gin Weir is owned and operated by WaterNSW and its pool facilitates water extraction for numerous irrigation farms. Gin Gin Weir will be partially demolished to provide fish passage at low storage levels.</p> <p>Re-regulating structure</p> <p>Combined structure expected to consist of a concrete ogee weir with overshot gates, radial gates for flood passage and a fish passage structure. The radial gates will be approximately 10m high, and the overall structure approximately 14m high. The structure will be approximately 60m long across the river with wing walls extending to the riverbanks on either side. The overall structure will be of a similar length to Gin Gin Weir (approximately 120m) and the wing walls will be a similar height to the abutments on Gin Gin Weir. A suitable fish lock would be provided near the riverbank for the effective movement of fish moving upstream. The design will be further developed in consultation with DPIE.</p> <p>Temporary Diversion Channel</p>



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Construction in the dry will require a temporary diversion channel on the western bank of the river around 20m wide at the invert level to divert river flows around the construction site.

Cofferdams

Temporary cofferdams would be required to dam across the existing river both upstream and downstream of the project to prevent river flows entering the construction site, and to direct flows into the temporary diversion channel.

Storage Pool

The re-regulating storage pool would be about 2 - 3m below the bank level when full and would contain an estimated 6,000 ML of water, with the normal operating range likely to be less.

Bank Protection

Armouring using rock rip rap would potentially be required at scour points.

Access

Construction access would likely be required to both riverbanks from Gin Gin Weir Road and Burroway Road. Permanent access is likely to be from both roads.

Power Supply

Permanent power supply would be required to operate gates, fishway and associated operational and communications equipment.

Construction Zone

Site sheds, parking, lay-down areas, temporary access around the site, equipment storage, material stockpiles, temporary fencing, construction parking (as close to work sites as possible) and power supply (or generator).

Site Management

Erosion and sediment control works, dewatering operations, flood protection works.

Site Rehabilitation

Revegetation of disturbed construction zone.

Groundwater Control

A geophysical investigation was completed in September 2019 in the general vicinity of Gin Gin Weir and areas downstream. The results suggest three main stratigraphies are present up to a depth of 30m below ground level. The results indicate that groundwater control may be required if construction requires excavation below groundwater level.

1.3 What is the extent and location of your proposed action?

See Appendix B

1.5 Provide a brief physical description of the property on which the proposed action will take place and the location of the proposed action (e.g. proximity to major towns, or for off-shore actions, shortest distance to mainland)

The referral area for the proposed action is located on the Macquarie River downstream of the existing Gin Gin Weir, around 6km upstream of Gin Gin and 18km north east of Trangie, in the Orana Region of NSW. The area around the proposed action is dominated by agriculture and Gin Gin Weir Reserve. The riverbanks around it are vegetated by large trees and to its left, gives away to cultivated land. Narromine is the largest town near the proposed action.

The majority of the proposed action would be undertaken within the river. Some additional areas outside of the river would be used to provide a temporary works, including a diversion channel, coffer dam, work compounds, laydown areas and access roads. Permanent access roads are also proposed from both sides of the proposed controlled action location.

1.6 What is the size of the proposed action area development footprint (or work area) including disturbance footprint and avoidance footprint (if relevant)?



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The proposed action relates to the construction of a new re-regulating storage in the Macquarie River, 200m downstream of the existing Gin Gin Weir. Part of the Gin Gin Weir would also be demolished. Impacts of the proposed action would therefore occur within the Macquarie River, upstream and downstream of Gin Gin Weir. The proposed action is not expected to impact on delivery of environmental water to downstream environments including the Macquarie Marshes.

The new re-regulating storage will create a storage pool at full supply level that extends approximately 30km upstream to near Mumble Peg Road (see Figure 6 of attached Scoping Report).

1.7 Proposed action location

Other - The Macquarie River, downstream of Gin Gin Weir. See Figure 2 of attached Scoping Report.

1.8 Primary jurisdiction

New South Wales

1.9 Has the person proposing to take the action received any Australian Government grant funding to undertake this project?

Yes No

1.10 Is the proposed action subject to local government planning approval?

Yes No

1.11 Provide an estimated start and estimated end date for the proposed action	Start Date	01/03/2021
	End Date	31/03/2023

1.12 Provide details of the context, planning framework and state and/or local Government requirements

Under the State Environmental Planning Policy (State and Regional Development) 2011 (SRD SEPP), development is considered to be State significant Infrastructure (SSI) if it is permissible without consent and specified in Schedule 3. Under Clause 14(1) of SRD SEPP, development is declared to be State significant infrastructure for the purposes of the Act if:

- (a) the development on the land concerned is, by the operation of an environmental planning policy, permissible without development consent under Part 4 of the Act, and
- (b) The development is specified in Schedule 3.

Under Clause 125 (2) of the State Environmental Planning Policy (Infrastructure) 2007 (ISEPP), development for the purpose of water storage facilities, may be carried out by or on behalf of a public authority without consent on land in Zone RU1 Primary Production, Zone RU2 Rural Landscape, Zone SP1 Special Activities, Zone SP2 Infrastructure or an equivalent land use zone. A water storage facility means a dam, weir or reservoir for the collection and storage of water, and includes associated monitoring or gauging equipment (Standard Instrument—Principal Local Environmental Plan). The project would be undertaken by WaterNSW (a public authority) on land zoned RU1 Primary Production under the Narromine Local Environmental Plan 2011 and is therefore permissible without development consent.

