

## Appendices



## Appendix A. SEARs table

Requirement	Where addressed in this EIS
General requirements	
<ul> <li>The environmental impact statement (EIS) must be prepared in accordance with, and meet the minimum requirements of clauses 6 and 7 of Schedule 2 of the Environmental Planning and Assessment Regulation 2000 (the Regulation).</li> <li>Notwithstanding the key issues specified below, the EIS must include an environmental risk assessment to identify the potential environmental impacts associated with the infrastructure.</li> <li>Where relevant, the assessment of key issues below, and any other significant issues identified in the risk assessment, must include: <ul> <li>adequate baseline data</li> <li>consideration of the potential cumulative impacts due to other developments in the vicinity (completed, underway or proposed)</li> <li>measures to avoid, minimise and if necessary, offset predicted impacts, including detailed contingency plans for managing any significant risks to the environment; and</li> <li>details of proposed removal of the existing weir.</li> </ul> </li> </ul>	A checklist of compliance with the requirements of the Environmental Planning and Assessment Regulation 2000 is provided in <b>Appendix A.3</b> . An environmental risk assessment is provided in <b>Section 23</b> . Baseline data is provided in the descriptions of the existing environment in <b>Sections 7</b> to <b>21</b> . Potential cumulative impacts are assessed in <b>Section 22</b> . Measure to avoid and minimise impacts are provided in the management and mitigation measure tables in <b>Sections 7</b> to <b>21</b> and these are presented in a consolidated table in Appendix E. Measures to offset biodiversity impacts are presented in <b>Sections 12.8</b> and <b>13.7.1</b> . Assessment of the potential impacts of removing the existing weir are provided in the impact assessments in <b>Sections 7</b> to <b>21</b> .
The EIS must be accompanied by a report from a qualified quantity surveyor providing:	A quantity surveyor's report has been provided to the Department of Planning and Environment
<ul> <li>a detailed calculation of the capital investment value (CIV) (as defined in clause 3 of the Regulation) of the proposal, including details of all assumptions and components from which the CIV calculation is derived. The report shall be prepared on company letterhead and indicate applicable GST component of the CIV;</li> </ul>	The construction workforce is provided in <b>Section 3.1</b> .
<ul> <li>an estimate of jobs that will be created during the construction and operational phases of the proposed infrastructure; and</li> </ul>	
<ul> <li>certification that the information provided is accurate at the date of preparation.</li> </ul>	



