

# Billabong Creek Regulators proposal

The NSW Department of Climate Change, Energy, the Environment and Water is proposing to replace two existing weirs along Billabong Creek with new regulators

The Water Group in the NSW Department of Climate Change, Energy, the Environment and Water is proposing to replace two existing weirs along Billabong Creek with new regulators. The two existing weirs to be replaced are Hartwood Weir and Wanganella Weir, both built in the early 20<sup>th</sup> century and currently in states of declining condition and functionality. Billabong Creek is within the Yanco Creek system in south-west NSW as shown on Figure 1.

It is intended that WaterNSW would own and operate the new regulators once constructed.

The proposal is subject to environmental and planning approvals under Part 5 Division 5.2 of the *NSW Environmental Planning and Assessment Act 1979* and in accordance with the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999*. This Environmental Impact Statement has been prepared to support the application for approval and address the Secretary's Environmental Assessment Requirements (SEARs) issued by the NSW Department of Planning, Housing and Infrastructure on 17 October 2024.



Figure 1: Location of the proposal

## The proposal

### Need for the proposal

The proposal is needed to improve the efficiency of water management in Billabong Creek by improving:

- the ability to deliver the right amount of environmental and consumptive (town and irrigation) water to the right place at the right time
- the passage of native fish through the system.

The proposal would assist delivery of improved environmental outcomes compared to current conditions. This would support the aim of the Murray-Darling Basin Plan adopted in November 2012 and the Water Group's Yanco Creek Modernisation Project, which aims to upgrade of infrastructure to enable smarter use of water in the Yanco Creek system.

The proposal has evolved through multiple optioneering studies, technical studies, a detailed business case and ongoing community and stakeholder engagement. These activities:

- reduced the original scope of the proposal down from the replacement of four weirs to two
- refined the design to improve beneficial outcomes of the design and minimise adverse impacts.

The weirs included in the proposal are shown in Figure 2 and Figure 3.



Figure 2: Hartwood Weir



Figure 3: Wanganella Weir

In summary, the proposal would contribute to the Yanco Creek Modernisation Project through a focus on delivering improved environment outcomes through upgraded infrastructure and smarter use of water.

## Proposal objectives

The objectives of the Billabong Creek Regulators proposal are to:

- modernise ageing infrastructure
- provide service for water users
- improve fish passage
- improve delivery of environmental water.

The design of the proposal would meet the objectives listed above while avoiding and minimising impacts on the local and regional environment, and impacts on the local community and businesses, as far as possible.

## Description of the proposal

The proposal involves replacing two existing weirs along Billabong Creek with new regulators. The core structure of the two regulators is similar and would include:

- a regulator structure including concrete piers with maintenance bulkhead slots, concrete apron downstream of the structure concrete wingwalls upstream and downstream of the structure, fixed concrete crests and automated layflat gates across the crest of the structure to assist with flow management
- a fishway comprising a low turbulence 'keyhole' type vertical slot fishway with allowances for variable headwater to provide upstream fish passage and automated sidewinder gates within the vertical slot fishway to allow for variable headwater conditions
- regulator access from a trafficable deck (Hartwood Regulator only) and a pedestrian walkway access part way across Wanganella Regulator structure for maintenance
- regulator automated controls comprising an electrical control house and Supervisory Control and Data Acquisition (SCADA) control system
- fencing of the structures to prevent public access
- crushed rock maintenance pads, access and turnaround areas adjacent to the structure
- rock beaching upstream and downstream of structure for erosion protection.

An indicative layout of a regulator is shown in Figure 4. This example is of a five gate regulator with a fish passage (on the left) and trafficable deck for maintenance vehicles.



Figure 4: Indicative layout of a regulator

The proposal would also involve the following elements:

- power supply to the regulators would be provided by a mix of underground and overhead electricity cables connecting the structures to the grid
- access to the regulators would require permanent tracks for maintenance and some additional tracks to support construction only. Track upgrades include a new drainage culvert at Hartwood
- the existing Forest Creek block bank, associated with the Hartwood Regulator, is in a degraded condition. This will be replaced with a similar earthen structure in the same location
- the Wanganella flood bypass channel would be constructed to reduce potential upstream flooding impacts from the Wanganella Regulator. The channel would enable flood waters to drain between the billabongs in the Wanganella Reserve during flood events
- an existing privately owned borrow pit on lot 56 / DP756322 near Hartwood Weir would be extended to provide material for the construction of Hartwood Regulator and Forest Creek block bank.