Clause 4(1) of Schedule 3 of SRD SEPP defines water storage or water treatment facilities that are State significant infrastructure as: Development for the purposes of water storage or water treatment facilities (not including desalination plants) that has a capital investment value of more than \$30 million. As the project would have a capital investment value of over \$30 million and is permissible without development consent, it is State significant infrastructure as defined under clause 14(1) of SRD SEPP. Planning approval for the project is therefore subject to Part 5, Division 5.2 of the Environmental Planning and Assessment Act 1979.

A Scoping Report and application for the project as State Significant Infrastructure was submitted to the NSW Department of Planning, Industry and Environment on 03 March 2020. The Secretary's environmental assessment requirements (SEARs)



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were issued 25 March 2020 (SSI-10044).

The proposed action is assessable as State significant infrastructure (SSI) and needs approval from the NSW Minister for Planning in accordance with Division 5.2 of the NSW Environmental Planning and Assessment Act 1979 (EP&A Act), and by operation of clause 14(1) and Schedule 3 of SRD SEPP, and clause 79(1) of ISEPP. An Environmental Impact Statement (EIS) is being prepared to support an application to carry out the project under section 5.15 of the EP&A Act and clause 192 of the Environmental Planning and Assessment Regulation 2000 (EP&A Regulation). The EIS is also being prepared in accordance with the SEARs.

The EIS will clearly identify and assess the environmental impacts associated with the proposed action.

1.13 Describe any public consultation that has been, is being or will be undertaken, including with Indigenous stakeholders

Community engagement commenced mid-2018 with the development of the strategic business case addressing water security in the Macquarie Valley that considered a range of options including a new re-regulating storage on the Macquarie River. During that time, WaterNSW held briefings and meetings with stakeholders from industry, service and utility providers, local councils, Federal and state government, and traditional landowners.

WaterNSW maintains ongoing engagement with its customers and community in the Macquarie River valley through the following:

- Macquarie-Cudgegong Customer Advisory Group
- Macquarie Valley River Operations Stakeholder Consultative Committee.

Community, targeted stakeholder and landowner views were sought in preparing the Scoping Report for the project, to understand the issues to be addressed in the EIS, and opportunities and ongoing involvement during the assessment of the impacts of the project.

Engagement approaches included:

- Phone, email or letter contact with stakeholders
- Initial briefings of stakeholders, individually or in stakeholder forum groups
- Direct contact and meetings with affected landholders and also surrounding properties
- Joining stakeholder group meetings to present and discuss the project to their membership
- Project update in the form of a newsletter
- Community information and updates at WaterNSW's project webpage
- All day community information sessions (Community Forums) for landowners within 50km upstream of the project site, displaying maps and being available to discuss individual properties.

Aboriginal community engaged in preparing the Scoping Report included the Narromine Local Aboriginal Land Council (LALC), Warren-Macquarie LALC, and Trangie LALC.

WaterNSW will continue to proactively engage, inform and involve the stakeholders and the community about the project in the preparation of the EIS. WaterNSW will obtain opportunities for feedback, and feedback will inform project development, environmental assessment and EIS preparation.

Consultation with approval agencies will involve coordination meetings and provision of timely information.

Consultation during exhibition of the EIS

The DPIE will place the EIS on public exhibition for at least 28 days. At minimum, advertisements will be placed in local newspapers to advise of the exhibition, provide details of where the EIS can be viewed and information about other consultation activities during the exhibition period. Submissions received during public exhibition will be collated into a report and will be considered in the assessment of the EIS and further development of the project.

1.14 Describe any environmental impact assessments that have been or will be carried out under Commonwealth, State or Territory legislation including relevant impacts of the project

Initial environmental investigations were undertaken for the Scoping Report and an EIS is being prepared in accordance with the SEARs. Based on the Scoping Report and the SEARs, the following key issues need to be assessed in detail in preparing the EIS:

- Hydrology, flooding, geomorphology and water quality
- Terrestrial and aquatic biodiversity (including a Biodiversity Development Assessment Report)



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- Aboriginal and non-Aboriginal heritage
- Social and economic
- Transport and access
- Soils and land
- Hazards and waste
- Visual
- Air
- Noise and vibration.

WaterNSW will consult with relevant stakeholders in preparing the EIS. If the Minister decides that significant impacts to MNES are likely, these will be assessed under the EPBC Act. It is WaterNSW preference that the proposed action be assessed using an accredited process under section 87(4) of the EPBC Act, where the Commonwealth accredits the assessment process under Division 5.2 of Part 5 of the EP&A Act.

1.15 Is this action part of a staged development (or a component of a larger project)?

Yes No

1.16 Is the proposed action related to other actions or proposals in the region?

Yes No



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Section 2

Matters of national environmental significance

2.1 Is the proposed action likely to have any direct or indirect impact on the values of any World Heritage properties?

Yes No

2.2 Is the proposed action likely to have any direct or indirect impact on the values of any National Heritage places?

Yes No

2.3 Is the proposed action likely to have any direct or indirect impact on the ecological character of a Ramsar wetland?

Yes No

Wetland

The Macquarie Marshes extend across the Lower Macquarie Floodplain north of Warren and are a significant downstream ecosystem. The wetlands are recognised in listings by NSW and the Commonwealth – listed as Critically Endangered under the Environmental Protection & Biodiversity Conservation Act 1999. The marshes are nationally and internationally important given their size, diversity of wetland types, extent of wetland communities and large-scale colonial waterbird breeding events. Within the wetlands are areas listed by Ramsar and are also subject to international agreements on migratory bird breeding sites.

Impact

The proposed action will not have any direct impact on the Macquarie Marshes which are some 150km downstream of the construction site. Impacts on the Macquarie Marshes may be indirect relating to altered flow regimes. These will arise with the more efficient management of irrigation water released from Burrendong Dam that the project will offer.

