WaterNSW

Wilcannia Weir Replacement
EIS Scoping Report

May 2020

Executive summary

Introduction and location overview

WaterNSW proposes to undertake the Wilcannia Weir replacement project (the project), involving construction of a new weir and decommissioning of the existing weir. The project is located on the Darling River by the township of Wilcannia in the Central Darling local government area. The Darling River is part of the Barwon-Darling river system, which is a sub-catchment of the Murray-Darling Basin, the largest and most complex river system in Australia.

Project overview

Wilcannia Weir, constructed in 1942, is the town's primary source of water. However, the weir is in a declining condition with a small storage proving increasingly inadequate as a reliable source of water. This poses a substantial risk to the long-term security of town water supply. Several studies, including a detailed business case, have been undertaken to investigate options for the replacement of the weir and to improve the town's water supply security. Further technical investigation and community consultation identified a location for a replacement weir, approximately five kilometres downstream of the existing weir.

The NSW and Commonwealth governments have recognised the need for the project and announced a $30 million commitment for the upgrade of Wilcannia Weir. WaterNSW carries the responsibility for delivery of the new weir.

Statutory context

The project is located within the geographic footprint of the Western Weirs Program under Schedule 3 of the *Water Supply (Critical Needs Act) 2019* (CN Act). Under Schedule 3 of CN Act the project is declared to be critical State significant infrastructure and is subject to the provisions of Part 5, Division 5.2 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

WaterNSW is required to obtain approval from the NSW Minister for Planning and Public Spaces before carrying out the development. An environmental impact statement (EIS) is required to accompany the application for approval of the development.

This scoping report has been prepared by GHD on behalf of WaterNSW to support a request for the Secretary's Environmental Assessment Requirements (SEARs) for the Wilcannia Weir replacement project EIS.

Community and stakeholder engagement

During project development and scoping, WaterNSW's project team commenced their community and stakeholder engagement strategy with a focus on culturally appropriate engagement and collaboration. Preparation for the engagement activities involved collaboration with local Aboriginal Elders and key community groups to inform project planning and delivery. A series of community information sessions, stakeholder meetings, sessions at local schools and other engagement activities were facilitated by WaterNSW to provide information about the project and to obtain community views on project design and construction. Feedback received from the community is supportive of the proposed new weir and stresses the need for the project to enhance the social, economic and environmental benefits for Wilcannia.

WaterNSW recognises that community and stakeholder engagement and regular communication are essential to the development of the project. WaterNSW will continue to engage, inform and involve key stakeholders, including the community, about the project, and

provide opportunities for feedback. To meet COVID-19 protocols and guidelines, activities are being delivered, where possible, through online and desktop activities. Issues raised during engagement will be provided to the project team to inform project development, environmental assessment and the preparation of the EIS.

Key issues

Key issues for assessment in the EIS are defined as issues where there is the potential for a high or moderate environmental impact, and therefore, where detailed assessment is required to determine the level of potential impact, and the measures required to mitigate or manage the impact. These are as follows:

- hydrology, geomorphology and water quality
- terrestrial and aquatic biodiversity
- Aboriginal heritage
- historic heritage
- social and economic
- land, soils and contamination
- access
- visual
- air quality and noise.

A preliminary environmental assessment has been undertaken during the preparation of this scoping report to inform the SEARs.

Next steps

The NSW Department of Planning, Industry and Environment (the Department) will publish the scoping report online and seek advice from relevant Government agencies for inclusion in the SEARs. The SEARs will be published online within 28 days of the publication of the scoping report on the Department's major projects website.

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1. Introduction

1.1 Project background and objectives

Wilcannia Weir is located on the Darling River by the township of Wilcannia in the Central Darling local government area, in far western NSW. The weir was constructed in 1942 to provide a water supply to the town. The weir is the primary source of water supply for the town, augmented by an emergency groundwater supply that provides a limited amount of water during periods of drought (Public Works Advisory, 2019). The weir is currently in a state of declining condition and functionality, and poses a significant risk to the long-term security of the town's water supply.

WaterNSW proposes to undertake the Wilcannia Weir replacement project (the project), which involves the construction of a new weir approximately five kilometres downstream of the existing Wilcannia Weir, and the decommissioning of the existing weir. Several studies, including a detailed business case, have been undertaken to investigate options for the replacement of the weir (refer Section 1.3).

The project location is shown in Figure 1-1 and details of the project are discussed in Section 2.

The project is subject to environmental and planning approvals under the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) and, potentially, the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The NSW *Water Supply (Critical Needs) Act 2019* (CN Act) applies to the project as its location is within the geographic footprint of the Western Weirs Program. As such, its listing defines the project as being critical State significant infrastructure. Accordingly, WaterNSW as the proponent is required to obtain approval from the NSW Minister for Planning and Public Spaces before carrying out the project. An environmental impact statement (EIS) must accompany the application for approval. This is discussed in further detail in Section 3.

1.2 Strategic context and project need

On 12 November 2018, the NSW and Commonwealth governments announced a $30 million commitment for the upgrade of Wilcannia Weir. The upgrade is designed to improve water security and community outcomes for Wilcannia. The business case for the project was finalised in mid-2019. It is a comprehensive assessment of the need for the new weir and documents the community engagement that led to the decision about the preferred location, size and concept of the structure (Public Works Advisory, 2019). WaterNSW now has responsibility for the delivery of the replacement weir.

Commitment from the two governments to the replacement weir recognises the declining condition and functionality of the existing weir, and therefore, the long-term security risk for town water supply. It also recognises the significance of the river to the Wilcannia community, and the beneficial outcomes that the new weir would bring to the community.

The NSW Government's funding commitment to the replacement weir is under the Safe and Secure Water Program, with the objective to secure water supply for Wilcannia. The program addresses key risks to regional water safety and security in NSW, which includes providing safe, secure and sustainable water services to regional NSW towns. The program was established in August 2017 under the NSW Government's Restart NSW Fund.

The Commonwealth Government's funding commitment is part of a package of initiatives to support the implementation of the Murray-Darling Basin Plan. The funding for the replacement weir is part of the 'Improving outcomes for Indigenous people, and addressing social and economic impacts of the Murray-Darling Plan' stream of initiatives. The funding is to support works for cultural gatherings and low impact water recreation.

Wilcannia Weir is also within an umbrella program of weir improvements being managed by WaterNSW known as the Western Weirs Program. The Program aims to improve the condition, function and security offered by weirs on the Barwon-Darling River (WaterNSW, 2019). Whilst the Program is in the early stages of development, the upgrade of Wilcannia Weir is consistent with the Program and the benefits it aims to achieve.

1.3 Alternatives considered

In 2000, an investigation involving assessment of ten sites up to 10 kilometres downstream from Wilcannia was undertaken, with the results documented in *Wilcannia Water Supply Augmentation – Weir Based Options Study* (SMEC, 2000). Four of the ten sites were considered further, as documented in *Wilcannia Weir Upgrade – Reconnaissance of Four New Weir Sites* (NSW Public Works, 2013). In 2014, the NSW Government began investigating options for upgrading the Wilcannia Weir based on these investigations.

In 2016, a scoping study and business case for the replacement of Wilcannia Weir was prepared (Jacobs, 2016). The scoping study and business case identified three possible options for the future of the Wilcannia Weir. These were:

1. Do nothing
2. Replacement of the weir at the existing site (including the development of a community river place)
3. Replacement of the weir at a new downstream site.

A business case addendum with associated technical investigations and community consultation was completed in 2019 (Public Works Advisory, 2019). The structural investigation and condition assessment of the existing Wilcannia Weir that accompanies the business case addendum found that an upgraded weir would generally restore the existing weir pool storage with opportunities to increase it further. However, it also found that the existing weir is nearing the end of its effective design life.

In addition to other works, an upgrade of the existing weir would require a new line of steel sheet piling to extend the design life of the weir, and the need to incorporate a fishway. Therefore, the cost for replacing the weir in its existing location, including installation of a fishway, is similar to that of constructing a new weir, including a fishway.

WaterNSW considers that the replacement of the weir at a new downstream site is a better option from both a design and a construction point of view. Additional benefits associated with a new weir downstream include community preference and enhancement of visual and recreational amenity of the Darling River as it passes Wilcannia.

The studies and community consultation undertaken to support the business case demonstrated that a new weir located approximately 5.25 kilometres downstream of the existing Wilcannia Weir would be the preferred option. Following further consideration of the proposed location by WaterNSW, and consultation with the community, the final preferred site was chosen a short distance upstream, at a point approximately five kilometres downstream of the existing weir, and approximately two kilometres south of Wilcannia township.

It was determined that the new weir would be designed with a crest full supply level increased by one metre compared to the existing weir. The option of maintaining the existing weir height does not meet water security requirements for the town, nor did an option of raising the height by 0.5 metres (Public Works Advisory, 2019). The raising of the weir height to one metre higher than the existing weir would effectively maintain the existing weir pool and provide additional weir pool storage between the new site and the existing weir upstream. This would result in extending the current weir pool extent from about 59 kilometres to a combined weir pool length of 86 kilometres, thus increasing the potential water storage by approximately 170 percent.

It was also concluded that the existing weir should be decommissioned and removed once the new weir and associated fishway is operational. This would provide for connectivity of the new storage area downstream of the existing weir to the water supply offtake for the town's water supply, while also removing a barrier to fish passage.

1.4 Purpose of the scoping report

This scoping report has been prepared by GHD on behalf of WaterNSW (the proponent) to support a request for Secretary's Environmental Assessment Requirements (SEARs) for the Wilcannia Weir replacement project EIS.

This scoping report has been prepared in accordance with the requirements of the NSW Department of Planning, Industry and Environment (2020) for the scoping report that is to accompany an application for State significant infrastructure, and aims to:

- describe the project
- identify the relevant strategic and statutory context
- summarise the results of any early community engagement
- identify the scale and nature of the impacts of the project
- outline the proposed approach to assessment and community engagement.

The Department will publish the scoping report online and seek advice from relevant Government agencies about the content of the SEARs. The SEARs will be published online within 28 days of the publication of the scoping report.

Paper Size ISO A4

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Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 54

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WaterNSW
Wilcannia Weir Replacement
Scoping Report

Project No. **12518155**
Revision No. **-**
Date **13/ 05/ 2020**

Project location

FIGURE 1.1

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2. The project

2.1 Local setting

Wilcannia is located approximately 965 kilometres north-west of Sydney and about 200 kilometres northeast of the nearest city, Broken Hill. It is a small town with a population of 549 according to the 2016 census, with 74.4 percent of the population being of Aboriginal or Torres Strait Islander descent, mostly from the Barkandji Nation (Barkandji meaning “people of the river”).

The township of Wilcannia was proclaimed in 1866 and reached its peak in the 1880s with a population of 3,000 people when it was known as the ‘Queen City of the West’. During this time, Wilcannia was one of the major river ports on the Murray-Darling River system.

The Darling River, by which Wilcannia is situated, is the third longest river in Australia, measuring 1,472 kilometres from its source in northern NSW to its confluence with the Murray River at Wentworth on the Victorian border. Including its tributaries, it is the longest river system in Australia. The Darling River is part of the Barwon-Darling river system, and a sub-catchment of the Murray-Darling Basin.

To provide water security for communities along the river, a number of weirs have been constructed on the Darling River between Bourke and the Menindee Lakes, including Wilcannia Weir.

Climatic conditions in Wilcannia are semi-arid, with extremes of hot and dry weather in the summer periods. Major land use in the area includes rural grazing, with the main economic activities including pastoral, horticultural, agricultural, mining and tourism.

The major road infrastructure is the Barrier Highway (Route A32), which connects to the Mitchell Highway and traverses the Far West Region of NSW, ultimately heading west into South Australia.