Requirement	Where addressed in this EIS	
Key issue 1: Statutory and strategic context		
<ul> <li>Address the statutory provisions applying to the infrastructure contained in all relevant environmental planning instruments, including:</li> <li>State Environmental Planning Policy (State &amp; Regional Development) 2011</li> <li>State Environmental Planning Policy (Infrastructure) 2007</li> </ul>	Statutory provisions in relevant environmental planning provisions are addressed in <b>Section 4.4</b> . Draft State Environmental	
<ul> <li>State Environmental Planning Policy (Remediation of Land) 2019</li> <li>Draft State Environmental Planning Policy (Remediation of Land)</li> <li>Draft State Environmental Planning Policy (Environment)</li> <li>State Environmental Planning Policy (Primary Production and Rural Development) 2019</li> </ul>	not applicable to the proposal and therefore is not addressed in the environmental impact statement.	
Central Darling Local Environmental Plan 2012		
<ul> <li>Address the relevant planning provisions, goals and strategic planning objectives in the following:</li> <li>NSW State Priorities</li> <li>NSW Floodplain Development Manual 2005</li> <li>State Infrastructure Strategy 2018 – 2038 Building the Momentum</li> <li>Crime Prevention Through Environmental Design (CPTED) Principles</li> <li>NSW Aquifer Interference Policy 2012</li> <li>Guideline for Controlled Activities on Waterfront Land 2018</li> <li>NSW Weirs Policy 1997</li> <li><i>Policy and Guidelines for Fish Habitat Conservation and Management</i> (update 2013)</li> </ul>	A strategic planning review is provided in <b>Appendix G</b> .	
Key issue 2: Water		
<ul> <li>Include a thorough description of the existing environmental conditions and hydrological regime, including:</li> <li>Existing hydrology and river operations.</li> <li>River channel form, relevant River Styles and alteration of channel form and geomorphic processes including: sediment transmission rates, storage and reworking, and in-channel sediment features.</li> </ul>	The existing environmental conditions and hydrological regime are described in detail in Section 3 of <b>Technical Report 1</b> and in summary in <b>Sections 7.5</b> , <b>8.4</b> , <b>9.5</b> and <b>10.5</b> .	
<ul> <li>Mapping of rivers, streams, wetlands, estuaries, and groundwater potentially impacted by the project.</li> </ul>		
<ul> <li>Geomorphic features and energy transmission through the proposed weir pool upper extent and downstream along the river.</li> </ul>		
<ul> <li>In-channel geomorphic features, persistence and resilience of these features.</li> </ul>		
<ul> <li>Relationships between the channel and adjacent floodplains, including a description of the frequency and duration of overbank flows, sediment trapping and sediment features on the floodplain and any river levees.</li> </ul>		
<ul> <li>Instream assets and functions associated with all upstream and downstream river that will see altered flow.</li> </ul>		
<ul> <li>Water quality baseline data for the water resource likely to be impacted by the development.</li> </ul>		
<ul> <li>Highly connected alluvial aquifers and their responses to river flows.</li> </ul>		



#### Requirement

Include a thorough assessment of the hydrological impacts of the proposed weir, including:

- The extent of the proposed weir pool
- Geomorphic criteria to inform measures to arrest and prevent deterioration of channel condition, address sediment starvation downstream of the weir, and promote geomorphic recovery in regulated rivers impacted by changed flow regime.
- Catchment scale water balance and projected alterations in water supply and demand management.
- Means to provide adequate volumetric limits, timing, inundation, flow velocities and associated stream power or shear stress in channel and on adjacent floodplains.
- Impacts during construction and operation of the Wilcannia Weir replacement on the region's surface and groundwater sources and adjacent water users, ensuring compliance with the Water Sharing Plan for the Barwon-Darling Unregulated and Alluvial Water Sources 2012, the Barwon-Darling Watercourse Water Resource Plan (including any amendments that may be required to accommodate the new weir), and sustainable diversion limits of the Murray-Darling Basin Plan.
- An assessment of the impacts of the project to the Environmental Flow Requirements downstream as stated in the relevant Long-Term Water Plan prepared by DPE EES as part of basin plan requirements.
- Design criteria relating to flow hydrographs, release rules, any proposed translucency measures and other alteration of riverine hydrology, flow energy and sediment transport in the process of regulating a currently unregulated river.
- Predicted impacts on licensed water users, including any impact to water quality and availability, and the potential for land salinisation adjacent to the extended weir pool.
- An assessment of the potential impact on groundwater and surface water users and details of how existing water rights will be protected.
- Changes to environmental water availability, both regulated/licensed and unregulated/rules-based sources of such water, specifically:
  - assessment of the impacts on environmental water availability and flows to downstream receiving waters.
  - assessment of impacts to the volume, reliability and effectiveness of Planned Environmental Water in the catchment downstream of the work.
  - assessment of impact to volume, reliability, effectiveness or deliverability of Held Environmental Water assets in the catchment downstream of the works.
  - any water substitution effects of the removal of surplus or tributary flows from the catchment that may then require held or discretionary planned environmental water to make up the shortfall.

#### Where addressed in this EIS

The hydrological impacts of the proposal are assessed in detail in Section 5 of **Technical Report 1.** A summary of this assessment is provided in **Section 7.6**.

The extent of the proposed weir pool is shown in **Figure** 3-1.