Environmental watering flows to the Macquarie Marshes will be unaffected by the operation of the project. Impacts to other parts of the regulated flow regime that reach the Macquarie Marshes are likely, potentially altering the volume and frequency of these regulated flows. The effects of this on the area of the Macquarie Marshes and the river downstream of the re-regulating storage will be assessed as part of the EIS being prepared for the project.

2.3.2 Do you consider this impact to be significant?

Yes No

2.4 Is the proposed action likely to have any direct or indirect impact on the members of any listed species or any threatened ecological community, or their habitat?

Yes No

Species or threatened ecological community

In summary, the combined total number of identified threatened ecological communities and listed threatened species potentially occurring at or in the vicinity of the project area (including the upstream inundation area) as identified in EPBC Act Protected Matters Search are:

Threatened Communities and Species	Number Potentially Affected
Ecological Communities	6
Flora	4
Fauna – birds	9
Fauna – mammals	5
Fauna – reptiles	1
Fauna – fish	3

Impact

Potential direct impacts on threatened ecological communities within the project area may include:

- Clearing of small areas of vegetation for construction (re-regulating structure and access)



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- Inundation of vegetation as a result of impoundment.

Potential direct and indirect impacts on threatened species may include:

- Direct loss of individuals during construction and operation
- Loss of freshwater habitat types such as riffle zones due to inundation, and changes to flow regimes and water quality
 - Impacts to aquatic habitats and riparian vegetation from the regular variability of water levels within the storage and the associated effects on river bank stability
 - Loss or decrease of available recruitment area, due to changes in available habitat
 - Improvements to fish passage in the locality with fish passage provided at the new storage and the removal of the barrier effects of Gin Gin Weir.

Among these impacts are those to the Murray Cod which is listed as vulnerable. There are likely impacts to the structural elements that make up established habitat in the existing Gin Gin Weir pool, including potential spawning sites. The new operational regimes may impact larval recruitment and the movement of fish in the locality.

Potential impacts to terrestrial flora and fauna at the project construction site are unlikely to be significant given the comparatively small footprint of the project within communities represented more broadly along the river. There are opportunities to both minimise and mitigate any impacts with rehabilitation of the site following construction. Potential impacts to riparian flora adjoining the upstream inundation area from the new and variable pool levels will need to be further analysed. Field investigations will be able to confirm potential impacts and mitigation measures.

Potential impacts to the aquatic environment are likely to be more marked with a more extensive pool created behind the re-regulating structure than the existing weir, greater variability in the pool levels and altered fish passage opportunities at the location. The proposed fish passage to be provided at the new re-regulating structure and the removal of the barrier effect of Gin Gin Weir will improve overall fish passage at this location. However, the alterations to important fish habitat in this locality and the potential operation effects on habitat and spawning for Trout Cod and Murray Cod may give rise to potentially significant impacts to these species. Field investigations and further refinement of the proposed operating rules for the re-regulating structure will be able to confirm potential impacts and mitigation measures.

Construction

Mitigation measures will be applied to the project minimising the extent of the construction area and therefore the vegetation required for removal at the project site and for access, protecting vegetation outside the construction area, instituting native fauna management protocols for the construction area and rehabilitating and revegetating disturbed areas.

Operation

Other potential impacts during the operation of the re-regulating storage include:

- Change of flowing river habitats to pool habitat
- Impacts to aquatic habitats and riparian vegetation from the regular variability of water levels within the storage and the associated effects on river bank stability
 - Improvements to fish passage in the locality with fish passage provided at the new storage and the removal of the barrier effects of Gin Gin Weir.

Mitigation measures will be put in place to ensure that: the operation of the re-regulating storage delivers required environmental water downstream; the fish passage is operated and maintained to meet the target operating objectives; and, the operating regime of the storage is managed to minimise adverse impacts to river banks.

2.4.2 Do you consider this impact to be significant?

Yes No

2.5 Is the proposed action likely to have any direct or indirect impact on the members of any listed migratory species or their habitat?

Yes No

Migratory species

The EPBC Act Protected Matters Search identified a number of listed migratory species within the project area. These comprise one marine bird, three terrestrial species and five wetland species. These are indicative of the potential scale of listed matters that may be affected by the proposed action and the likelihood that some impact will occur.



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Impact <p>Potential impacts to listed migratory species include:</p> <ul style="list-style-type: none">• Loss or changes to habitat, including changing flowing river habitats to pool habitat• Temporary displacement during construction activities• Alterations to hydrological regimes• Impacts to groundwater dependent ecosystems• Impacts to aquatic habitats and riparian vegetation from the regular variability of water levels within the storage. <p>There are extensive areas of likely more important habitat for migratory species in the region. As such, the proposed action is unlikely to result in substantial modification of important habitat or seriously disrupt the lifecycle of migratory species. The proposed action will not be introducing an invasive species.</p> <p>Field investigations and further assessment undertaken for the EIS will be able to confirm potential impacts and mitigation measures.</p>
2.5.2 Do you consider this impact to be significant? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
2.6 Is the proposed action to be undertaken in a marine environment (outside Commonwealth marine areas)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
2.7 Is the proposed action likely to be taken on or near Commonwealth land? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
2.8 Is the proposed action taking place in the Great Barrier Reef Marine Park? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
2.9 Is the proposed action likely to have any direct or indirect impact on a water resource from coal seam gas or large coal mining development? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
2.10 Is the proposed action a nuclear action? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
2.11 Is the proposed action to be taken by a Commonwealth agency? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
2.12 Is the proposed action to be undertaken in a Commonwealth Heritage place overseas? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
2.13 Is the proposed action likely to have any direct or indirect impact on any part of the environment in the Commonwealth marine area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No



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Section 3

Description of the project area

3.1 Describe the flora and fauna relevant to the project area

High level searches based on the Narromine LGA of NSW Wildlife Atlas Bionet and of Protected Matters under the EPBC Act were completed. These are indicative of the potential scale of listed matters that may be affected by the project and the likelihood that some impact will occur.