## Operation of the regulators

It is intended that the regulators would be operated by WaterNSW, in accordance with the operating requirements established by the Water Group, in consultation with WaterNSW. These operating requirements are contained in the Yanco Creek system operations plan. The operations plan is in draft format and being developed in consultation with WaterNSW as the intended new asset owner, key government agencies and community stakeholders. The operations plan forms part of the larger NSW Sustainable Diversion Limit Adjustment Mechanism (SDLAM) program funded by the Australian Government.

The Yanco Creek operations plan includes the following content:

- operating principles for the water resources across the Yanco Creek system

- governance arrangements for implementing, reporting and amending the plan
- guidance for implementing and adapting operations, including the protection of environmental baseflows, the use of downstream storages by preference for supply and setting operating levels for the proposal
- operating principles and limits for key water regulating structures in the Yanco Creek system
- specifying environmental flow provisions for the Yanco Creek system
- factors that could contribute to the refinement of the plan.

The proposed regulators would provide greater control of water levels which would be operated to meet environmental and water supply objectives.

## Construction of the proposal

Construction of the proposal is anticipated to start in 2025 and be completed by 2026. The construction period is anticipated to be around 18 months. Construction would pause during periods of high flow.

The key phases of the construction works for each site include:

- site establishment including vegetation clearance, access track upgrades, environmental requirements, i.e., exclusion area fencing, compound site set up
- in-stream pre-construction works such as installation of sediment curtains
- construction of the regulators and fishways
- utility services construction
- demolition of existing weirs
- site rehabilitation and demobilisation.

## Benefits of the proposal

The proposal focuses on delivering equivalent and/or improved environment outcomes through upgraded infrastructure and the smarter use of water. The expected benefits include:

- more efficient delivery of environmental water
- improved fish passage (e.g. new fishways)
- improved knowledge and understanding of First Nations cultural heritage
- improved connection to Country
- an economic, training and employment boost for local communities
- improved levels of service for water users (e.g. more flexible irrigation scheduling)
- reduced risk of further non-strategic water market purchases from the southern-connected Basin to meet Murray-Darling Basin Plan commitments.

## Community and stakeholder engagement

The Water Group's goal has been to work collaboratively with stakeholders to advocate for and deliver smarter use of water across the Yanco Creek system meeting the requirements of the SDLAM program.

Key objectives include:

- ensuring key stakeholders are effectively engaged and enabled to provide meaningful feedback on the project using appropriate feedback channels
- ensuring stakeholders are well informed of project activities and progress using accurate, appropriate, and easily accessible communications materials
- building, maintaining and strengthening the Water Group's relationships with key stakeholders and community representatives as part of community and government partnership
- building community capacity and generating shared understandings.

Community engagement for work related to modernising the Yanco Creek system, including the proposal, began in late-2018. In late 2019, the Water Group developed a community engagement plan in partnership with the Yanco Creek and Tributaries Advisory Council. Stakeholder engagement has continued with the principal groups consulted as follows:

- Government agencies
- community including landowners and First Nations groups
- Yanco Creek and Tributaries Advisory Council members
- Technical Advisory Group
- other stakeholders consulted specifically on the EIS and EPBC referral.

Should the proposal be approved, the Water Group would continue to engage with the community and stakeholders in the lead up to, and during construction.