An assessment of the geomorphology impacts of the proposal is provided in Section 6 of **Technical Report 1**. A summary of this assessment is provided in **Section 8.5**.

Wilcannia Weir Replacement Environmental Impact Statement

AND A

Re	equirement	Where addressed in this EIS
ln pr	clude a thorough assessment of the water quality impacts of the oposed weir, including:	
•	The ambient NSW Water Quality Objectives (NSW WQO) and environmental values for the river, including the indicators and associated trigger values or criteria for the identified environmental values.	
•	The significance of any identified impacts including consideration of the relevant ambient water quality outcomes.	
•	How construction and operation of the project will, to the extent that the project can influence, ensure that:	
	<ul> <li>where the NSW WQOs for receiving waters are currently being met they will continue to be protected; and</li> </ul>	
	<ul> <li>where the NSW WQOs are not currently being met, activities will work toward their achievement over time.</li> </ul>	
•	Identify proposed monitoring locations, monitoring frequency and indicators of surface and groundwater quality.	
•	Assess changes to thermal stratification in the weir pool.	
Re	elevant Policies and Guidelines:	These policies and guidelines are
•	NSW Water Quality and River Flow Objectives at http://www.environment.nsw.gov.au/ieo/	discussed in Sections 2.3.3 and 2.3.10 of <b>Technical Report 1</b> .
•	Using the ANZECC Guidelines and Water Quality Objectives in NSW (DEC, 2006)	
•	Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG, 2018)	
•	Approved Methods for the Sampling and Analysis of Water Pollutants in NSW (Department of Environment and Climate Change, 2004).	
Ke	ey issue 3: Flooding	
Ide pr Fle an ch m	entify flood risk on-site (detailing the most recent flood studies for the oject area) and consideration of any relevant provisions of the NSW bodplain Development Manual (Department of Infrastructure, Planning of Natural Resources, 2005), including the potential effects of climate ange, sea level rise and an increase in rainfall intensity. If there is a aterial flood risk, include design solutions for mitigation.	The proposal would have a negligible impact on flooding as discussed in Section 9 of <b>Technical Report 1</b> and summarised in <b>Section 11</b> . There is no recent flood study for the proposal area. Given that the proposal area. Given that the proposal would have a negligible impact on flooding, consideration of factors that may worsen flooding such as climate change is not relevant.



Requirement	Where addressed in this EIS
<ul> <li>Map features relevant to flooding as described in the Floodplain Development Manual 2005 (NSW Government 2005), including:</li> <li>Flood prone land.</li> <li>Flood planning area, the area below the flood planning level.</li> <li>Hydraulic categorisation (floodways and flood storage areas).</li> <li>Flood hazard.</li> </ul>	The proposal would have a negligible impact on flooding as discussed in Section 9 of <b>Technical Report 1</b> and summarised in <b>Section 11</b> . There is no local mapping of flood prone land, a flood planning area, flood storage areas or flood hazards. However, given that the proposal would have a negligible impact on flooding, consideration of these matters is not relevant.
Describe flood assessment and modelling undertaken in determining the design flood levels for events, including a minimum of the 5% Annual Exceedance Probability (AEP), 1% AEP, flood levels and the probable maximum flood, or an equivalent extreme event.	Weir drown-out would occur at a flow of 12,070 megalitres per day, which has a time duration exceedance frequency of 17 per cent, or about 1 in 6 years, as noted in Section 9.4 of <b>Technical</b> <b>Report 1</b> and summarised in <b>Section 11.6.2</b> . At the weir drown- out flow, upstream water levels would be about 0.16 to 0.20 metres higher than existing depending on the height of the proposed weir. These afflux values would diminish due to backwater effects moving away from the new weir site in the upstream direction. For larger flood events such as the 1% AEP and the probable maximum flood the new weir would not produce any incremental impact in terms of affluxes compared to the existing weir.
Model the effect of the proposed project (including fill) on current flood behaviour for a range of design events. This includes the 0.5% and 0.2% AEP year flood events as proxies for assessing sensitivity to an increase in rainfall intensity of flood producing rainfall events due to climate change.	The proposal would have a negligible impact on flooding as discussed in Section 9.4 of <b>Technical Report 1</b> and summarised in <b>Section 11.6</b> . As noted above, for large flood events such as the 1% AEP and the probable maximum flood the new weir would not produce any incremental impact in terms of affluxes compared to the existing weir. Given that the proposal would have an insignificant impact on flooding no flood modelling has been carried out.