A search of the NSW Wildlife Atlas Bionet for the Narromine LGA shows 62 plant species listed as Threatened and 44 animal species listed as Threatened. In addition there are 14 Threatened Ecological Communities (TECs) - 11 Endangered Ecological Communities and three Critically Endangered Ecological Communities. Of the 14 TECs listed under the NSW Biodiversity Conservation Act 2016 (BC Act), seven have a listing under the EPBC Act. Nine migratory species of birds are also listed under the EPBC Act.

The aquatic ecological community in the natural drainage system of the lowland catchment of the Darling River (Darling River EEC) is listed under the NSW Fisheries Management Act 1994 (FM Act) and includes all native fish and aquatic invertebrates within all natural creeks, rivers, streams and associated lagoons, billabongs, lakes, flow diversions to anabranches, the anabranches, and the floodplains of the Darling River within NSW, including Menindee Lakes and the Barwon River. The sections of the Macquarie River downstream of Burrendong Dam are part of this EEC. The Final Recommendation of the Fisheries Scientific Committee indicates that 'in its natural state, many of the water-bodies in this EEC are characterised by variable and unpredictable patterns of high and low flows'.

The TECs and threatened species listed under the BC Act, FM Act and EPBC Act as having being recorded in the locality or have the potential to be present in the locality may occur within the Darling River EEC.

Threatened freshwater fish distribution

The following threatened freshwater fish under the FM Act, with listings of Vulnerable (V), Endangered (E) or as an Endangered Population (EP), have indicative distributions in the Macquarie River catchment (Riches and others 2016) in the vicinity of the project:

- Eel-tailed Catfish (E, EP)
- Olive Perchlet (E, EP)
- Southern Purple Spotted Gudgeon (E)
- Silver Perch (V)
- Trout Cod (E).

Instream structures are also listed as the Key Threatening Process Installation and operation of instream structures and other mechanisms that alter natural flow regimes of rivers and streams. The Degradation of Native Riparian Vegetation along NSW watercourses and the Removal of Large Woody Debris for NSW Rivers and Streams are also Key Threatening Processes that may apply to the project.

Three fish species are protected under the EPBC Act and are known to occur in the section of river between Warren and Dubbo. These are:

- Murray Cod (Vulnerable)
- Silver Perch (Critically Endangered)
- Trout Cod (Endangered).

Gin Gin Weir is ranked as a high remediation priority due to the following:

- Class 1 fish habitat - major permanently flowing waterway and presence of one or more threatened fish species (the Macquarie River is within the expected distribution of silver perch
- (Bidyanus bidyanus), olive perchlet (Ambassis agassizii), purple spotted gudgeon (Mogurnda adspersa) and trout cod (Maccullochella macquariensis)
- Diverse range of native fish (High Conservation Value)
- Location within the catchment (fish habitat located in the lower end of the catchment have a higher conservation need due to the higher prevalence of spawning grounds or core habitats)
- Improved stream connectivity with the next upstream barrier to fish passage is Narromine Weir approximately 50km away and the next barrier downstream is Warren Weir approximately 45km away
- Low frequency of drown out (flow at which fish passage is possible, where head loss and velocities are minimal).



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Macquarie Marshes

The Macquarie Marshes extend across the Lower Macquarie Floodplain north of Warren and are a significant downstream ecosystem. The wetlands are recognised in listings by NSW and the Commonwealth – listed as Critically Endangered under the EPBC Act. The marshes are nationally and internationally important given their size, diversity of wetland types, extent of wetland communities and large-scale colonial waterbird breeding events. Within the wetlands are areas listed by Ramsar and are also subject to international agreements on migratory bird breeding sites.

Aquatic habitat

The Macquarie River in the vicinity of Gin Gin Weir was rated with a fish community status of 'Poor'. The length of the Macquarie River that traverses the re-regulating storage site and pool is identified as Key Fish Habitat. The Instream Value of the Macquarie River in the locality of the project ranges across medium, high and very high values. The ecological value of high probability groundwater dependent vegetation ecosystems in the locality of the project ranges across medium and high values.

3.2 Describe the hydrology relevant to the project area (including water flows)

The two major storages in the Macquarie River catchment are Windamere Dam (capacity 368,000 ML on the Cudgegong River), and Burrendong Dam on the Macquarie River (capacity 1,188,000 ML with additional storage capacity of 489,000 ML in the flood mitigation zone).

The volume and pattern of flows of the Macquarie River have been significantly altered by the construction of Burrendong Dam and extraction of water. Regulating structures downstream of the dams are used to manage the diversion of water into distributary creeks.

West of Narromine, the Macquarie River provides flows to distributary creeks, wetlands and alluvial river flats associated with braided channels. There is a complex system of anabranches and effluent creeks that connect the Macquarie, Darling and Bogan Rivers. The Macquarie Marshes are located toward the end of the catchment and are seasonally wet. The Macquarie River is joined by the Castlereagh River downstream of the Macquarie Marshes and then flows into the Barwon River near Brewarrina.

The project and its operation will interact with the hydrology of the river, including the pattern of flooding and the flow regimes downstream of the re-regulating storage, the interaction between surface water and groundwater, and potential changes to water quality.

The surface and ground waters of the valley are subject of the Water Sharing Plan for the Macquarie and Cudgegong Regulated Rivers Water Source 2016 and the Water Sharing Plan for the Macquarie Bogan Unregulated and Alluvial Water Sources 2012. Water resource plans are in preparation for the Macquarie-Castlereagh surface water and the Macquarie-Castlereagh Alluvium.