## Environmental impact assessment

### Design refinements

The environmental impact assessment is based on a preliminary design of the proposal that the Water Group has developed over a number of years in close consultation with WaterNSW and other key stakeholders. Impacts have been avoided or minimised through the design development process, where possible. Key design changes to minimise impacts include:

- Reduction of proposal scope to two regulators: the original scope of the proposal was to replace four weirs. Further hydrological modelling established the majority of water delivery efficiency could be obtained through replacement of just two weirs. This avoided impacts to landowners and communities close to the locations of Caroonboon and Piccaninny Weirs and reduced biodiversity impacts.
- Construction staging of new regulators: downstream, in-stream construction was chosen for the new regulators, with the new regulators being completed before removal of the existing

weirs. This reduced the need for earthworks, had higher community support and reduced environmental impacts. This methodology would mean the weir pools would be retained behind the existing weirs while the regulators are constructed, avoiding significant changes to the availability of weir pool supply.

- Alignment of access tracks: the alignment of the access track for the Forest Creek block bank was changed to avoid impacting upon a heritage feature. The was altered following consultation with the First Nations groups. Other track alignments were refined to minimise impacts to biodiversity.
- Power lines: following consultation with land owners, a corridor identified for an above ground electrical power line was changed to an underground asset to accommodate the land owners' needs. Other power line alignments were refined to minimise impacts to biodiversity.
- Wanganella flood bypass channel: the channel was designed to reduce flood levels in Wanganella Village for the two per cent and less frequent annual exceedance probability flood events.
- Access track floodway: the flood impacts assessment identified that the originally proposed access track to the Hartwood Regulator crossed a flood runner. If this flood runner is blocked this would lead to a minor increase in flood levels upstream. The access track design was modified to incorporate a floodway through this part of the track.
- Sustainable development principles: the design has considered how the principles (as defined in section 193, division 5, part 8 of the Environmental Planning and Assessment Regulation 2021) could be incorporated in the proposal. This has included an assessment against an accredited ecological sustainable development rating system and climate modelling in accordance with NSW Government Regional Climate Modelling.

## Construction of the proposal

Measures to minimise the identified potential impacts would be implemented through the design development and construction planning phases, taking into account the input of stakeholders and local community.

The majority of potential impacts would be managed through standard mitigation and management measures. Other potential impacts are discussed below.

**Hydrology:** the existing weirs will remain in place for the majority of the construction timeframe, only being demolished once the new regulators are fully installed. Therefore, the weirs will continue to have a similar influence on hydrology during the construction period similar to current conditions. In addition, the proposed construction methodology would involve partial coffer-damming of Billabong Creek allowing passing flows to meet irrigation and consumptive demands and environmental water provisions. Therefore, it is considered unlikely construction of the proposal would have a material adverse effect on the hydrology of Billabong Creek, either upstream or downstream.

**Flooding:** the flood inundation modelling has demonstrated the one in five year event impacts are contained within the creek channel. Construction activity zones outside of the channel would not be impacted in these events. The likelihood of a flood event of a greater magnitude occurring during

the 18 month construction period is considered low and flood impacts are not considered a significant risk.

**Surface water quality and aquatic ecology:** there would be potential for sediment runoff from areas disturbed by construction to impact water quality through increased turbidity if this risk is not appropriately managed. Areas presenting a high risk of soil erosion include areas cleared of vegetation close to the creek bank and disturbance of the creek bed. With the implementation of safeguards and management measures it was determined the risk is low. As such it is expected the water quality objectives and aquatic ecosystem values in the study area, including threatened species and key fish habitat, would be protected during construction.

**Terrestrial flora and fauna:** during construction some vegetation would need to be cleared. The proposal would remove up to 16.23 hectares of native vegetation across the proposal footprint. The impacted vegetation includes ecosystem and credit species habitat for the purposes of the Biodiversity Offset Scheme for six plant community types, one plant species and the following fauna species:

- Little Eagle
- Bush Stone-curlew
- Southern Bell Frog
- Southern Myotis
- Plains-wanderer.

An assessment of serious and irreversible impacts has been prepared for the Plains-wanderer due to the removal of 1.96 hectares of mapped important habitat for this species. Assessments of significance have been prepared for threatened species listed under the EPBC Act likely to be impacted by the proposal. The outcome of these assessments is the proposed action is not likely to result in a significant impact to any terrestrial threatened species or communities listed under the EPBC Act.

**Aboriginal heritage:** four Aboriginal cultural heritage items would be directly impacted. This would comprise of the total loss of three sites including the removal of two scar trees and one earth mound. Additionally partial loss of value due to tree trimming would occur at a scarred tree. Excavation may also impact currently unidentified subsurface Aboriginal objects.