Requirement	Where addressed in this EIS
<ul> <li>Provide flood modelling which considers and documents:</li> <li>Existing council flood studies in the area and examine consistency to the flood behaviour documented in these studies.</li> <li>The impact on existing flood behaviour for a full range of flood events including up to the probable maximum flood, or an equivalent extreme flood.</li> <li>Impacts of the development on flood behaviour resulting in detrimental changes in potential flood affectation of other developments or land. This may include redirection of flow, flow velocities, flood levels, hazard categories and hydraulic categories.</li> <li>Relevant provisions of the NSW Floodplain Development Manual 2005.</li> </ul>	There is no existing council flood study for the proposal area. The proposal would have a negligible impact on flooding as discussed in Section 9.4 of <b>Technical Report 1</b> and summarised in <b>Section 11.6</b> . As noted above, for large flood events such as the 1% AEP and the probable maximum flood the new weir would not produce any incremental impact in terms of affluxes compared to the existing weir. Given that the proposal would have an insignificant impact on flooding no flood modelling has been carried out.
<ul> <li>Assess the impacts on the proposed project on flood behaviour, including:</li> <li>Whether there will be detrimental increases in the potential flood affectation of other properties, assets and infrastructure.</li> <li>Consistency with Council floodplain risk management plans.</li> <li>Consistency with any Rural Floodplain Management Plans.</li> <li>Compatibility with the flood hazard of the land.</li> <li>Compatibility with the hydraulic functions of flow conveyance in floodways and storage in flood storage areas of the land.</li> <li>Whether there will be adverse effect to beneficial inundation of the floodplain environment, on, adjacent to or downstream of the site.</li> <li>Whether there will be direct or indirect increase in erosion, siltation, destruction of riparian vegetation or a reduction in the stability of river-banks or watercourses.</li> <li>Any impacts the development may have upon existing community emergency management arrangements for flooding.</li> <li>Whether the proposal incorporates specific measures to manage risk to life from flood.</li> <li>Emergency management, evacuation and access, and contingency measures for the development considering the full range or flood risk (based upon the probable maximum flood or an equivalent extreme</li> </ul>	There is no existing council flood study for the proposal area, The proposal would have a negligible impact on flooding as discussed in Section 9.4 of <b>Technical Report 1</b> and summarised in <b>Section 11.6</b> .
<ul> <li>Any impacts the development may have on the social and economic costs to the community as consequence of flooding.</li> </ul>	