The Water Sharing Plan for the Macquarie and Cudgegong Regulated Rivers Water Source 2016 provides for planned environmental water and stock and domestic (replenishment) flows. The NSW Government manages licenced water for the environment. The Commonwealth also has environmental water holdings in the Macquarie River. These holdings offer opportunities to align Commonwealth environmental water deliveries to increase the potential for environmental objectives to be achieved jointly and assist with delivery efficiency and effectiveness (Commonwealth Environmental Water Office, 2018).

3.3 Describe the soil and vegetation characteristics relevant to the project area

The project site locality is part of the Upper Darling Plains physiographic region and is a low lying alluvial floodplain at around 220mAHD.

The dominant soils on the Upper Darling Plains and Cobar Plains are grey and brown Vertosols and red Chromosols. The project locality is characterised by Chromosols which exhibit a strong texture contrast between the upper and lower horizons. A narrow belt of Dermosols occur along the Macquarie channel, which have structured horizons at depth, but lack strong texture contrast between upper and lower horizons. The locality is considered very good cropping land with fertile soils and short, low slopes.

The riverbanks around the project location are vegetated with large trees and, on the right bank of the river, the riverbank vegetation connects with a larger vegetated area that comprises the Gin Gin Weir Reserve. Public access to the river and its sandy beaches is available through the Reserve. On the left bank of the River, the riparian vegetation gives way to cultivated land across the floodplain.



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The river upstream and downstream of the proposed action is characterised by a band of riparian vegetation with both dryland and irrigated farmland across the floodplain.

3.4 Describe any outstanding natural features and/or any other important or unique values relevant to the project area

The landscape is part of the Upper Darling Plains bioregion and river channels support red gum communities, with coolibah and black box communities on floodplains (see Figure 9 of attached Scoping Report). Most of the regulated Macquarie River has high to very high ecological values due to a number of factors including the presence of a Ramsar site, the presence of threatened fish species, the presence of endangered ecological communities and large tracts of riparian vegetation and relatively undisturbed river reaches that provide habitat and contribute to primary production (NSW Department of Industry 2018a).

3.5 Describe the status of native vegetation relevant to the project area

The project location is adjoined by riparian vegetation and cultivated land. The largest remaining blocks of native vegetation are in national parks, state forests or travelling stock routes. There are no State Forests or National parks or reserves along the river near the project location. Downstream reserves include Macquarie Marshes Nature Reserve.

3.6 Describe the gradient (or depth range if action is to be taken in a marine area) relevant to the project area

Review of desktop information shows that the gradient is around 1m over 3km. This information will be refined as further field investigations for the project are undertaken for the EIS.

3.7 Describe the current condition of the environment relevant to the project area

The site of project for the re-regulating storage is approximately 200m downstream of the existing Gin Gin Weir. The riverbanks are vegetated with large trees and, on the right bank of the River, the riverbank vegetation connects with a larger vegetated area that comprises the Gin Gin Weir Reserve. Public access to the river and its sandy beaches is available through the Reserve. On the left bank of the river, the riparian vegetation gives way to cultivated land across the floodplain. Figure 8 of the attached Scoping Report shows the riparian vegetation and river channel immediately downstream of Gin Gin Weir, looking towards the site.

The aquatic ecosystem is dominated by the weir and the weir pool. The fish community status was rated as poor (see section 5.3.1.4 of attached Scoping Report).

The river upstream and downstream of the proposed re-regulating storage, is characterised by a band of riparian vegetation with both dryland and irrigated farmland across the floodplain. Homesteads and farm buildings are dotted across the landscape.

Narromine is the largest town near the project site with a population of some 6,500, and nearby Trangie has a population of around 1,200.

3.8 Describe any Commonwealth Heritage places or other places recognised as having heritage values relevant to the project

No Commonwealth heritage properties or places are located in close proximity to referral area.

3.9 Describe any Indigenous heritage values relevant to the project area

The referral area is located within the traditional country of the Wiradjuri People. The project locality is on the lands of the Trangie LALC, Narromine LALC and Warren Macquarie LALC.

The initial search of the Aboriginal Heritage Information Management System (27 July 2019) indicated no registered Aboriginal sites or places within one kilometre of the proposed re-regulating storage structure. Registered sites are located adjacent to the River around Rocky Point, some 20 kilometres upstream. The river at Rocky Point will be within the inundation area of the new re-regulating storage.

The nature of the recorded sites suggests that similar sites are likely to exist at other locations along the river and across the landscape.

A search of Native Title Vision, the National Native Title Tribunal's online mapping database (24 November 2019), indicated no Native Title determinations or applications at the project site.

3.10 Describe the tenure of the action area (e.g. freehold, leasehold) relevant to the project area

The project is located on Crown land (NSW Government). Land parcels potentially affected by the project are:



Note: PDF may contain fields not relevant to your application. These fields will appear blank or unticked. Please disregard these fields.

Lot	DP	Owner
7310	1160283	NSW Department of Planning, Industry and Environment (Housing and Property)
53	41552	Private Landholder
7010	1020351	NSW Department of Planning, Industry and Environment (Housing and Property)
1	1163113	NSW Department of Planning, Industry and Environment (Housing and Property).

3.11 Describe any existing or any proposed uses relevant to the project area

The majority of the proposed action is located within the Macquarie River, which is regulated by the existing Gin Gin Weir. The purpose of the project is to provide a re-regulating storage to temporarily store part of the operational surplus flow events and regulate them as required, and thus reduce operational losses currently being experienced. The project will also provide operational flexibility to more efficiently deliver water to water users. No such storage is currently available on the Macquarie River downstream of the major upper catchment dams.