2.2 Existing infrastructure

Wilcannia Weir is the town’s supply weir, constructed in 1942 and refurbished in 1987 (Public Works Advisory, 2019). It is a fixed crest sheet pile structure about 3.5 metres high with a 43 metre-long main crest. The elements of the refurbishment works are most dominant, including the new concrete cap crest and the upstream and downstream rockfill embankment weir batters. The timber piling on the right bank abutment is one of the most obvious elements of the original weir structure.

The weir pool extends for 59 kilometres upstream and has an estimated capacity of 3,570 megalitres of water. The weir is now reaching the end of its design life and there are numerous signs of degradation of the weir structure resulting in increased risk to the security of the existing storage (Public Works Advisory, 2019). Photograph 1 shows the weir in January 2020.

Photograph 1 Wilcannia Weir

Wilcannia Weir is located behind the Wilcannia Hospital in the northern part of town. The weir is accessible from the north via Bonney Street or Field Street and an unsealed track down the riverbank. Access from the south is through the Council operated Victory Park Caravan Park, located off the Barrier Highway.

The water supply offtake point for the town is located 80 metres upstream of Wilcannia Weir. At this location, water is pumped from the weir pool to provide both a raw water supply for outdoor use within the town and, following treatment at the water treatment plant on Hood Street, a supply for domestic potable use. Photograph 2 shows the Darling River looking upstream from the weir with the water supply offtake in the left foreground.

Photograph 2 Darling River looking upstream from Wilcannia Weir

2.3 Project description

The Wilcannia Weir replacement project consists of construction and operation of a new weir, and the decommissioning and partial or complete demolition of the existing weir.

2.3.1 Location of the proposed new weir

The proposed new weir will be located on a reach of the river downstream of Union Bend, approximately five kilometres downstream of the existing weir, and approximately two kilometres south of Wilcannia township. The site of the proposed weir is shown in Photograph 3, showing the deeply incised river channel and the characteristic riverbank vegetation. The crest of the 4.5 metre-high weir will be approximately 5.5 metres below the top of the riverbanks.

Photograph 3 Darling River, looking downstream to the site of the proposed weir

2.3.2 Construction of the new weir

The main components of the new weir are as follows:

- a fixed crest type weir approximately 4.5 metres high and 45 metres wide, storing 6,610 megalitres of water at full supply level
- a fishway adjacent to the left bank of the river to provide fish passage past the weir
- a small manual gate to manage the release of water from the storage and, therefore, the quality of water within the weir pool.

A small recreation area, known as a community river place, is proposed on the right bank of the river adjacent to the new weir.

Construction details for the new weir are being considered by WaterNSW, however it is anticipated that the works would be staged being initial weir construction followed by the construction of the fishway and the installation of the gate.

The location and details of the fish passage are in development by WaterNSW. Both upstream and downstream movement of fish past the weir is being considered.

The proposed gate will be sized to provide for the management of water quality within the weir pool. It is expected that the gate will be operated irregularly and that a manual gate would be sufficient.

The prefabrication of major components is being evaluated as a potential construction method. Works will still be required in the river to establish a cut-off in the riverbed, potentially with sheet piles, and to establish the weir foundations and aprons.

A cofferdam or other means to control water in the river may be required to protect the site from river flows with temporary means to pass the water around the works site. Bank protection works may be required during construction and operation.

The construction approach will depend on the final design layout and management of potential construction risks. A key aspect is staging of any river diversion, cofferdams and dewatering. Hydrology and hydraulic assessments will be undertaken to inform the development of the construction staging methodology.

Locations for the construction compound and staging areas have been identified on areas of the floodplain near the weir site (see Figure 2-1). Photograph 4 illustrates the landform at the site of the proposed main construction compound and the existing access track towards the left bank of the river. The weir location and riverbank are beyond the trees in the background of Photograph 4.

WaterNSW is proposing to commence construction as soon as approvals are obtained so that the weir can be completed in early 2022. Construction and commissioning of the replacement weir is anticipated to take eight months.

Photograph 4 Site of proposed construction compound

Paper Size ISO A4

0 200 400

Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 54

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Wilcannia Weir Replacement

Indicative construction areas and access routes to the proposed new weir

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FIGURE 2.1

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Data source: World Topographic Map: Sources: Esri, HERE, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community
World Imagery: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. Created by: kschroder-turner

2.3.3 Construction access

The primary construction access to the site will be from the south using an existing track from the Barrier Highway across the private property to the left bank of the river. The existing grey cracking clays severely restrict access along the track when wet; therefore, the track will be upgraded to provide all weather access for construction vehicles. The terrain on the left bank is lower and flatter than the right bank. WaterNSW has made lease arrangements with the property owner, Wilcannia Local Aboriginal Land Council, for construction use and access across this land.

Access from the north will be via Union Bend Road, which links Reid Street and the bores at Union Bend, which are used to supplement the town's water supply. A new 270 metre-long unsealed track will link Union Bend Road with the river's right bank. A car park for construction workers' vehicles will be provided adjacent to Union Bend Road. This car park may be retained at the completion of construction for parking associated with a proposed recreation area to be provided adjacent to the new weir.

2.3.4 Operation of the new weir

The new weir will hold approximately 6,610 megalitres of water at the full supply level, compared to the 3,570 megalitres capacity of the existing weir (Public Works Advisory, 2019). This will offer a total of 5,435 megalitres of water accessible for extraction for the town's water supply. This assumes that as the weir pool reaches extreme depletion that temporary measures will be put in place to extend the water supply offtake works and to transfer water from pools isolated by river bars within the weir pool extent.

The full storage level of the existing weir extends some 59 kilometres upstream. When full, the new weir pool will extend some 86 kilometres upstream of the new weir. This inundation comprises an additional 12 kilometres upstream and five kilometres downstream of the existing weir pool (see Figure 2-2).

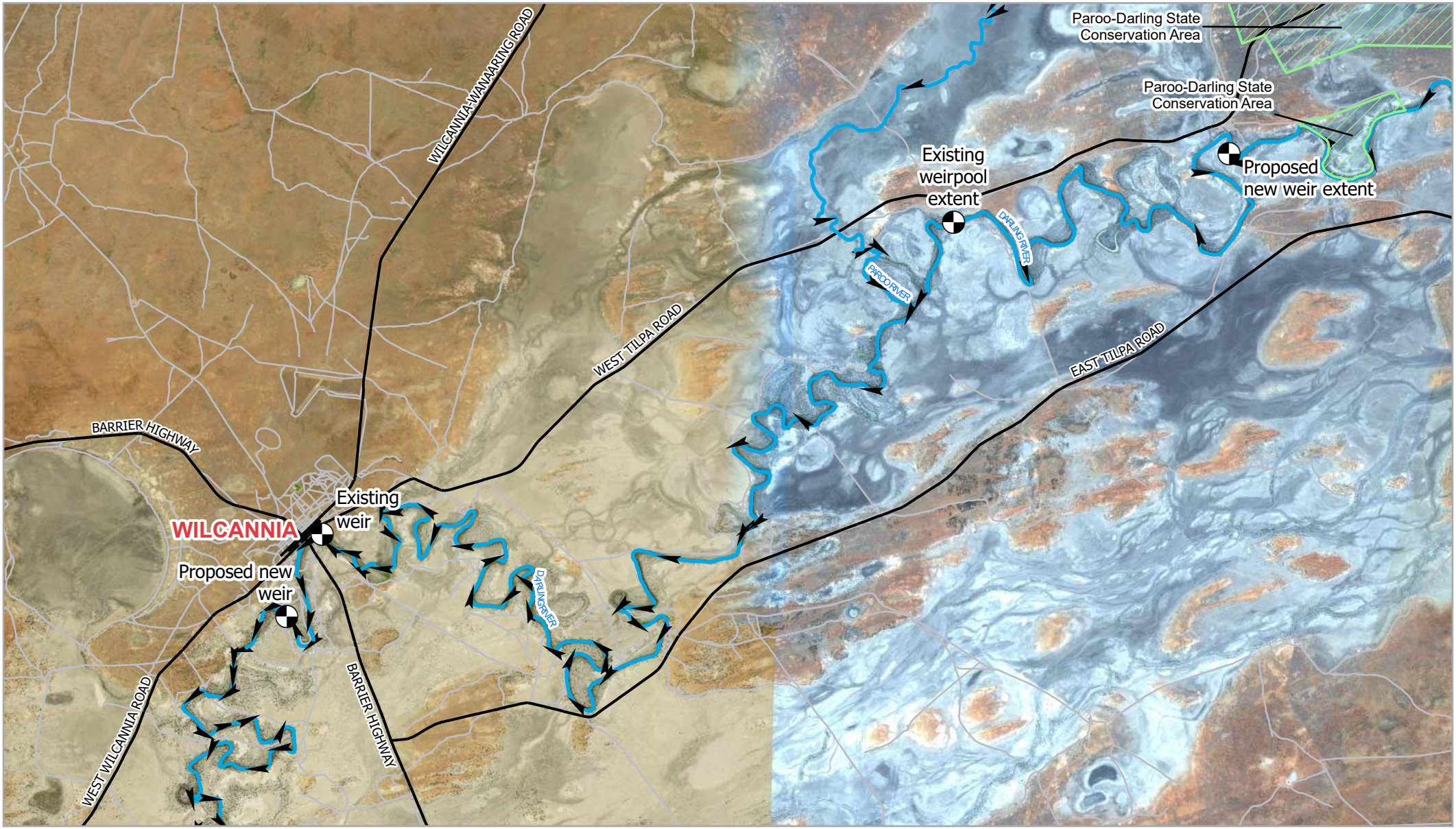
The determination of the one-metre-high weir raising is based on meeting Wilcannia's long-term water security with a 1^{o}C factor for climate warming (Public Works Advisory, 2019). The town's current unrestricted dry year extraction requirements are about 455 megalitres of water per annum and projected to be 483 megalitres of water per annum in 2047. The secure yield for the new weir will exceed the town's unrestricted dry year extraction requirements by about 100 megalitres of water per annum. Consultation with stakeholders during the preparation of the business case indicated a strong community desire to maximise weir pool storage capacity and flow release capability. It was also identified that this additional capacity would allow water quality management in the weir pool, primarily issues of salinity.

The proposed new weir will incorporate a gate, which would be operated to manage water quality. As this operation is expected to be irregular, it is currently proposed that manual operation of the gate would be required.

Details of the type and operation of the fish passage at the new weir will be included in the EIS.

2.3.5 Decommissioning of the existing weir

Decommissioning of the existing weir would involve full or partial demolition of the existing Wilcannia Weir, which is required to ensure the continuity of the weir pool behind the new weir. Maintaining the weir would prevent the town's water supply access point commanding all of the new downstream storage. Its removal will also provide for fish passage at this location.



Legend

- Point of interest
- Paroo-Darling State Conservation Area

Paper Size ISO A4

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Kilometres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 54

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Wilcannia Weir Replacement

Extent of weir inundation

Project No. **1218155**
Revision No. **A**
Date **13/05/2020**

FIGURE 2.2

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Data source: Imagery: NSW Government; Roads: NSW Government 2017; Rivers: NSW Government public_NSW_Imagery: . Created by: kschroder-turner

Demolition of Wilcannia Weir would be undertaken once construction of the new weir is operational and is expected to take approximately two weeks to complete. Demolition will need to consider the timing of such action in relation to the prevailing river and water supply conditions. Control measures could include aquatic silt curtains to protect the water supply offtake and to contain water quality impacts.

Access to the weir for demolition is proposed to be through the Council operated Victory Park Caravan Park from the Barrier Highway. This will provide access to the left bank of the river and no access from the high and steep right bank of the river is envisaged.

2.3.6 Hazards and risks

Flow along the Darling River is highly variable. Median annual flow forms less than 30 percent of the mean annual discharge, with maximum flood events orders of magnitude higher. Flows are usually higher during the summer months (December to April). The largest flows tend to be the result of summer rainfall, and hence flood events are more likely in summer and autumn. Minor flow events can be expected at least once or twice a year (NSW Department of Primary Industries, 2012a).