Requirement	Where addressed in this EIS
Key issue 4: Biodiversity assessment	'
Biodiversity impacts related to the proposed development are to be assessed in accordance with section 7.9 of the <i>Biodiversity Conservation</i> <i>Act 2016</i> , the Biodiversity Assessment Method and documented in a Biodiversity Development Assessment Report (BDAR). The BDAR must include information in the form detailed in the <i>Biodiversity Conservation</i> <i>Act 2016</i> (s6.12), Biodiversity Conservation Regulation 2017 (s6.8) and Biodiversity Assessment Method.	A biodiversity development assessment report for the proposal is provided in <b>Technical</b> <b>Report 2</b> and summarised in <b>Section 12</b> of this environmental impact statement.
The BDAR must 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.	Avoidance and minimisation is detailed in Section 8 of <b>Technical</b> <b>Report 2</b> and summarised in <b>Section 12.4</b> of this environmental impact statement. Offsetting is detailed in Sections 11 and 12 of <b>Technical Report 2</b> and summarised in <b>Section 12.8</b> of this environmental impact statement. Direct, indirect, and prescribed impacts are detailed in Section 9 of <b>Technical Report 2</b> and summarised in <b>Section 12.6</b> of this environmental impact statement.
<ul> <li>The BDAR must include details of the measures proposed to address the offset obligation as follows:</li> <li>the total number and classes of biodiversity credits required to be</li> </ul>	An offset strategy is provided in Section 12.1 of <b>Technical Report</b> <b>2</b> and summarised in <b>Section 12.8</b> of this environmental impact statement.
<ul><li>retired for the development/project</li><li>the number and classes of like-for-like biodiversity credits proposed</li></ul>	
to be retired	
<ul> <li>the number and classes of biodiversity credits proposed to be retired in accordance with the variation rules</li> </ul>	
<ul> <li>any proposal to fund a biodiversity conservation action</li> </ul>	
<ul> <li>any proposal to make a payment to the Biodiversity Conservation Fund.</li> </ul>	
If seeking approval to use the variation rules, the BDAR must contain details of the reasonable steps that have been taken to obtain requisite like-for-like biodiversity credits.	



#### Requirement

The BDAR must:

- be submitted with all spatial data associated with the survey and assessment as per Appendix K of the *Biodiversity Assessment Method* (DPIE, 2020b).
- be prepared by a person accredited in accordance with the Accreditation Scheme for the Application of the Biodiversity Assessment Method Order 2017 under section 6.10 of the Biodiversity Conservation Act 2016.
- include an aquatic ecological assessment from above and below Wilcannia Weir replacement that addresses all direct, indirect, and prescribed impacts of the new weir on Key Fish Habitat and associated flora and fauna including threatened species, populations, and communities during construction and operation for the life of the storage.
- include an assessment of the ecological impact of the Wilcannia Weir replacement upon the safe upstream and downstream passage of fish over the full range of weir operating conditions, including assessment of how the proposed operating rules of the weir may impact upon the safe fish passage as a result of the rules. The assessment must be performed in consultation with, and having regard to the requirements of DPI Fisheries.
- include an Aquatic Biodiversity Offsets Strategy that is consistent with relevant policy and guidelines and is adequately funded to mitigate and manage impacts of the Wilcannia Weir replacement during construction and subsequent operation, focusing on protecting and improving the biodiversity and conservation values of the Darling River (Baaka), its biota, and associated riparian zones in the medium to long term.
- details of the rehabilitation of the site and revegetation of disturbed areas are to be considered, with the manner of long-term management/security of the rehabilitation areas detailed. The Biodiversity Development Assessment Report should include details of stakeholder consultation where offsetting is proposed.
- include an assessment of impacts on groundwater dependent ecosystems.

#### Where addressed in this EIS

Spatial data is presented in the figures in **Technical Report 2** and **Section 12** of this environmental impact statement. Spatial data has been submitted to the NSW Biodiversity, Science and Conservation Directorate as part of the submission of the Biodiversity Assessment Method Calculator.

Personnel involved in the development of the biodiversity development assessment report are listed in Section 1.3 of **Technical Report 2**.

An aquatic ecology assessment is provided in **Technical Report 3** and summarised in **Section 13** of this environmental impact statement. The aquatic environment upstream and downstream, flow regime, as well as predicted threatened aquatic species, populations and communities are described in detail in Section 4 of **Technical Report 3** and summarised in **Section 13.5** of this environmental impact statement.

Potential impacts to fish passage during operation of the new weir are assessed in Section 6 of **Technical Report 3**.

An aquatic biodiversity offset strategy is currently being negotiated with Fisheries NSW and is discussed in Section 9 of **Technical Report 3** and summarised in **Section 13.7.1** of this environmental impact statement.

Proposed rehabilitation of the areas impacted during construction is provided in mitigation and management measures B11 and AQ2 in **Table 12-5** and Table 13-1 respectively and shown in the concept rehabilitation plans in Appendices A and C of **Technical Report 6**.