The Gin Gin Weir is owned and operated by WaterNSW and its pool facilitates water extraction for numerous irrigation farms, including the larger Trangie-Nevertire Irrigation and Tenandra Irrigation schemes. The existing Gin Gin Weir will be demolished as part of the project. The water users of the river will remain the same.

The project location is popular for recreation, picnicking, boating, fishing and bushwalking with a sandy river beach. These were identified as important features to the community, and the project is seeking to retain and enhance these features as far as practicable.



Note: PDF may contain fields not relevant to your application. These fields will appear blank or unticked. Please disregard these fields.

Section 4

Measures to avoid or reduce impacts

4.1 Describe the measures you will undertake to avoid or reduce impact from your proposed action

Mitigation measures for the project will be put in place to ensure the following:

- Minimising the extent of the construction area and the vegetation required for removal at the project site and for access
- Instituting native fauna management protocols for the construction area and rehabilitating and re-vegetating disturbed areas
- Operating the re-regulating storage delivers required environmental water downstream
- Providing fish passage at the new re-regulating structure and at Gin Gin Weir, and the fishway is operated and maintained to meet the target operating objectives
- Operating regime of the storage is managed to minimise adverse impacts to river banks and riparian vegetation.

Measures to avoid, minimise and mitigate impacts resulting from the proposed action will be further developed and supplemented as the project design is developed and the assessment is completed in the EIS. Other proposed high level mitigation measures are described throughout in the attached Scoping Report.

4.2 For matters protected by the EPBC Act that may be affected by the proposed action, describe the proposed environmental outcomes to be achieved

For listed species and TECs, an assessment of the biodiversity values and the likely biodiversity impacts of the proposed action will be undertaken in accordance with relevant NSW and Commonwealth legislation and guidelines.

Building on the mitigation measures above are two proposed environmental outcomes:

- ensuring that the re-regulating storage does not impede the passage environmental water for the river downstream and the Macquarie Marshes
- fish passage is provided past the re-regulating storage and at Gin Gin Weir.

These will be developed further with the operating rules for the project, the design of fish passage and the assessment completed in the EIS. The EIS will document any further environmental outcomes that are proposed to be achieved for MNES.

As stated previously, if the Minister decides that significant impacts to MNES are likely from the proposed action, these impacts will be assessed under the EPBC Act. It is WaterNSW preference that the proposed action be assessed using an accredited process under section 87(4) of the EPBC Act, where the Commonwealth accredits the assessment process under Division 5.2 of Part 5 of the EP&A Act.



Note: PDF may contain fields not relevant to your application. These fields will appear blank or unticked. Please disregard these fields.

Section 5

Conclusion on the likelihood of significant impacts

5.1 You indicated the below ticked items to be of significant impact and therefore you consider the action to be a controlled action

- World Heritage properties
- National Heritage places
- Wetlands of international importance (declared Ramsar wetlands)
- Listed threatened species or any threatened ecological community
- Listed migratory species
- Marine environment outside Commonwealth marine areas
- Protection of the environment from actions involving Commonwealth land
- Great Barrier Reef Marine Park
- A water resource, in relation to coal seam gas development and large coal mining development
- Protection of the environment from nuclear actions
- Protection of the environment from Commonwealth actions
- Commonwealth Heritage places overseas
- Commonwealth marine areas

5.2 If no significant matters are identified, provide the key reasons why you think the proposed action is not likely to have a significant impact on a matter protected under the EPBC Act and therefore not a controlled action

Potential significant impacts have been identified to listed threatened species and communities. Impacts to the Macquarie Marshes and listed migratory species are considered unlikely. These impacts will be further considered and assessed in the Biodiversity Development Assessment Report (BDAR) and an aquatic ecological assessment for the EIS, in accordance with the project's SEARs.



Note: PDF may contain fields not relevant to your application. These fields will appear blank or unticked. Please disregard these fields.

Section 6

Environmental record of the person proposing to take the action

6.1 Does the person taking the action have a satisfactory record of responsible environmental management? Explain in further detail

WaterNSW is a NSW state owned corporation tasked with the operation and management of NSW dams and rivers, exercising certain conferred functions under the NSW Water Act 1912 and NSW Water Management Act 2000 concerning water licences and approvals. WaterNSW operates under an operating licence granted by the Independent Pricing and Regulatory Tribunal (IPART). Each year, IPART audits and reports on the organisation's performance against the licence provisions. Penalties may be imposed for non-compliance.

WaterNSW's operating licence enables it to exercise its functions under the NSW Water NSW Act 2014. The operating license requires maintenance of an environmental management system (EMS) in accordance with ISO14001:2016 and implementation of the system across all relevant activities associated with the construction and operation of its assets. WaterNSW has no history of prosecutions with respect to its environmental record.

6.2 Provide details of any past or present proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against either (a) the person proposing to take the action or, (b) if a permit has been applied for in relation to the action – the person making the application

WaterNSW formed in 2015 and is a combination of three legacy government entities, - State Water Corporation, Sydney Catchment Authority and some functions of the Department of Planning, Industry and Environment (previously Department of Industry). WaterNSW has not had any previous proceedings against it under Commonwealth or State law for the protection of the environment, conservation and sustainable use of natural resources.

6.3 If it is a corporation undertaking the action will the action be taken in accordance with the corporation's environmental policy and framework?

Yes No

6.3.1 If the person taking the action is a corporation, provide details of the corporation's environmental policy and planning framework

WaterNSW's operating licence enables it to exercise its functions under the NSW Water NSW Act 2014. The operating license requires maintenance of an environmental management system (EMS) in accordance with ISO14001:2016 and implementation of the system across all relevant activities associated with the construction and operation of its assets.