Major fires have occurred in the Central Darling Bush Fire Management Committee area in the summers of 1974/75, 1976/77 and 1983/84. These fires have followed exceptionally wet seasons that resulted in a heavy body of fuel. Most fires occur in the open plains type country, fanned by hot dry winds. The area has an average of 40 bush fires a year, with most of these being minor (Central Darling Bush Fire Management Committee 2011).

2.3.7 Land ownership

Table 2-1 shows the land parcels potentially affected by the construction of the project (property search completed by WaterNSW, 2 October 2019). Native Title (Non-Exclusive Areas) is held over the Darling River and the Crown Lands identified in Table 2-1 (Native Title Determination NCD2015/001 - Barkandji Traditional Owners).

Table 2-1 Land parcels potentially affected by construction

Property Details	Owner	Construction aspect
Lot 3445 DP765734	Wilcannia Local Aboriginal Land Council	Access and construction (new weir)
Lot 4143 DP766648	Wilcannia Local Aboriginal Land Council	Access (new weir)
Lot 7314 DP1181235	Crown Land	Access and construction (new weir)
Lot 7301 DP1181254	Crown Land	Access (existing weir)
Lot 4 DP757028	Crown Land	Access (existing weir)
Darling River	Crown Land	Location of new weir and existing weir

3. Statutory context

3.1 NSW planning framework

The *Environmental Planning and Assessment Act 1979* (EP&A Act) establishes the planning and approvals process in NSW. The EP&A Act provides for the making of Environmental Planning Instruments (EPIs) including Local Environmental Plans (LEPs) and State Environmental Planning Policies (SEPPs), which set out requirements for particular localities and/or particular types of development. Other Acts, applicable EPIs and the Regulations made under the EP&A Act determine the relevant planning approval pathway and the associated environmental assessment requirements for proposed development activities.

3.1.1 Water Supply (Critical Needs) Act 2019

The *Water Supply (Critical Needs) Act 2019* includes, at Schedule 3, a *declaration of certain dam-related development as critical State significant infrastructure,* which may be carried out without development consent under Part 4 of the EP&A Act. The proposed development is subject of Part 2 of Schedule 3, which includes development described as follows:

5 Western Weirs program

(1) Development for the purposes of regulating the flows of water in the Barwon-Darling unregulated river system from the Queensland border to Menindee Lakes, and the Lower Darling regulated river system from downstream of the Menindee Lakes to the junction with the Murray River at Wentworth, including the following—

(a) the construction of new regulating structures,

(b) the removal or decommissioning of existing weirs,

(c) the construction of structures to enable the passage of fish.

(2) Development that is ancillary to other development in this clause (including the upgrading or construction of access roads, utilities infrastructure, construction accommodation and construction compounds).

The project is within the geographic scope of the above provisions and the list of proposed development. Therefore, the project is critical State significant infrastructure and subject to the provisions of Part 5, Division 5.2 of the EP&A Act.

3.1.2 Environmental Planning and Assessment Act 1979

Part 5, Division 5.2 of the EP&A Act sets out the environmental assessment provisions for State significant infrastructure (SSI) and additional provisions applying to critical SSI. Critical SSI is defined (section 5.11 of the EP&A Act) as SSI that is also declared critical SSI, being in a category of development *that, in the opinion of the Minister, is essential for the State for economic, environmental or social reasons* (section 5.13).

WaterNSW is required to obtain the approval of the Minister for Planning before carrying out the development (section 5.14). An EIS is required to accompany the application for approval of the development.

Planning approval for SSI under Part 5, Division 5.2 of the EP&A Act provides that:

- certain authorisations under other Acts are not required (section 5.23). The following authorisations that would otherwise have been required for the project are not required due to the application of this section:

  - permit for works that block fish passage – section 219, *Fisheries Management Act 1994*
  - excavation permit – section 139, *Heritage Act 1977*
  - Aboriginal heritage impact permit – section 90, *National Parks and Wildlife Act 1974*
  - water management works approvals – section 90, *Water Management Act 2000*.
- certain authorisations under other Acts cannot be refused and are to be consistent with the approval (section 5.24). The following authorisation that would otherwise have been required for the project is not required due to the application of this section:
  - consent related to public roads – section 138, *Roads Act 1993*.

In addition, the following provisions apply to critical SSI:

- a development control order cannot be given to critical SSI (section 5.22 (4)), including stop work or demolition orders (Schedule 5)
- certain orders, directions or notices cannot be made or given so as to prevent or interfere with the carrying out of approved critical SSI (section 5.23(3)):
  - an interim protection order - *National Parks and Wildlife Act 1974*
  - stop work orders - Part 6A, *National Parks and Wildlife Act 1974* or Part 7A *Fisheries Management Act 1994*
  - remediation directions - Part 6A, *National Parks and Wildlife Act 1974*
  - regulatory compliance mechanisms - *Biodiversity Conservation Act 2016*
  - environment protection notice - Chapter 4, *Protection of the Environment Operations Act 1997*
  - orders under section 124 of the *Local Government Act 1993*
- certain third party appeal provisions do not apply to critical SSI (section 5.27).

The following notices are likely to be required:

- Notice to the landowner - cl.193(4), *Environmental Planning and Assessment Regulation 2000*
- Notice of dredging or reclamation – s.199, *Fisheries Management Act 1994.*

3.1.3 Fisheries Management Act 1994

The *Fisheries Management Act 1994* (FM Act) includes provisions to protect aquatic habitats including the provision of fishways in the construction of dams and weirs (Part 7, Division 8).

A public authority that proposes to construct, alter or modify a weir on a waterway is subject to the provisions of section 218(5) of the FM Act as follows:

(a) must notify the Minister of the proposal, and

(b) must, if the Minister so requests, include as part of the works for the dam, weir or reservoir, or for its alteration or modification, a suitable fishway or fish by-pass.

3.1.4 Central Darling Local Environmental Plan 2012

Whilst not directly relevant to the planning approval for this project, the local environmental plan that applies to the land offers guidance about the environmental objectives for the location.

The site of the proposed new weir and the location of the existing Wilcannia Weir are within Central Darling Shire and on land subject to *Central Darling Local Environmental Plan 2012* (Central Darling LEP). The new weir and existing weir are within the banks of the Darling River on land within Zone W1 – Natural Waterways.

The stated objectives of Zone W1 are:

- to protect the ecological and scenic values of natural waterways
- to prevent development that would have an adverse effect on the natural values of waterways in this zone
- to provide for sustainable fishing industries and recreational fishing.

The land use surrounding the existing weir is R1 General Residential to the north and RE2 Private Recreation to the south. The land adjoining the river at the new weir site is in Zone RU1-Primary Production.

3.2 Commonwealth legislation

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is the primary Commonwealth legislation relating to the environment. Under Part 3 of the EPBC Act, approval from the Australian Minister for the Environment is required for a controlled action being an action that:

- has, will have, or is likely to have a significant impact on a matter of national environmental significance
- is undertaken on Commonwealth land and has, will have, or is likely to have a significant impact on the environment
- is undertaken outside Commonwealth land and has, will have or is likely to have a significant impact on the environment of Commonwealth land, or
- is undertaken by the Commonwealth and has, will have or is likely to have a significant impact on the environment.

A significant impact under the EPBC Act is an impact which is important, notable, or of consequence, having regard to its context or intensity. Whether or not an action is likely to have a significant impact depends upon the sensitivity, value, and quality of the environment which is impacted, and upon the intensity, duration, magnitude and geographic extent of the impacts. Matters of national environmental significance (MNES) include:

- world heritage properties
- national heritage places
- wetlands of international importance (often called 'Ramsar' wetlands after the international treaty under which such wetlands are listed)
- nationally threatened species and ecological communities
- migratory species
- Commonwealth marine areas
- the Great Barrier Reef Marine Park
- nuclear actions (including uranium mining)
- a water resource, in relation to coal seam gas development and large coal mining development.

WaterNSW will refer the project to the Minister for the Environment to determine whether the project is an action that will need formal assessment and approval under the EPBC Act. The bilateral agreement between the Commonwealth and NSW governments, if the Commonwealth would determine the project to be a controlled action, provides accreditation of the NSW determination of this action.

4. Community and stakeholder engagement

4.1 Engagement during project scoping

The preparation of the business case for the project in 2016 was informed by stakeholder engagement and collaboration, including liaison with Central Darling Shire Council, Wilcannia Central School, the local Aboriginal Land Council, the Wilcannia Community Working Party and the Wilcannia Tourism Association. Individuals consulted included pastoralists, local business owners and members of the community (Jacobs, 2016). Some of the outcomes of this engagement of relevance to scoping the EIS include the following:

- confirmation of the economic and community benefits of a new weir, including improved water security and water quality to the town
- confirmation of the preferred location of the proposed new weir as the downstream location approximately 5.25 kilometres from the existing weir, and that this location may be adjusted during the design phase of the project following additional consultation with the community
- a strong desire in the community to see water in the river where it adjoins the town and under the Wilcannia Bridge
- a preference at the downstream site to include a capacity for traditional fish trapping
- potential for further unrecorded sites and places of heritage significance to occur within the study area, with a high potential for sub-surface heritage to be present
- acknowledgement that construction of access tracks could have the potential to impact upon sub-surface deposits containing artefacts
- recognition that several culturally modified trees, known as canoe trees, are located within the vicinity of the proposed new weir site and all culturally modified trees should be avoided by the project
- the potential for urban stormwater runoff to enter the weir pool, including sewage overflows, which will require additional barriers to contamination for the town water supply
- the need to ensure ongoing communication, collaboration and cooperation with the Wilcannia community about the project.

Further consultation was undertaken in early 2019 with the aim of identifying the final preferred location for the proposed new Wilcannia Weir (Public Works Advisory, 2019). It was recognised that there were a vast range of community views, as well as a number of unresolved technical issues that would require resolution prior to adopting a final option. A range of social, cultural and environmental concerns were considered utilising a collaborative approach aimed at incorporating valuable Indigenous and local knowledge. The consultation included providing detailed information about the project, site visits with stakeholder groups, detailed discussions and interviews, and community consultation workshops pre-approved by local Aboriginal Elders.

The community acknowledged that improved water flow is likely to enhance tourism, agricultural output, community autonomy, health and at the same time stimulate private and government investment. Enriched recreational amenities and increased water flow is likely to inspire community pride, revitalise river ecosystems and increase native fish populations (Public Works Advisory, 2019).

The community broadly agreed to the proposed new weir site. A range of community issues and potential opportunities were raised, including the issues listed above, plus:

- two locations were further considered for an alternative weir site: downstream of the Woytchugga Creek junction with the Darling River, about 5.4 kilometres downstream of the proposed new weir site, and a second alternative near Christmas Rocks, about 25.3 kilometres downstream of the proposed new weir site.
- continued concern about ensuring the security and quality of the supply of drinking water to Wilcannia
- risk of algal blooms in the river
- contamination and depletion of the available bore water supply
- the recreational use of the river from the existing weir to the southern end of town
- the proposed new weir project should have a positive community impact particularly for promoting local employment opportunities
- safety concerns about children's play in the proposed new weir pool.

In June 2019, Water NSW was engaged to design and construct the replacement weir. It has built on the preceding community engagement and continued to seek the views and advice of the community, stakeholder groups and local council to aid the continued development and scoping of the project. This engagement has contributed to the identification of the issues that need to be addressed in the EIS, and opportunities for ongoing involvement during the assessment of the impacts of the project.

The following stakeholders were consulted during WaterNSW's further refinement and scoping of the project to date:

- Aboriginal community: Wilcannia Local Aboriginal Land Council (LALC)
- landholders affected by investigations and construction of the proposed new weir
- the broader Wilcannia community
- NSW Department of Planning, Industry and Environment (Environment, Energy and Science Group)
- NSW Department of Planning, Industry and Environment (Water)
- Central Darling Shire Council
- Wilcannia Community Working Party
- Murdi Paaki Services
- Department of Premier and Cabinet
- Murdi Paaki Regional Association
- National Indigenous Advocacy Agency.