**Non-Aboriginal heritage:** two heritage items, assessed as being of local significance, would be directly impacted by the proposal. Harwood Weir is locally listed on the state agency heritage register, WaterNSW Section 170 State Agency Heritage and Conservation register (WaterNSW S170 4550110). Wanganella Weir is not listed but is assessed as having local significance. The majority of features above the waterline serving as a visual reminder of the location of the historical weir, would be removed. As such, the overall level of impact on both weirs would be major. Mitigation proposed includes interpretation options and salvage of the Hartwood Weir engraving.

**Social:** there would be no public access to Wanganella Weir and the adjacent campsite during construction. This area would be restricted to maintain public safety.

## Operation of the proposal

**Hydrology:** overall, the hydrological analysis shows the operation of the proposal will have some minor localised effects on hydrology (i.e. water balance, seasonality, flow variability, and flow sizes) which are consistent with the aims of the proposal and the broader system changes outlined in the operations plan. As such, the overall hydrological characteristics of Billabong Creek within the proposal study area or the broader Yanco Billabong System will not substantially alter as a result of the proposal. Operation of the proposal will result in an overall improvement in the frequency of achieving requirements for a number of Environmental Water Requirement categories to support key ecological values of the system. The proposal is also not anticipated to negatively impact key hydrological aspects of the Yanco Creek System, including the proposal study area, when taking into consideration potential cumulative effects associated with other projects in the study area.

**Flooding:** overall, the flood assessment has demonstrated there will be no significant detrimental increases to properties, assets, and infrastructure. As there is fundamentally no change in the flood characteristics due to the proposals, it can be concluded the flood hazard and hydraulic functions of flow conveyance in floodways and flood storage characteristics remain consistent with current conditions and the Conargo Local Environment Plan. Further, as there is no fundamental change to the flooding conditions the existing emergency management, evacuation and access.

**Surface water quality and aquatic ecology:** the design of the new regulators would allow for improved control of environmental flows and fish passage resulting in improved connectivity for native aquatic species. Relatively minor changes to flow and velocity are predicted regardless of the operating flow setting (maximum or minimum) and are unlikely to negatively impact the native aquatic community. Based on the assessment of the existing water quality and aquatic environments, the design of the new regulators, and the proposed safeguards and management practices, it was concluded water quality objectives and aquatic ecosystem values within the study area would be adequately protected during operation of the proposal.

**Non-Aboriginal heritage:** the remaining features of the locally heritage significant weirs would comprise the in-creek base slabs and a wingwall at Wanganella. These structures were constructed to withstand water flows of various levels and speeds. The remaining heritage significance would not be further impacted by any additional hydrological impacts from changes to the water flow due to the operation of the new regulators.

**Social:** the operational social impacts are generally beneficial to the local community and include improved water management, delivery and availability contributing to business and economic outcomes, particularly agricultural industries. The proposal will support the overall health and wellbeing of current and future surrounding communities through improved water supply, management and security. It will also support Aboriginal values associated with environmental protection and flows. The proposal would provide direct and indirect employment opportunities and regional economic growth, supporting livelihoods and wellbeing.

## Next steps

The Water Group is seeking approval from the Minister for Planning and Public Spaces for the construction and operation of the proposal. Steps are shown in Figure 5:

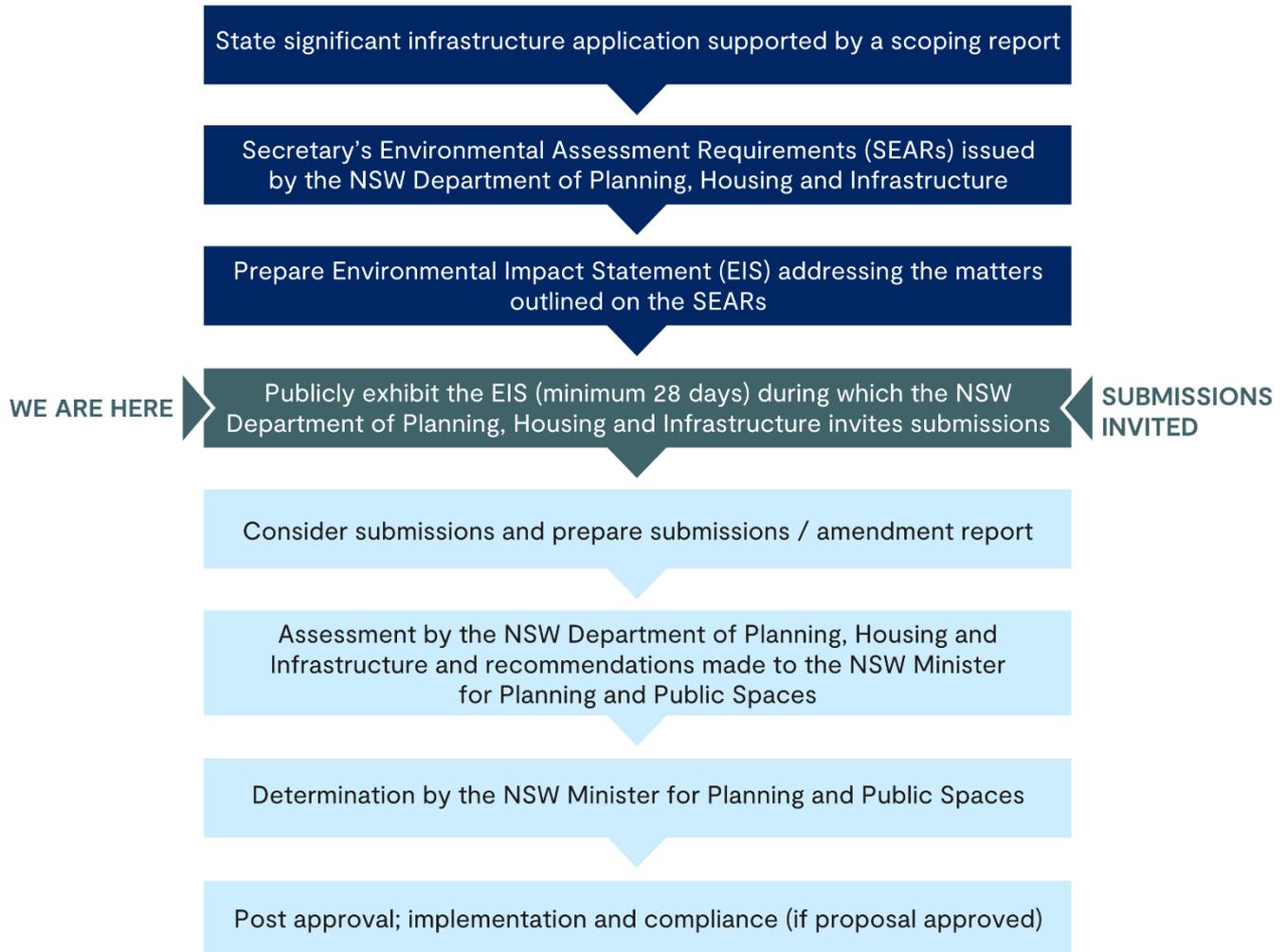


Figure 5: Approval and consultation process

The Minister for Planning and Public Spaces would then make a decision on the proposal and, if approved, set conditions of approval.

Consultation with the community and stakeholders would continue throughout the detailed design and construction phases as required.

During the exhibition period, the Environmental Impact Statement will be available for viewing on the Major project planning portal at [planningportal.nsw.gov.au/major-projects/projects/billabong-creek-environmental-water-regulators](http://planningportal.nsw.gov.au/major-projects/projects/billabong-creek-environmental-water-regulators)

Written submissions can be made to the NSW Department of Planning, Housing and Infrastructure. All submissions received will be placed on the proposal website. Submissions can be made by creating an account at [planningportal.nsw.gov.au/major-projects/projects/on-exhibition](http://planningportal.nsw.gov.au/major-projects/projects/on-exhibition). This allows you to save a submission in progress and stay up to date with the progress of an application.