Further, section 6 of the NSW Water NSW Act 2014 stipulates the objectives of WaterNSW. Objective 2(d) states: where its activities affect the environment, to conduct its operations in compliance with the principles of ecologically sustainable development contained in section 6 (2) of the Protection of the Environment Administration Act 1991. The principles of ESD are reflected in WaterNSW's environmental policy, corporate structure, associated documentation and management plans and the general culture of the workplace.

WaterNSW liaises with key stakeholders regularly to ensure all legislative requirements and associated responsibilities are met. WaterNSW has invested significant capital and resources into improving its environmental performance and minimise impacts associated with Cold Water Pollution, mining within the catchment, water quality, weed and pest management, fire management and protection and maintenance of Aboriginal and historic heritage.

6.4 Has the person taking the action previously referred an action under the EPBC Act, or been responsible for undertaking an action referred under the EPBC Act?

Yes No

6.4.1 EPBC Act No and/or Name of Proposal

WaterNSW has referred one action under the EPBC Act:

2019/8590 – Water NSW / Water Management and Use / The Peel River, downstream of Chaffey Dam to the confluence of the Peel and Namoi Rivers / New South Wales / Operation of Peel River Drought Protection Works.

WaterNSW legacy items have referred several projects (relevantly from the State Water Corporation or Sydney Catchment Authority, but not from the Department of Planning, Industry and Environment):

2012/6523 - State Water Corporation / Water Management and Use / South east of Tamworth / New South Wales / Chaffey Dam Augmentation and Safety Upgrade



Note: PDF may contain fields not relevant to your application. These fields will appear blank or unticked. Please disregard these fields.

2007/3810 - State Water Corporation / Natural Resources Management / Macquarie Marshes Nature Reserve / New South Wales / Northern Marsh Bypass Channel Remedial Works

2006/3186 - State Water Corporation / Water Management and Use / Namoi River / New South Wales / Upgrade of Keepit Dam on the Namoi River

2006/3209 - Sydney Catchment Authority / Water Management and Use / Kangaloon / New South Wales / Upper Nepean (Kangaloon) Groundwater Borefield (Not completed)

2004/1762 - Sydney Catchment Authority / Natural Resources Management / Wingecarribee / New South Wales / Weed Management Program within Wingecarribee Swamp.



Note: PDF may contain fields not relevant to your application. These fields will appear blank or unticked. Please disregard these fields.

Section 7

Information sources

Reference source

GHD, January 2020. Macquarie River Re-regulating Storage – Scoping Report.

Reliability

Information used in this referral was drawn from Commonwealth and State government databases and reports prepared by reliable and experienced individuals. Further studies and surveys will be undertaken to confirm the validity of the findings of those sources as related to the proposed action.

Uncertainties

Some of the reports used raise uncertainties about aspects of the Macquarie River environment. The proposed further studies and surveys should reduce these uncertainties as related to the proposed action. The EIS will document and analyse these and identify how the proposed action will respond to any residual uncertainties.



Note: PDF may contain fields not relevant to your application. These fields will appear blank or unticked. Please disregard these fields.

Section 8

Proposed alternatives

Do you have any feasible alternatives to taking the proposed action?

Yes No

8.0 Provide a description of the feasible alternative

The State Infrastructure Strategy 2018-2038 (Infrastructure NSW 2018) identified the Macquarie River catchment as one of the three highest priority inland river catchments facing the most significant water management challenges in NSW. The catchment has low drought security due to low/variable rainfall, high evaporation and limited storages. The Strategy illustrates how the combination of climate, topography and existing asset performance indicates the potential need for augmentation of, or investment in, additional storage capacity to improve water security. In addition for the Macquarie River catchment, delivery efficiency is also a priority due to distribution losses and operational inefficiencies. Also, climate modelling suggests that, in the absence of a material response, reliability is forecast to continue to decrease in the face of a changing climate. Water availability is critical for the urban centres with growing populations as well as for the high security licence holders, environment and cultural values of the region.

Further detailed analysis by WaterNSW supported this assessment, with low reliability of water supply causing a substantial proportion of the irrigated agricultural production capacity to be underutilised, with negative economic and social impacts for communities. A number of feasible options were identified for further assessment, of which a new re-regulating storage on the Macquarie River, was one.

A mid-river re-regulating storage was considered a prospective solution to assist with mitigating operational inefficiencies in the regulated system. A new re-regulating storage, in the vicinity of the existing Gin Gin Weir, was considered worthy of further assessment because it would improve operational flexibility and reduce losses of allocated water released from distant headwater dams. Irrigation water orders could be delivered more timely and effectively, as could meeting minimum water flow targets along the system.

The existing weir was constructed 120 years ago and has suffered structural failure. An alternative to the project would be to either re-construct the existing weir to the original design height or maintain the existing weir without construction of a re-regulating storage. This would require the continuation of operational inefficiencies currently experienced, and not realising increased security of water supply, full potential of agricultural operations or achieving the long-term water security strategic objectives in the Macquarie River catchment.

8.1 Select the relevant alternatives related to your proposed action

- Timeframes
- Locations
- Activities



Note: PDF may contain fields not relevant to your application. These fields will appear blank or unticked. Please disregard these fields.

8.9 Describe any public consultation that has been, is being or will be undertaken, including with Indigenous stakeholders

No consultation on the alternative has been conducted. WaterNSW has no current plans to undertake public consultation on the project alternative (re-construct the existing weir to the original design height or maintain the existing weir without construction of a re-regulating storage).

8.10 Describe any environmental impact assessments that have been or will be carried out under Commonwealth, State or Territory legislation including relevant impacts of the project

No environmental impact assessments are proposed for the project alternative (re-construct the existing weir to the original design height or maintain the existing weir without construction of a re-regulating storage).