4.1.1 Engagement approach

During the development and scoping of the project, the WaterNSW project team activated engagement strategies with a focus on culturally appropriate engagement and collaboration. Preparation for these engagement activities involved collaboration with local Aboriginal Elders and key community groups to inform project planning and delivery. The following approaches were employed to provide information about the project and to obtain views about the project's design and construction, including environmental aspects of the project:

- phone, email or letter contact with stakeholders and community members
- direct contact and meetings with stakeholder groups and the local council

- community information sessions to keep the community informed as the project progresses through to the development of the EIS
- education sessions held at local primary and secondary schools
- community information and updates at WaterNSW's project webpage
- project updates in the form of fact sheets and flyers inserted within *Wilcannia News.*

Activities undertaken during the period are summarised in Table 4-1.

Table 4-1 Engagement activities undertaken to date

Timing	Activity	Detail
Ongoing	WaterNSW customer helpdesk contact details	Phone, email, fax, website and mail contact mechanisms established to enable community members to contact the project team.
	Project notifications	Project notifications issued to impacted landholders notifying them of upcoming site investigations and field works.
August 2019	Smoking ceremony	Smoking ceremony performed by a local community member and site visit.
	Community information sessions	Two community information sessions to inform the community of the preferred location and the steps WaterNSW is taking to prepare for the construction of the proposed new weir.
	Council meeting	Meeting with Central Darling Shire Council held during the community information session.
	Stakeholder meetings	Individual meetings with the following stakeholders: • Wilcannia LALC • NSW Department Planning Industry and Environment • Wilcannia Community Working Party
	Local radio meeting	Meeting with Wilcannia Radio and a local Elder.
August 2019 – April 2020	Project updates	Four project updates advertised on the WaterNSW website and distributed to stakeholders. Two issued subsequent to the identification of the proposed site and two additional updates inserted within *Wilcannia News* in October 2019 and March 2020.
September 2019	Local radio meeting	Meeting with Wilcannia River radio and local community member.
October 2019	Community information sessions	Three targeted community barbeques and an evening information to inform community members about the nature and scope of the project, learn more about the final location of the proposed new weir and provide an opportunity to provide direct feedback to the project team.

Timing	Activity	Detail
	Education sessions	Education sessions held at St Therese's Catholic School, Wilcannia Central School and Wings youth drop in centre to introduce the project to the students, inform them of the benefits of the proposed new weir, as well as establish strong rapport and connections with the young people of Wilcannia.
	Stakeholder meetings	Individual meetings with the following stakeholders: • NSW Department of Planning, Industry and Environment (Environment, Energy and Science Group) • Wilcannia Community Working Party and Murdi Paaki Services • Wilcannia LALC • Department of Premier and Cabinet and a local Elder.
	Local radio interview	Wilcannia River Radio interview with the WaterNSW project team broadcasted prior to the community information sessions in October to increase project awareness and advertise the upcoming events.
	Local radio meeting	Meeting with Wilcannia Radio.
October 2019 – April 2020	Project flyers	Project flyers widely distributed by WaterNSW, *Wilcannia News* and Central Darling Shire Council to the community and stakeholders inviting them to the upcoming community and stakeholder consultation events facilitated by WaterNSW.
November 2019	Stakeholder meeting	Meeting with Murdi Paaki Regional Association.
December 2019	Stakeholder meeting	Meeting with Wilcannia LALC to discuss land access.
January 2020	Stakeholder meeting	Meetings with Wilcannia LALC to access land and arrange a Cultural Heritage Officer.
	Stakeholder meeting	Meeting with National Indigenous Advocacy Agency.
	Environmental meeting	Environmental meeting with Central Darling Shire Council.

Timing	Activity	Detail
February 2020	Site visit	Visits to weir sites with targeted stakeholders and local Elders.
	Smoking ceremony	Smoking ceremony and Cultural Heritage tour by a local Elder.
	Community information sessions	Two community information sessions providing information on the benefits of the proposed new weir site, preliminary concept design and other key project information. A third session was facilitated to engage interested community artists to create images for use at the proposed new weir site.
	Education session	Education sessions at St Therese's Catholic School, Wilcannia Central School and Wings youth drop in centre.
	Council meeting	Meeting with Central Darling Shire Council and Wilcannia LALC to discuss project progress and the potential approval pathways.
	Stakeholder meeting	Meeting with Wilcannia LALC and Wilcannia Community Working Party.
	Local radio meeting	Meeting with Wilcannia radio.
	Local radio interview	Interview with ABC Radio and Local Radio.
	Workshops	Community art workshop with local artists and video production local trainee workshop.
March 2020	Local radio meeting	Meeting with Wilcannia River radio regarding the COVID-19 pandemic and the consultation strategy.
April 2020	Stakeholder meeting	Meeting with NSW Department of Planning, Industry and Environment (Water) to brief them on the project status and the updated planning pathway.
May 2020	Council meeting	Meeting with Central Darling Shire Council to discuss project progress and the proposed EIS.

4.1.2 Community feedback received

A series of key themes have been used to collate and categorise the feedback received during this phase of engagement. In particular, the community information sessions in October 2019 that were facilitated in the form of community barbeques and an evening session, were attended by over 119 community members over three days. The vast majority of those who attended these sessions were Aboriginal (greater than 90 percent), and as the Aboriginal population in Wilcannia is 452, the WaterNSW project team were able to connect with, and have direct conversations with, around 25 percent of the community in Wilcannia.

The following provides an overview of the themes of the feedback about the project received to date:

- community sentiment was clear - when the river dies, the Barkandji community die, literally. The river encourages growth, tourism and recreational opportunities
- confirmation of the economic and community benefits of a new weir, including improved water security and water quality to the town
- a preference at the downstream site to include a capacity for traditional fish trapping
- the potential for urban stormwater runoff to enter the weir pool, including sewage overflows, which will require additional barriers to prevent contamination of the town water supply
- the historical and cultural connection of the community to the river needs to be incorporated into the design of the proposed new weir
- there is potential for further unrecorded sites and places of heritage significance to occur within the EIS study area, with a high potential for sub-surface heritage to be present
- recognition that several culturally modified trees, known as canoe trees, are located within the vicinity of the proposed new weir site and all culturally modified trees should be avoided by the project
- acknowledgement that construction of the access track could have the potential to impact upon sub-surface deposits containing artefacts
- a strong desire in the community to see water in the river through the town and under the Wilcannia Bridge
- the community wanted to understand where the proposed new weir was going, how it would operate and if there were going to be opportunities for local jobs
- the community expressed interest in having amenities such as tables and bathroom facilities incorporated at the proposed new weir site, as well as the use of old weir rocks (or selection of) to be used at the new recreation area
- the community expressed some concern that they do not want camping or caravans at the proposed new weir site
- the use of the proposed new weir as a place for native fish harvesting activities and recreation is integral to its design. Fishing when the water levels are high is not only a peaceful and enjoyable pursuit, it is an important cultural activity and an integral part of the Wilcannia non-fiscal economy
- some Aboriginal Elders expressed concern that the young people of Wilcannia are losing their cultural fishing knowledge, and that too many fish were being taken from the river. There is a desire within the community to encourage sustainable fishing practices
- the community expressed a strong desire to ensure the weir project will have a positive community impact, particularly for promoting local employment opportunities

- community safety strategies need to be implemented in the school and recreation areas
- there was agreement that the location of the proposed new weir is good and is supported by the community
- the irrigation community understood the reasons for why the proposed new weir needed to be raised by only one metre, even though they would still like to see it higher
- almost all stakeholders raised concerns regarding the need to secure the supply of drinking water for Wilcannia. Some considered the water to be poor quality and not of an acceptable standard
- some community members expressed concerns about raising the river level or creating a new weir pool downstream of town, citing concerns that the aquifer the community relies upon could become contaminated
- there is concern that ongoing reliance on the bores could result in low levels of bore water, placing them at risk
- the need to ensure ongoing communication, collaboration and cooperation with the Wilcannia community
- community members and stakeholders expressed consistently and overwhelmingly that WaterNSW had organised the engagement activities 'the right way' and that WaterNSW did their utmost to engage 'everyone' to ensure no family groups were excluded.

4.2 Engagement proposed during preparation of the EIS

Community and stakeholder engagement and regular communication are essential to the development of the project. WaterNSW will continue to engage, inform and involve the stakeholders and the community about the project and provide opportunities for feedback. Issues raised during the engagement will be provided to the project team to inform project development, environmental assessment and the preparation of the EIS.

Since consultation began in mid-2019, the WaterNSW project team have already developed strong working relationships with stakeholders and family groups, and will continue to build upon these relationships during the preparation and exhibition of the EIS.

The COVID-19 pandemic and the necessary precautionary actions means that WaterNSW has had to consider alternative strategies for consultation and engagement with the Wilcannia Community and stakeholders, to continue progressing the project and the environmental assessments wherever possible and safe.

The following sections are a summary of WaterNSW's proposed community and stakeholder engagement strategy during the preparation of the EIS.

4.2.1 Principles of engagement

As the community and stakeholder engagement lead for this project, WaterNSW has developed a clear and comprehensive approach to engaging with the community and stakeholders for the project. This approach is based around the principles of:

- regular communication
- being responsive to all stakeholders
- providing information about the project and its impacts
- explaining how community feedback is used
- providing ongoing opportunities for feedback.

WaterNSW encourages feedback and will continue to seek input as the project progresses.

4.2.2 Engagement during the EIS

A range of communication and engagement activities will occur whilst the EIS is being prepared. WaterNSW will continue to provide information about the project, the assessment of the project's environmental impact and the opportunity for formal submissions during the EIS exhibition.

Community and stakeholder engagement during the EIS will provide:

- plain English documents and information that is easily accessible and relevant
- direct points of contact with the project team and a robust enquiry and complaints process
- online consultation with the newly appointed project reference group that will act as key representative for consultation during the COVID-19 restriction period. Then face-to-face sessions can resume
- regular project updates on the webpage, and via fact sheets and community news and radio updates
- feedback mechanisms to provide information about the potential impacts of the project and to seek input about how impacts could be avoided, mitigated or managed
- community displays at the local council office and community centres.

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

To meet the COVID-19 protocols and guidelines, activities can be delivered where possible through online and desktop activities. Further to this, the community have provided feedback that establishment of a project reference group with a small group of key community members would be a good way to keep consulting. This will require planning and assistance from the community to provide adequate access to technology and internet from a safe location that meets the COVID-19 guidelines.

4.2.3 Engagement during public exhibition of the EIS

The EIS will be placed on public exhibition for at least 28 days.

At a minimum, advertisements will be placed in the *Wilcannia News* to advise of the exhibition, provide details of where the EIS can be viewed and information about other consultation activities during the exhibition period.

During the exhibition period, any stakeholder or community member can make a formal submission regarding the project. Submissions will be collated into a report and will be considered in the assessment of the EIS and further development of the project.

4.2.4 Engagement following the exhibition of the EIS

Following the exhibition period, WaterNSW will respond to submissions received during the exhibition of the EIS. WaterNSW may undertake any further engagement to respond to issues raised. If this process extends over a long period, WaterNSW will provide regular updates on the project's status.

If the project receives planning approval, WaterNSW will continue to engage with the stakeholders and the community during the construction phase. WaterNSW will continue to lead a construction community engagement program and the project team will continue to be the single point of contact about the project for all stages of the project.

5. Preliminary environmental assessment

5.1 Overview

A preliminary environmental assessment has been carried out to identify potential environmental impacts that may arise because of the project and those matters unlikely to require assessment. A scoping worksheet has been completed and included as Appendix A. The appendix provides a summary of the issues, impacts, level of environmental assessment required for the project, community matters and the assessment approach. The appendix also identifies where a cumulative assessment of impacts is required, considering current, reasonably foreseeable and relevant future projects to be included in the assessment.

Key issues for assessment in the EIS are defined as issues where there is the potential for a high or moderate impact, and therefore, where detailed assessment is required to determine the level of potential impact and the measures required to mitigate or manage the impact. The outcomes of preliminary environmental investigations, including feedback received from the community and other stakeholders identified the following key environmental issues for the project:

- hydrology, geomorphology and water quality
- terrestrial and aquatic biodiversity
- Aboriginal heritage
- historic heritage
- social and economic
- land, soils and contamination
- access
- visual
- air quality and noise.

Further information on these issues is provided in sections 5.2 to 5.10 inclusive.

5.2 Hydrology, geomorphology and water quality

5.2.1 Existing environment

The Barwon-Darling River is located in a semi-arid environment characterised by extreme climatic variability, with large areas of the catchment often subject to prolonged drought periods. Rainfall is low and highly variable, with hot summers and mild winters. The semi-arid environment and high summer temperatures result in high evaporation rates across the broader catchment. As a result, river flows are highly variable, with a large proportion of average flows occurring in wet years and major flood events. River flows decrease downstream of Bourke due to a lack of contributions from tributaries and high rates of evaporation (NSW Department of Primary Industries, 2012a).

Surface and groundwater around Wilcannia are subject of the *Water Sharing Plan for the Barwon-Darling Unregulated and Alluvial Water Sources 2012* (the Plan). For the purposes of the Plan, Wilcannia is within River Section 4 of the *Barwon-Darling Unregulated River Water Source and the Upper Darling Alluvial Groundwater Source*. The Plan sets water extraction limits, water allocations and access rules. Wilcannia's town water supply is allocated

400 megalitres of water per year from the river and 220 megalitres per year from the Upper Darling Alluvial. Wilcannia has two reticulated water systems with a treated water supply for potable domestic use and a raw water supply for outdoor use.

Water resource plans, to replace the water sharing plan, are in preparation for the Barwon-Darling watercourse and the Darling Alluvium. Notable in the proposed provisions is greater protection of low flows in the river (NSW Department of Planning, Industry and Environment, 2019a).

The ecological importance of low flows in the Barwon-Darling river system include maintaining populations of native fish and aquatic habitats, maintaining water quality and providing longitudinal connectivity (Murray-Darling Basin Authority 2018). These flows, along with small freshes (low magnitude, temporary increased river flows), are also important for downstream communities to ensure reliable and good quality water for critical human water needs, and water to support cultural and recreational values. Measures to protect these environmental values are contained in the *Barwon–Darling Long Term Water Plan* (NSW Department of Planning, Industry and Environment, 2019b).

The Natural Resources Commission (2019) found that provisions in the Plan fail to protect ecologically important flow pulses and low flows, which are under increased stress from upstream extraction and drought conditions. It also reported that cease to flow periods have become longer at the downstream gauges in recent years, with annual cease to flow periods of over 80 days at Wilcannia since 2013. There was also a reduction in the volume, duration and magnitude of low flows downstream, which could prolong associated environmental and social impacts. In Wilcannia, there have been longer periods between algal suppression flows, with an elevated risk of decreasing water quality and increasing algal blooms.

Water quality condition in the Darling River at Wilcannia is assessed as poor (NSW Department of Planning, Industry and Environment, 2019c). High flows result in higher turbidity, and higher concentrations of nutrients and possibly pesticides and pathogens. There is also a general trend towards increasing turbidity and nutrient concentration with distance down the catchment as cumulative impacts increase. During increasingly extended periods when there is no tributary inflow, the Darling River can dry to a series of standing pools. The quality of the water in these remnant pools is generally poor with high nutrients, suspended sediments and salinity. Water in stagnant pools can have high nutrient concentrations, triggering potentially toxic blue-green algal blooms.

The river is the primary source of water supply and a popular recreational area for Wilcannia township. The *NSW Water Quality and River Flow Objectives for the Barwon-Darling and Far Western catchments* (NSW Department of Environment, Climate Change and Water, 2006) provide water quality objectives for the protection of the waterways affected by the proposed weir. The waterways in this locality are within the following two categories:

- waterways affected by urban development
- controlled rivers with reduced flow.

Waterways affected by urban development are waterways within urban areas, such as Wilcannia, and are identified as often substantially modified and generally carry poor quality stormwater. For these waterways, water quality objectives are set for the protection of aquatic ecosystems, visual amenity and recreation.

Controlled rivers with reduced flow is an extensive category that extends from Mungindi to the top of Lake Wetherell, in the Menindee Lakes system. It is subject to reduced inflows to the Barwon-Darling River and with flow patterns also affected by pumping, weirs and natural processes. For these waterways, water quality objectives include those listed above as well as

those related to the protection of water supplies for irrigation, homesteads, drinking water sources and aquatic foods (cooked).

It is intended that the water quality objectives should be used to develop plans and actions affecting water quality and river health. The proposed Barwon-Darling Watercourse Water Resource Plan will include a number of strategies to address risks of water quality degradation (NSW Department of Planning, Industry and Environment, 2019c), including:

- protecting low flow and pool habitats to prevent accelerated rates of drying, deterioration in water quality or loss of connectivity
- protecting a portion of natural flows to support instream processes and facilitate sediment and nutrient transport into lowland streams and onto floodplains
- identifying water quality targets for water dependent ecosystems, long-term salinity planning, irrigation water, raw water for treatment for human consumption and recreational water.

5.2.2 Summary of potential issues

Construction impacts from the project have the potential to adversely impact the water quality of the Darling River due to the following:

- fuel spills entering the waterway
- sediment (soil, gravel, concrete washings) entering the waterway and increasing turbidity and potentially, pH levels through added alkalinity (concrete washings)
- disturbance of the riverbed resulting in adverse impacts to water quality
- management of water at the site, including dewatering of the construction site.

Operation of the proposed weir has the potential to impact downstream river flows, especially during periods of low flows. The proposed weir will incorporate a gate that will be operated to manage water quality within the weir pool and to provide some flexibility to release water downstream. WaterNSW is developing the details of the operation of the weir pool and the gate at the new weir. These operations will need to consider further the potential effects of the weir capturing low flows, and small freshes, interrupting the passage of these flows down the river and potentially prolonging periods of no flow downstream. The operation of the weir will also be subject to consideration, and further refinement, within the integrated strategy of the Western Weirs Program (WaterNSW, 2019).

Methods for managing river flow during construction have the potential to restrict the passage of low flows and lengthening periods of no flow. As above, there is the potential for downstream impacts depending on the river management methods proposed during construction and the length of time this management will be in place.

Investigations into drown-out flows and the inundation effects of the new weir found that the new weir would drown-out at a flow of approximately 12,070 megalitres of water per day. The headwater from this flow is approximately four metres below the low top of bank water level (Public Works Advisory, 2019). The conclusion of this analysis was that the weir drown-out flows are substantially below the top of low bank level, indicating that the proposed weir is unlikely to produce any apparent significant upstream impacts.

The location of the new weir increases the likelihood of hazardous events such stormwater and sewerage system overflows impacting water quality (Public Works Advisory, 2019). An increased risk was also identified of spills and chemical leaks if the new weir pool was located within the town catchment. Potential sources of this risk include the Barrier Highway where it crosses the Darling River at Wilcannia, and places in town where chemicals are stored in large

volumes. Funds have been provided under the NSW Government's Safe and Secure Water Program to construct a new water treatment plant for Wilcannia's water supply.

The increased weir pool volume is expected to reduce impacts on water quality from saline inflows during very low or no flow conditions (Public Works Advisory, 2019). It was also identified that the frequency of no flow events with a duration of more than two months (and a corresponding risk of increased salinity in the weir pool) is in the order of once every 10 years on average.

There is interaction between the weir pool and the alluvial zones that are hydraulically connected to the river. This may have implications for the quality of water available from the town's supplementary water supply bores at Union Bend. The interaction is likely to be most marked at full storage level although water quality issues may be more pronounced as the weir pool level declines. WaterNSW has commenced a hydrogeological investigation to better understand the potential for the weir pool to interact with groundwater, and any subsequent need to manage risks to water supply.

Active management of water quality in the weir pool has the potential to further reduce the risk of adverse impacts on bores due to high salinity events (Public Works Advisory, 2019). This would equally apply to risks from other potential water contamination or algal blooms. Where this management involves the downstream release of poor quality water, there may be impacts from such releases on downstream ecosystems and river users.

5.2.3 Proposed further assessment

Further assessment of the existing hydrological regime will be completed for surface and groundwater resources (including reliance by users and for ecological purposes) likely to be impacted by the project. Full details of the proposed operation of the weir will be presented and assessed in the EIS.

An impact assessment will be completed for the construction and operational stages of the project on surface and groundwater hydrology, including:

- describing and analysing natural processes within the river that affect the health of the fluvial, riparian and landscape health, aquatic connectivity and access to habitat for spawning and refuge. This will include impacts of changes to downstream river flows, including changes to the volume, timing and seasonality flows
- assessing compliance of the project with the provisions of water sharing plans, water resource plans and the Murray-Darling Basin Plan, including requirements for the passing of environmental water or cultural flows by the weir
- assessing impacts from permanent and temporary interruption of groundwater flow, implications for groundwater dependent surface flows ecosystems and species and groundwater users
- identifying direct or indirect increases in erosion, siltation, destruction of riparian vegetation or a reduction in the stability of riverbanks or watercourses
- identifying water take from surface or groundwater sources during construction
- identifying mitigation measures.

An assessment will be completed of the impacts on water quality, including:

- identifying the ambient NSW Water Quality Objectives and environmental values for the Darling River impacted by the project, including the indicators and associated trigger values or criteria for the identified environmental values

- identifying and estimating the quality and quantity of all pollutants that may be introduced into the water cycle by source and discharge point, and describe the nature and degree of impact on the receiving environment
- identifying the rainfall and river flow event to define the basis for the design of water quality protection measures
- assessing the significance of any identified impacts including consideration of the relevant ambient water quality outcomes
- identifying mitigation measures.

5.3 Biodiversity

The landscape is part of the Darling Riverine Plains bioregion which includes the Darling River and its floodplains, and vegetation includes river red gum, blackbox and coolibah woodlands.

Most of the river downstream of Wilcannia and within the inundation area of the new weir pool have been assessed as having a medium to high instream ecological value and include the presence of threatened fish species and endangered ecological communities (NSW Department of Planning, Industry and Environment, 2019d). Approximately three kilometres upstream of the predicted inundation area the river passes through the Paroo Darling National Park and Paroo Darling State Conservation Area.

5.3.1 Existing environment

Terrestrial ecology

Native vegetation is identified at the site of proposed new weir and staging area, including:

- Coolibah – River Cooba – Lignum woodland wetland of frequently flooded floodplains (PCT ID 39), which forms a component of Coolibah-Black Box Woodland in the Darling Riverine Plains and is listed as an Endangered Ecological Community (EEC) under the *Biodiversity Conservation Act 2016* (BC Act) and *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act)
- River Red Gum tall to very tall open-forest/ woodland on rivers on floodplains (PCT ID 36)
- anthropologic herbland/cropland (PCT ID 1000).

The desktop assessment identified threatened flora and fauna species that have been mapped within 20 kilometres of the project site as follows:

- flora species include burr-daisy (*Calotis moorei*) and saltbush (*Atriplex infrequens*), which are listed as threatened under the BC and EPBC Acts, and spear-grass (*Austrostipa metatoris*) and Menindee Nightshade (*Solanum karsense*), which are listed as vulnerable species under the BC and EPBC Acts
- fauna species include Major Mitchells Cockatoo (*Lophochroa leadbeateri*), Little Eagle (*Hieraaetus morphnoides*) and Red-tailed Black Cockatoo (*Calyptorhynchus banksii samueli*) which are listed as vulnerable under the BC Act.