8.12 Nominate any matters of National Environmental Significance that are likely to be impacted by this alternative proposal by ticking the relevant checkboxes

Listed threatened species or any threatened ecological community

8.12.1 Provide further information on potential impacts of matters of environmental significance that you have nominated above

Re-constructing the existing weir is likely to require some vegetation clearance and disturbance for construction activities. This may result in some direct and indirect impacts to listed threatened species and/or TECs near the project location.

8.13 Describe any impacts on the flora and fauna relevant to the alternative proposal

As per 8.12.1, this may result in some direct and indirect impacts to flora and fauna near the project location.

8.24 What are the proposed measures for any alternative action to avoid or reduce the impact?

Proposed measures for the alternative to the project (re-construct existing weir) would be similar to those proposed for the project. These have been summarised in this referral and in the attached Scoping Report.

8.25 Do you have another alternative?

Yes No



Note: PDF may contain fields not relevant to your application. These fields will appear blank or unticked. Please disregard these fields.

Section 9

Person proposing the action

9.1.1 Is the person proposing the action a member of an organisation?
 Yes No

Organisation

Organisation name	WATER NSW
Business name	Water NSW
ABN	21147934787
ACN	
Business address	169 Macquarie St, Parramatta, 2150, NSW, Australia
Postal address	
Main Phone number	1300 662 077
Fax	
Primary email address	Customer.Helpdesk@waternsw.com.au
Secondary email address	mina.suh@waternsw.com.au

9.1.2 I qualify for exemption from fees under section 520(4C)(e)(v) of the EPBC Act because I am:
 Small business
 Not applicable

9.1.2.2 I would like to apply for a waiver of full or partial fees under Schedule 1, 5.21A of the EPBC Regulations *
 Yes No

9.1.3 Contact

First name	Mina
Last name	Suh
Job title	Planning and Approvals Adviser
Phone	1300 662 077
Mobile	0436 841 288
Fax	
Email	mina.suh@waternsw.com.au
Primary address	169 Macquarie St, Parramatta, 2150, NSW, Australia
Address	

Declaration: Person proposing the action

I, Carl Butcher on behalf of Water NSW, declare that to the best of my knowledge the information I have given on, or attached to the EPBC Act Referral is complete, current and correct. I understand that giving false or misleading information is a serious offence. I declare that I am not taking the action on behalf or for the benefit of any other person or entity.

Signature:  Date: 28 May 2020

I, _____, the person proposing the action, consent to the designation of _____ as the proponent for the purposes of the action described in this EPBC Act Referral.

Signature:.....Date:



Note: PDF may contain fields not relevant to your application. These fields will appear blank or unticked. Please disregard these fields.

Proposed designated proponent

9.2.1 Is the proposed designated proponent a member of an organisation?
 Yes No

Organisation


Organisation name WATER NSW
Business name Water NSW
ABN 21147934787
ACN
Business address 169 Macquarie St, Parramatta, 2150, NSW, Australia
Postal address
Main Phone number 1300 662 077
Fax
Primary email address Customer.Helpdesk@waternsw.com.au
Secondary email address mina.suh@waternsw.com.au

9.2.2 Contact

First name Mina
Last name Suh
Job title Planning and Approvals Adviser
Phone 1300 662 077
Mobile 0436 841 288
Fax
Email mina.suh@waternsw.com.au
Primary address 169 Macquarie St, Parramatta, 2150, NSW, Australia
Address


Declaration: Proposed Designated Proponent

I, Carl Butcher on behalf of Water NSW, the
proposed designated proponent, consent to the designation of
myself as the proponent for the purposes of the action described in this EPBC Act Referral.

Signature:  **Date:** 28th May 2020



Note: PDF may contain fields not relevant to your application. These fields will appear blank or unticked. Please disregard these fields.

Referring party (person preparing the information)	
9.3.1 Is the referring party (person preparing the information) a member of an organisation?	
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Organisation	
Organisation name	WATER NSW
Business name	Water NSW
ABN	21147934787
ACN	
Business address	169 Macquarie St, Parramatta, 2150, NSW, Australia
Postal address	
Main Phone number	1300 662 077
Fax	
Primary email address	Customer.Helpdesk@waternsw.com.au
Secondary email address	mina.suh@waternsw.com.au
9.3.2 Contact	
First name	Mina
Last name	Suh
Job title	Planning and Approvals Adviser
Phone	1300 662 077
Mobile	0436 841 288
Fax	
Email	mina.suh@waternsw.com.au
Primary address	169 Macquarie St, Parramatta, 2150, NSW, Australia
Address	
Declaration: Referring party (person preparing the information)	
I, <u>Mina Suh</u> , declare that	
to the best of my knowledge the information I have given on, or attached to this EPBC Act Referral is complete, current and correct. I understand that giving false or misleading information is a serious offence.	
Signature: 	Date: <u>8 April 2020</u>



Note: PDF may contain fields not relevant to your application. These fields will appear blank or unticked. Please disregard these fields.

Appendix A	
Attachment	
Document Type	File Name
action_area_images	MRRRS Referral construction footprint.pdf
impact_reduction_docs	MRRRS - EIS Scoping Report.pdf

Appendix B
Coordinates
Area 1
-31.937758825091,148.1438977378
-31.937421949102,148.14097949439
-31.93774061561,148.14065762931
-31.937922710261,148.14048596794
-31.937503892024,148.14022847587
-31.936711774054,148.13989588195
-31.936484152685,148.13972422058
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-31.934736001784,148.14383336479
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-31.935737550638,148.14346858436
-31.936119957322,148.14361878807
-31.936711774054,148.14390846664
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