Aquatic ecology

The Darling River is mapped as key fish habitat (NSW Department of Primary Industries, 2007). The aquatic ecological community of the lowland Darling River is listed as an EEC under the *Fisheries Management Act 1994* (FM Act), and is identified as potential habitat for the following three species of threatened fish listed under the FM Act:

- Western population of Olive Perchlet (*Ambassis agassizii*), an endangered population under the FM Act
- Silver Perch (*Bidyanus bidyanus*), a vulnerable species under the FM Act
- Darling River Snail (*Notopala sublineata*), a critically endangered species under the FM Act.

The Murray Cod (*Maccullochella peelii*), listed as a vulnerable species under the EPBC Act, is also predicted to occur along the Darling River. Silver Perch (*Bidyanus bidyanus*) is listed as critically endangered under the EPBC Act.

Migratory fauna

The desktop assessment identified the following migratory fauna species that may occur in the locality of the project site: Common Sandpiper (*Actitis hypoleucos*), Sharp-tailed Sandpiper (*Calidris acuminata*), Curlew Sandpiper (*Calidris ferruginea*), Pectoral Sandpiper (*Calidris melanotos*), Latham's Snipe (*Gallinago harwickii*) and Gull-billed Tern (*Gelochelidon nilotica*).

5.3.2 Summary of potential issues

Construction of the project could involve some selective removal of mature vegetation. Threatened fauna species most at risk from construction impact include Major Mitchells Cockatoo (*Lophochroa leadbeateri*), Little Eagle (*Hieraaetus morphnoides*) and Red-tailed Black Cockatoo (*Calyptorhynchus banksii samueli*), all listed as vulnerable species under the BC Act. Threatened flora species most at risk of impact include saltbush (*Atriplex infrequens*) and Menindee Nightshade (*Solanum karsense*).

Other potential impacts to biodiversity values during construction could include injury or mortality to fauna due to clearing and increased construction traffic and loss of movement corridors and connectivity.

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 of the new weir has the potential to alter flows to the Darling River downstream and this may potentially impact migratory waders.

The project will also be assessed for any contribution to the following Key Threatening Processes under the BC Act or FM Act:

- *Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands*
- *Installation and operation of instream structures and other mechanisms that alter natural flow regimes of rivers and streams*
- *Degradation of Native Riparian Vegetation along NSW watercourses*
- *Removal of Large Woody Debris for NSW Rivers and Streams*.

The new weir may further change the flowing river habitats (the pool and riffle sequence) to a longer pool-only habitat. At full supply level, the new weir pool will add an additional 27 kilometres of pool habitat to the 59 kilometres of pool habitat of the existing weir at full supply level. There may also be impacts to aquatic habitats and riparian vegetation, and other groundwater dependent ecosystems, from the larger inundation of the new weir pool. The new weir pool may also affect the value of re-snagging to improve fish habitat that has occurred in the Wilcannia Weir pool. At the same time, the new weir pool may offer a refuge habitat in periods of extended low or no river flows.

Wilcannia Weir is identified as one of six priority structures within the Darling River system that are barriers to fish passage requiring the installation of fish passage (NSW Department of Primary Industries, 2012b). There will be improvements to fish passage in the locality with fish passage provided at the new weir, and the removal of the barrier effects of the existing Wilcannia Weir.

5.3.3 Proposed further assessment

Biodiversity impacts will be further assessed in accordance with the NSW *Biodiversity Conservation Act 2016*, and documented in a Biodiversity Development Assessment Report. This report will document the application of the avoid, minimise and offset framework including assessing all direct, indirect and prescribed impacts in accordance with the Biodiversity Assessment Method. This will address guidelines including:

- *Biodiversity Assessment Method* (Office of Environment and Heritage, 2017)
- *Policy and guidelines for fish habitat conservation and management* (NSW Department of Primary Industries, 2013)
- *NSW Biodiversity Offsets Policy for Major Projects* (Office of Environment and Heritage, 2014)
- *Risk assessment guidelines for groundwater dependent ecosystems* (Serov *et al*. 2012).

The assessment will include:

- reviewing existing information and database records
- field surveys, including vegetation mapping, plot/transects, threatened flora searches, and flora and fauna habitat surveys
- identifying the extent of native vegetation within and adjoining the construction site and the weir pool inundation area
- assessing the potential impacts on biodiversity, including impacts on threatened species, populations and ecological communities and habitat. This will include Murray Cod breeding areas
- identifying and assessing aquatic habitats and fauna in accordance with the *Fisheries NSW Policy and Guidelines for Fish Habitat Conservation and Management* (NSW Department of Primary Industries, 2013)
- assessing effects to the re-snagging for fish habitat that has occurred in the river within the weir pool inundation area
- assessing any contribution to a Key Threatening Process
- assessing impacts to fish movement (and life cycles) in the river and the amelioration of impacts provided by fish passage at the new weir
- identifying safeguards and mitigation measures
- identifying impacts requiring offsetting, and the requirements and options for offsetting
- conducting assessments of significance pursuant to the *Environmental Protection and Biodiversity Conservation Act 1999* significant impact guidelines for impacts on matters of national environmental significance, NSW *Biodiversity Conservation Act 2016* for terrestrial biota, and the *NSW Fisheries Management Act 1994* for threatened aquatic biota.

5.4 Aboriginal heritage

5.4.1 Existing environment

Wilcannia is the traditional home of the Barkandji people, who have a cultural and spiritual link to the river. The river and its banks are likely to have greater archaeological sensitivity, reflecting these links and the history of Aboriginal occupation near the waterway. The locality also contains vegetation suitable for cultural use, which includes terraces and riverbanks featuring river red gum, coolabah, black box, clumps of acacia and saltbush.

Sites recorded in the Aboriginal Heritage Information Management System (AHIMS) around Wilcannia include open campsites (some including burnt food remains such as shell and animal bone), burials, silcrete quarry, stone arrangements, fish traps, and scarred trees including canoe trees. The canoe trees at Wilcannia are very significant because in many cases it is known when they were cut out and who cut them. A series of archaeological sites well known to the local community and of contemporary and historic significance are located from Steamers Point and downstream towards Wilcannia township (Central Darling Shire and Wilcannia Local Aboriginal Land Council 2018).

A search of the AHIMS database on 7 January 2020 returned 20 records for Aboriginal sites within a four kilometres by four kilometres search area surrounding the location of the proposed new weir. All but four of the sites are complex locations involving more than one artefact type.

The AHIMS search identified a number of sites in close proximity to the riverbank upstream of the proposed weir location, the closest one being AHIMS site 24-5-0160 (Union Bend Canoe Tree 3) located within ten metres of the proposed weir location.

A search of the NSW heritage register identified Steamers Point, an Aboriginal place listed under the *National Parks and Wildlife Act*, gazetted in June 2014. Steamers Point Aboriginal place adjoins the river about 350 metres upstream from the existing weir and 2.3 kilometres northeast of the proposed new weir location.

5.4.2 Summary of potential issues

Ground disturbance works (such as access roads, lay down areas and the weir itself) related to the construction of the project have the potential to impact Aboriginal objects. In addition to the known site near the construction access to the weir on the right bank (Union Bend Canoe Tree 3, see Photograph 5), the high archaeological sensitivity of landforms in the area necessitates additional assessment and survey.

WaterNSW has discussed the proposed access route near the Union Bend Canoe Tree with the Aboriginal community. The access route is proposed to avoid the tree, but it will need to be protected from incidental damage during construction. The location is also being considered as a recreational area, and community river place, once the weir is complete.

Photograph 5 Union Bend Canoe Tree

The listing of the Steamers Point Aboriginal place includes the land from the top of the riverbank but not the river itself. The inundation from the new weir pool will be well within the riverbanks and not affect land at the top of the bank. However further consultation should confirm any potential impacts to the significance of this location.

There is also the potential for cultural sites to be present within the direct impact area of inundation. This could include sites within the current river channel affected by the increased water level or changes to river flow patterns because of the project.

Indirect impacts associated with the operation of the project are limited to the inundation zone. This could include sites that are directly on the bank of the current channel being subject to changed erosional conditions, or identified socially significant sites such as waterholes or fishing sites being affected by the project.

5.4.3 Proposed further assessment

An Aboriginal cultural heritage assessment will be undertaken which will involve:

- identifying and assessing any impacts in accordance with the *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (Office of Environment and Heritage 2011) and *Aboriginal cultural heritage consultation requirements for proponents 2010* (Department of Environment, Climate Change and Water 2010b)
- completing updated database searches and reviewing any previous investigations and assessments
- identifying safeguards and mitigation measures
- preparing an Aboriginal cultural heritage assessment report.

5.5 Historic heritage

5.5.1 Existing environment

A search on publicly available heritage databases was undertaken to determine the presence of non-Aboriginal heritage items near the site of the proposed weir. The search returned with no non-Aboriginal heritage items with National, Commonwealth or State significance. The existing Wilcannia Weir is not a listed item, and as it is not a WaterNSW asset, it was not assessed in the preparation of WaterNSW's section 170 Heritage and Conservation Register.

There are 26 items of local heritage significance within the town of Wilcannia listed in the Central Darling LEP 2012, two of which are located within close proximity to the river, being the Wilcannia Bridge and the Old Wharf and Winch. The Wilcannia Bridge formerly carried the Barrier Highway across the Darling River, now replaced with a new bridge, (Photograph 6) and the Old Wharf and Winch is located adjacent to Wilcannia Bridge. Remnants of the Old Wharf is shown in Photograph 7.

Photograph 6 Wilcannia Bridge over the Darling River

Photograph 7 Remnants of Wilcannia Wharf

5.5.2 Summary of potential issues

The project is not expected to impact on any locally listed heritage items during construction.

Once the proposed weir is operational, indirect heritage impact is possible on the Wilcannia Bridge and Old Wharf and Winch due to the changing water level. These river trade infrastructure sites were built at the turn of the 20th century and the wharf is stated as being in poor condition, and consideration will need to be given to changes in water level possibly disturbing bank stability in this location.

5.5.3 Proposed further assessment

A heritage impact study will be undertaken to assess the potential impacts of construction and operation of the new weir, and the proposed demolition of the existing weir. WaterNSW is also assessing the requirement to protect the iron supports of the Wilcannia Bridge from further corrosion that may be created by the new weir pool.

5.6 Social and economic

5.6.1 Existing environment

Given the history of Wilcannia and the socio-demographic features, the existing Wilcannia Weir needs to be replaced to improve long-term water security for the town and enhance the social, economic and environmental features of Wilcannia. There is a strong feeling in the community that the replacement of the weir in a more advantageous position would increase the number of visitors stopping in Wilcannia for food and accommodation, thus providing increased local employment opportunities. The replacement of the weir in a location downstream of the town would create both a larger weir pool and one that extends through the town, increasing amenity through enhanced visibility and accessibility of the weir pool, supporting social and economic benefits.

5.6.2 Summary of potential issues

The construction and operation of the proposed new weir has the potential to result in the following social and economic issues and opportunities:

- impacts associated with property access and acquisition
- changes to community amenity, including as a result of changes to traffic, noise, air quality and the visual environment
- employment and business opportunities from construction related jobs, revenue for businesses providing construction facilities and resources, and increased patronage for some businesses providing services for employees in local towns
- environmental and recreational benefits with improved fish passage in this locality.

Mitigation measures will include:

- minimising long term alienation of private and public land
- retaining access to private land throughout construction
- promoting use of local businesses for construction resources
- providing additional recreational amenity opportunities
- providing opportunities for local jobs.

5.6.3 Proposed further assessment

A land use and property assessment will be undertaken to assess the potential impacts of construction and operation. It will include:

- identifying land uses, ownership and existing access arrangements
- reviewing relevant planning instruments, regional plans and land use strategies
- confirming any land acquisition requirements
- assessing potential impacts on land use and property during construction and operation
- assessing potential impacts to users of public recreation areas
- identifying safeguards and mitigation measures, including potential opportunities to provide new recreation areas and to enhance or upgrade recreation areas impacted by the project.

A socio-economic impact assessment will be undertaken to assess the potential impacts of construction and operation. It will include:

- analysing available community data, reviewing the characteristics of communities in the project area and preparing a profile of communities with the potential to be affected by the project
- identifying community facilities in the project area
- analysing the outcomes of community consultation in relation to community values (including the values attached to places or facilities), issues and concerns
- describing the existing business and economic environment and analysing how this might be impacted by the project
- reviewing the results of other relevant specialist assessments
- assessing the potential impacts and benefits of the project during construction and operation
- identifying safeguards and mitigation measures

- considering any cumulative impacts from construction and operation of the project and other projects in Wilcannia.

5.7 Land, soils and contamination

5.7.1 Existing environment

The Darling River at Wilcannia is part of the Darling Riverine Plains Bioregion. The upper catchment landscape is a series of overlapping, low gradient alluvial fans. The lower tract of the river, downstream of Bourke to the Menindee Lakes, is a narrow floodplain confined between bedrock landscapes (NSW National Parks and Wildlife Service, 2003). The river flows within a deeply incised channel with few channel benches and a narrow floodplain. The channel width is between 60 to 80 metres and channel depth up to 25 metres. Topography along the river is relatively low, from 50 to 100 metres above sea level on the floodplain (NSW Department of Primary Industries, 2012a). The general river form is shown in Photograph 8, which shows the Darling River approximately 26 kilometres upstream of the proposed weir site.

The *Soil Landscapes of Wilcannia 1:250,000 Geological series* (Frenda, 1965) identifies that the land on which the proposed new weir is located consists of quaternary residual soils (Qrs), characteristic of floodplains, outwash areas and drainage flats of black and red clayey silt and sand. The soils are predominantly vertosols, which are clay-rich soils of uniform texture, with potential for strong cracking and slickensides (Gray and Murphy, 2002). The grey cracking clays are in evidence on the proposed access route to the left bank and the proposed main construction compound.

The soils are described as having high agricultural potential with high chemical fertility and water-holding capacity but requiring significant amounts of rain before water is available to plants. As such, gypsum and/or lime may be required to improve their structure. Heavy plastic clays can be difficult to cultivate especially when they are wet. Shrink-swell characteristics also create problems for foundations of buildings built on vertosol type soils.

A search of the NSW EPA Contaminated Land Register on 24 January 2020 did not identify any contaminated lands within the Central Darling Shire.

Photograph 8 Darling River upstream of Wilcannia

5.7.2 Summary of potential issues

Construction would result in exposure of soil, associated spoil and removal of vegetation that may have the potential to increase the risk of an erosion and runoff hazard. Soil with high erodibility may also create stability issues during construction. This may have implications for access on riverbanks, construction areas benched into the riverbank and a cofferdam, if used.

The access routes and construction areas on the grey heavy clay soils will require treatment to provide an all-weather surface during construction and for maintenance access during operation. Therefore, access tracks are likely to be permanent, which may have long-term impacts for water flow across the floodplains.

Watercourses within the project corridor may be impacted through an increase in sediment loads during rainfall events that would lower existing water quality through increased turbidity. Other pollutants could potentially be introduced to waterways during construction if not managed properly, through hydrocarbon spills for example.

Compaction of soils during construction could lead to decreased permeability, with wind erosion potentially eroding unsecured stockpiles or bunds created during earthworks.

Operation of the proposed weir would alter the water storage levels within the new weir pool, resulting in the wetting of larger portions of the riverbanks during low flow conditions within the inundation area. There are likely to be long periods of saturation of more of the riverbanks than is currently occurring when the weir pool is full, followed by slow drying of the banks as the weir pool is depleted. This process is unlikely to lead to bank surcharge and/or riverbank cracking, with any concomitant negative impacts on riverbank stability and/or resultant bank slumping. There was little evidence at the locations visited on the field inspection of such impacts from the existing weir pool (example shown in Photograph 9). This should be confirmed as the details of proposed weir operations are developed.

Photograph 9 Darling River looking downstream at Steamers Point

The hydraulic impact of the new weir will be the creation of a localised increase in turbulence and flow velocity immediately downstream. This has the potential to cause scour or erosion of the riverbed and banks, and may result in the creation of a deep pool downstream of the new

weir as new fluvial geomorphic equilibrium conditions are realised. The final form of the proposed weir may incorporate a stilling basin on the downstream base of the weir and other bed and bank protection that should prevent these impacts.

The demolition of the existing weir may also have impacts to the bed and bank formation at that location. However, being within a weir pool rather than a flowing section of the river, these changes are likely to be contained and localised.

5.7.3 Proposed further assessment

Further investigation and assessment should:

- assess the construction and operation of the new weir and removal of the exiting weir on river geomorphology in the vicinity of the project
- assess the requirements for access to the site, and identify suitable surface treatment for access tracks and construction areas
- identify access requirements on riverbanks that minimise modification to the riverbank and further exposure to erosion
- identify safeguards and mitigation measures.

5.8 Access

5.8.1 Existing environment

Major road infrastructure in the locality is the Barrier Highway (Route A32), which runs through the town of Wilcannia and crosses the Darling River on Wilcannia Bridge (see Figure 1-1). In the vicinity of Wilcannia, the Barrier Highway has one travel lane in each direction with an undivided carriageway.

Reid Street runs perpendicular to Barrier Highway at Wilcannia. Northeast of town, West Tilpa Road, which is a mostly gravel road, connects to the town of Tilpa (see Figure 2-2). Sections of the river upstream from the existing weir can be accessed via this road. South-west of Wilcannia, Reid Street turns into West Wilcannia Road, which connects Wilcannia and Menindee. Given the remote area, traffic on these roads is typically low.

Access to the existing weir is possible through the local streets of Wilcannia on unsealed surfaces. From the north, the weir can be accessed via local streets and an unsealed track down the bank of the Darling River. From the south, access is through Victory Park Caravan Park off the Barrier Highway (see Photograph 10).

The closest roads to the new weir site are the Barrier Highway to the east and Union Bend Road to the north. The preferred access to the site for construction is across the Yeoval property from the Barrier Highway south of Wilcannia and approximately three kilometres on a dirt track to the left bank of the river. Access to the right bank is along the gravel Union Bend Road from Reid Street and then a 250 metre walk to the river bank, or a circuitous route on rough vehicle tracks along the river bank in the Union Bend area.

5.8.2 Summary of potential issues

Construction of the new weir would require an access road to be built over the existing unsealed track across private property from the Barrier Highway to access the weir site from the south (see Figure 2-1). This will be the primary construction access to the site of the new weir. From the north, a new access track will be required to link the weir site to Union Bend Road. This will form part of a secondary access route but will be primarily for light vehicles. It is proposed that

construction workers would access the site from this route and a car park is proposed adjacent to Union Bend Road for workers' vehicles.

During construction, heavy vehicles would deliver construction plant, equipment and materials, and remove waste. There would be a temporary increase in heavy vehicle movements on roads and an increase in light vehicle movements associated with smaller deliveries and construction worker transport.

Demolition of the existing weir would require access through Victory Park Caravan Park from the Barrier Highway. It is anticipated that this access would be required for up to two weeks and there is potential that construction traffic may impact caravan park residents. As details of the proposed demolition are confirmed, further consideration can be given to measures to manage and mitigate such impacts.

Photograph 10 Victory Park Caravan Park

During operation, there will be a small number of additional light traffic movements in the locality associated with operating and maintaining the new weir. There will also be additional light traffic movements associated with the proposed recreation area adjacent to the weir on the right bank of the river. The proposed carpark for construction workers, located adjacent to Union Bend Road, may also be retained for users of the recreation area.

5.8.3 Proposed further assessment

A traffic, transport and access assessment will need to be undertaken to assess the potential impacts of construction and operation. The assessment would include:

- confirming the existing traffic and transport environment and access conditions to and from the Barrier Highway
- identifying and assessing potential traffic impacts, including site access identification, construction traffic volumes, the nature of existing traffic and the need to apply traffic management measures
- identifying and assessing other potential transport impacts to public roads and potential access restrictions during construction
- identifying access arrangements for demolition of the existing weir

- identifying safeguards and mitigation measures.

5.9 Visual

5.9.1 Existing environment

The landscape and visual amenity of the locality is characterised by the town of Wilcannia and rural properties with a corridor of riparian vegetation following the river course. The site of the proposed weir is contained within an area of riparian woodland and screened from private property and public viewpoints. The locality of the existing weir is more public and can be readily viewed from public roads and parks.

5.9.2 Summary of potential issues

The construction of the new weir will be a change in the character of the existing location as will the new weir pool, which will extend past the town.

The new weir pool will be the most obvious visual change from the many public parks and access points in Wilcannia town, and from predominantly private viewpoints further up the river. This is considered by the local community to be a positive change. Photograph 11 illustrates the view of the river from Baker Park in the town where the new weir pool would replace the existing landscape.

Activities associated with complete or partial demolition of the existing weir will represent change though will be temporary. The site of the existing weir will be underwater following its full or partial demolition and the filling of the new weir pool.

Photograph 11 View of Darling River from Baker Park, Wilcannia

5.9.3 Proposed further assessment

A landscape character and visual impact assessment would be completed to identify potential impacts during construction and operation. It would include:

- identifying existing landscapes and features
- analysing impacts to views and vistas
- identifying heritage items that may be impacted
- assessing impacts to public recreation areas.

5.10 Air quality and noise

5.10.1 Existing environment

The background noise and air quality environments are typical of a small urban and rural area comprised of homes and small businesses, agricultural properties and rural residences. A search of the National Pollutant Inventory undertaken on 20 January 2020 identified no sources of pollution for the 2017/18 reporting period within ten kilometres of the project sites (Australian Government Department of Sustainability, Environment, Water, Population and Communities, 2020).

The main existing noise sources and air pollution near the project would be associated with traffic on the road network and operation of plant and machinery in Wilcannia township and on rural properties.

The nearest sensitive receptors to the existing weir will be the Wilcannia Hospital, about 120 metres east of the weir. The closest residential properties to the site are within Wilcannia itself, approximately 100 metres from the weir. The Victory Park Caravan Park, on the southern bank of the river, is approximately 80 metres from the weir.

The proposed new weir is relatively distant from sensitive receptors, with the closest residential properties located approximately 1.5 kilometres away on the southern edge of Wilcannia township.

5.10.2 Summary of potential issues

The construction of the new weir and complete or partial demolition of the existing weir would increase noise and potentially vibration at receivers closest to the two sites. Construction will generate noise from operating plant and machinery. Piling activities will generate noise and vibration, while heavy vehicle movements during construction will also contribute to noise levels.

Potential air quality impacts from increased dust and emissions depend on the scale of the activity, the quantities of material handled, the treatment of stockpiles and access tracks, the distance to sensitive receivers and prevailing wind conditions. Impacts from the complete or partial demolition of the existing weir are likely to be greater to sensitive receivers than from construction activities at the site of the new weir. Construction impacts at either site would be temporary.

Work will generally be undertaken within standard construction hours. However, work outside of these hours may occur and the environmental impact assessment will assess extended construction hours, including on Saturday and Sunday.

There will also be temporary increases in emissions from construction plant and equipment, and potentially increased dust from earthworks and ground disturbance, stockpiles and vehicle movements.

5.10.3 Proposed further assessment

A construction noise and vibration assessment would be undertaken for the project. Occupants of noise sensitive properties should be consulted as part of this assessment, particularly those within close proximity of the existing weir. The assessment would involve a quantitative construction noise assessment (in accordance with the NSW EPA *Interim Construction Noise Guidelines* (Department of Environment and Climate Change NSW, 2009) and include the following:

- identification of noise sensitive receivers
- noise monitoring for baseline noise levels (if required)
- modelling and predictions of noise levels
- planning to ensure that activities are organised to minimise impacts during construction.

The potential impact of increased dust and emissions on air quality would be further considered in the context of the proposed construction activities. Measures to minimise and manage dust and fine particles will be detailed in the EIS.

5.11 Other environmental issues

5.11.1 Resources and waste

The main statutes applicable to managing waste in NSW are the *Protection of the Environment Operations Act 1997* (POEO Act), the *Protection of the Environment Operations (Waste) Regulation 2014* (Waste Regulation) and the *Waste Avoidance and Resource Recovery Act 2001* (WARR Act).

The POEO Act establishes the procedures for environmental control. The Waste Regulation regulates matters such as waste classification, the obligations of consignors (producers and agents), transporters and receivers of waste in relation to waste transport licensing and tracking requirements. The WARR Act aims to ensure that waste management options are considered against the following waste management hierarchy:

1. Avoidance of unnecessary resource consumption
2. Resource recovery (including reuse, reprocessing, recycling and energy recovery)
3. Disposal.

The NSW Government provides guidance for the transition to a circular economy in NSW with principles to guide resource use and management (NSW Environment Protection Authority, 2019).

Summary of potential issues

During construction, concrete, steel, stone and gravel would be required. Prefabricated components may also be used to reduce construction timeframes and noise on site. These would be sourced from relevant manufacturers and suppliers.

Construction water would be sourced from the Darling River in accordance with a licence issued under the *Water Management Act 2000*.

Almost all waste associated with the project would be generated during construction and may include:

- excavation waste (spoil)
- demolition waste

- hazardous waste/contaminated spoil (if identified)
- vegetation/green waste
- liquid waste
- other construction waste
- general waste from site workers.

Waste would be managed in accordance with the waste provisions contained within the POEO Act and, where reused off site, would comply with relevant EPA resource recovery exemptions issued pursuant to the Waste Regulation. A waste management strategy would be developed for the project.

The volume of waste generated during operation would be minor and associated with maintenance activities and equipment replacement as required long term. Waste would be managed by the implementation of WaterNSW's standard waste management strategies.

Proposed further assessment

The EIS will provide further details on resource and waste management for the project, including:

- estimating the quantity of key waste types that may be generated
- identifying the approximate resource requirements for the project, including estimation of key materials requirements
- identifying a management hierarchy to reduce the volume of spoil needing to be disposed
- identifying the availability of materials from the region, including from quarries, potential material suppliers and reuse of materials
- assessing the potential waste management approach and impacts
- summarising the approach to managing contaminated soil should these be encountered
- identifying safeguards and mitigation measures.

5.11.2 Safety

Hazard and risk impacts associated with the project have the potential to affect the surrounding environment and human health.

Summary of potential issues

Potential issues during construction include:

- risks associated with the accidental release of dangerous or hazardous materials to the environment due to improper handling or storage, or in the event of a vehicle or construction equipment incident
- risks associated with the accidental release of contaminated water or soil, if present, to the environment
- risks of exposure to increased levels of noise and dust from work sites and construction vehicles
- flooding or inundation of construction work areas during heavy rainfall or high river flows.

Other construction activities could result in impacts to the health and safety of site workers, users, visitors and the local community if improperly managed. These include:

- operation of vehicles and construction equipment on site

- transportation of equipment, excavated spoil and material to and from site
- potential for risks to public safety resulting from unauthorised access to construction work areas.

All construction work areas would be isolated and secured from the public. Health and safety risks during construction would be managed by the implementation of standard workplace health and safety requirements. A work health and safety management plan, and safe work method statements, would be developed in accordance with regulatory requirements.

Potential issues during operation include risks associated with recreational use around the new weir and the new weir pool, including flows over the weir and submerged hazards.

Proposed further assessment

A hazard and risk assessment will be undertaken for the project and it will include:

- reviewing the relevant regulatory framework and applicable guidelines
- identifying construction and operational activities with the potential to cause impacts to off-site receivers
- describing the design features of the project that would manage risk and hazards during the operational stage
- qualitatively assessing potential impacts, including reviewing the results of the noise and vibration assessment and the air quality assessment in relation to the potential for health and safety impacts
- identifying safeguards and mitigation measures.

6. Conclusion

WaterNSW is designing and constructing a replacement weir for Wilcannia to improve long-term water security for the town. The weir will provide town water supplies, and preserve and enhance the social, economic and environmental features of Wilcannia. WaterNSW recognises the importance of the river to the community and wants to design and construct a weir that meets community needs and expectations, and maintains the strong connection people have to the river.

The community has had a long engagement with the project to date, and has been instrumental in determining the final location and scale of the replacement weir. This engagement will continue as the details of the replacement weir are further developed and refined, and the EIS is prepared for the project.

The replacement weir will mean more water is able to be stored, which will benefit the town by securing its water supply consistent with standards applied to other regional towns. The new weir pool offers a substantial contribution to the amenity and setting of the town with strong visual evidence of the river's dominance in this region. Fish passage will be enhanced at this location with a fishway at the new weir along with the partial or complete demolition of the existing weir. These features of the proposed project align with what the community has communicated to WaterNSW as being important.

This scoping report provides an overview of the Wilcannia Weir replacement project and identifies the likely scale and nature of impacts through construction and operation of the project to support the request for SEARs from DPIE.

This scoping report has identified the following environmental issues for the project:

- hydrology, geomorphology and water quality
- terrestrial and aquatic biodiversity
- Aboriginal heritage
- historic heritage
- social and economic
- land, soils and contamination
- access
- visual
- air quality and noise.

The level of assessment required to determine the potential impacts of the project has been reported herein for consideration by the NSW Department of Planning, Industry and Environment and other Government agencies.

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Appendix

Appendix A - Scoping Worksheet

Project : Wilcannia Replacement Weir

	MATTERS	IMPACTS		ASSESSMENT LEVEL	CUMULATIVE IMPACTS	COMMUNITY ISSUES	ASSESSMENT APPROACH	SCOPING REPORT
Potential matters that could be affected by the project		Is the project (without mitigation) likely to cause an impact?	Are the impacts (without mitigation) likely to be significant based on the magnitude of the impacts and/or sensitivity of receivers?	What level of assessment is required to assess impacts and determine mitigation measures?	Will cumulative assessment be required?	Did the community raise any concerns about the impacts?	Indicative approach to assessment in EIS	Where was this addressed in the Scoping Report?
Group	Specific	Impact?	Significant Impact?	Assessment Level	Cumulative Impact?	Concerns?	Category	Section
ACCESS	access to property	Unknown	Unlikely	Standard	No	Yes	Scoping Report with focussed engagement	2.3.3 & 5.8
	parking	Unknown	Unlikely	Standard	No	No	Scoping Report	2.3.3 & 5.8
	port / airport facilities	N/A					None (include short explanation in Scoping Report)	
	road / rail network	N/A					None (include short explanation in Scoping Report)	5.8
	other - please specify							
AIR	atmospheric emissions	N/A					None (include short explanation in Scoping Report)	
	gases	N/A					None (include short explanation in Scoping Report)	
	particulate matter	Yes	Unlikely	Standard	No	No	Scoping Report	5.10
	other - please specify							
AMENITY	noise	Yes	Unknown	Standard	No	No	Standard Assessment	5.10
	odour	N/A					None (include short explanation in Scoping Report)	
	vibration	Unknown	Unlikely	Standard	No	No	Scoping Report	5.10
	visual	Yes	Unlikely	Standard	No	No	Scoping Report	5.9
	other - please specify							
BIODIVERSITY	conservation areas	Unknown	Unlikely	Standard	No	No	Scoping Report	5.3
	native vegetation	Yes	Likely	Detailed	Yes	Yes	Detailed Assessment and CIA with focussed engage	5.3
	native fauna	Yes	Likely	Detailed	Yes	Yes	Detailed Assessment and CIA with focussed engage	5.3
	fish and fish passage	Yes	Likely	Detailed	Yes	Yes	Detailed Assessment and CIA with focussed engage	5.3
BUILT ENVIRONMENT	private property	Yes	Unknown	Standard	No	Yes	Standard Assessment with focussed engagement	2.3.2 & 5.3
	public domain	Yes	Unknown	Standard	Yes	Yes	Standard Assessment and CIA with focussed engag	2.3.7 & 5.8
	public infrastructure	Yes	Unknown	Standard	No	Yes	Standard Assessment with focussed engagement	2.3.7, 5.8 & 5.9
	other - please specify							5.2 & 5.5
ECONOMIC	livelihood	Unknown	Unlikely	Standard	No	Yes	Scoping Report with focussed engagement	5.6
	natural resource use	Yes	Unknown	Detailed	Yes	Yes	Detailed Assessment and CIA with focussed engage	5.6
	opportunity cost	Yes	Unknown	Standard	No	Yes	Standard Assessment with focussed engagement	5.6
	other - please specify							5.6
HAZARDS & RISKS	biosecurity	N/A					None (include short explanation in Scoping Report)	
	bush fire	Unknown	Unlikely	Standard	No	No	Scoping Report	2.3.6 & 5.11.2
	coastal hazards	N/A					None (include short explanation in Scoping Report)	
	dams	Yes	Likely	Standard	Yes	Yes	Standard Assessment and CIA with focussed engag	5.2 & 5.11.2
	dangerous goods	N/A					None (include short explanation in Scoping Report)	
	environmental hazards	N/A					None (include short explanation in Scoping Report)	
	floods	Unknown	Unknown	Detailed	Yes	Yes	Detailed Assessment and CIA with focussed engage	5.2 & 5.11.2
	groundwater contamination	N/A					None (include short explanation in Scoping Report)	
	hazardous / offensive development	N/A					None (include short explanation in Scoping Report)	
	land contamination	N/A					None (include short explanation in Scoping Report)	
	land movement	N/A					None (include short explanation in Scoping Report)	
	waste	Unknown	Unlikely	Standard	No	No	Scoping Report	5.11.1
	other - please specify							
HERITAGE	Aboriginal cultural	Yes	Unknown	Detailed	Yes	Yes	Detailed Assessment and CIA with focussed engage	5.4
	historic	Yes	Unknown	Standard	No	Yes	Standard Assessment with focussed engagement	5.5
	natural	N/A					None (include short explanation in Scoping Report)	
	other - please specify							
LAND	land capability	N/A					None (include short explanation in Scoping Report)	5.7
	soil chemistry	N/A					None (include short explanation in Scoping Report)	5.7
	stability / structure	Unknown	Unknown	Standard	Yes	Yes	Standard Assessment and CIA with focussed engag	5.7
	topography	N/A					None (include short explanation in Scoping Report)	5.7
	other - please specify							5.7
SOCIAL	community services / facilities	Yes	Likely	Standard	Yes	Yes	Standard Assessment and CIA with focussed engagement	
	health	Yes	Unlikely	Standard	Yes	Yes	Scoping Report with focussed engagement	5.6
	housing availability	N/A					None (include short explanation in Scoping Report)	
	safety	Unknown	Unknown	Standard	No	Yes	Standard Assessment with focussed engagement	5.11.2
	social cohesion	N/A					None (include short explanation in Scoping Report)	
	other - please specify							
WATER	ground water quality	Unknown	Unknown	Standard	Yes	Yes	Standard Assessment and CIA with focussed engag	5.2
	hydrological flows (including flooding)	Yes	Likely	Detailed	Yes	Yes	Detailed Assessment and CIA with focussed engage	5.2
	surface water quality	Yes	Likely	Detailed	Yes	Yes	Detailed Assessment and CIA with focussed engage	5.2
	water availability	Yes	Likely	Detailed	Yes	Yes	Detailed Assessment and CIA with focussed engage	5.2
	other - please specify							

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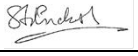
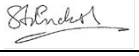
0	T Paull	S Winchester		S Winchester		21/05/20

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