Re	equirement	Where addressed in this EIS
		Potential impacts to groundwater dependent ecosystems are assessed in Section 9.3.5 of <b>Technical Report 2</b> and summarised in <b>Section 12.6</b> of this environmental impact statement.
Ke	y issue 5: Aboriginal Heritage	
Ide ac ine Th •	<ul> <li>entify and describe the Aboriginal cultural heritage values that exist ross the site and any other area which the project could directly or directly impact in an Aboriginal cultural heritage assessment report.</li> <li>be prepared in consultation with the local Aboriginal community and other relevant stakeholders, having regard to the <i>Aboriginal Cultural Heritage Consultation Requirements for Proponents</i> (Department of Environment, Climate Change and Water, 2010);</li> <li>document the significance of cultural heritage values for Aboriginal people who have a cultural association with the land</li> <li>demonstrate attempts to avoid impact upon cultural heritage values and identify any conservation outcomes; and</li> <li>where impacts are unavoidable, the Aboriginal cultural heritage assessment report must outline measures proposed to mitigate impacts.</li> <li>include reported cultural heritage sites known to the Barkandji, including the Falling Star, Billilla rocks, Union Bend Ngatji site and Steamers Point with the aim to:</li> <li>Document and assess whether there is likely to be a direct or indirect threat to each site from the construction of the weir</li> <li>Assess the significance of harm (scientifically and culturally) through archival documentation and through seeking information from the Registered Aboriginal Parties, with reference to intergenerational equity, cumulative harm and consideration of social and economic factors</li> <li>Determine if the proposal will impact on the proposed Barkandii Aboriginal Place pomination located near the weir</li> </ul>	An Aboriginal cultural heritage assessment report is provided in <b>Technical Report 4</b> and summarised in <b>Section 14</b> of this environmental impact statement.
De	Jovant Delicios and Guidelines:	Palayant policies and suidelines
•	Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 (Department of Environment, Climate Change and Water, 2010a)	are addressed in Section 2.1 of <b>Technical Report 4</b> and summarised in <b>Section 14.1</b> of this environmental impact
•	Code of Practice for the Archaeological Investigation of Aboriginal Objects in New South Wales (Department of Environment, Climate Change and Water, 2010b)	statement.
-	<i>Guide to Investigating, Assessing and Reporting on Aboriginal Cultural</i> <i>Heritage in NSW</i> (Office of Environment and Heritage, 2011)	



Requirement	Where addressed in this EIS
Key issue 6: Non-Aboriginal Heritage	
<ul> <li>Provide a heritage assessment including but not limited to an assessment of impacts to State and local heritage. Where impacts to State or locally significant heritage items are identified, the assessment shall:</li> <li>outline the proposed mitigation and management measures (including measures to avoid significant impacts and an evaluation of the effectiveness of the mitigation measures) generally consistent with the NSW Heritage Manual (1996),</li> <li>be undertaken by a suitably qualified heritage consultant(s) (note: where archaeological excavations are proposed the relevant consultant must meet the NSW Heritage Council's Excavation Director criteria),</li> <li>include a statement of heritage impact for all heritage items (including significance assessment),</li> <li>consider impacts including, but not limited to, vibration, demolition, archaeological disturbance, altered historical arrangements and access, landscape and vistas, and architectural noise treatment (as relevant), and</li> <li>where potential archaeological impacts have been identified develop an appropriate archaeological assessment methodology, including research design to quide</li> </ul>	A statement of heritage impact is provided in <b>Technical Report 5</b> and summarised in <b>Section 15</b> of this environmental impact statement.
Key issue 7: Social impacts	
<ul> <li>Identify and assess the potential social impacts of the project, considering affected communities and other relevant stakeholders, including:</li> <li>The significance of positive, negative and cumulative social impacts considering likelihood, extent, duration, severity/scale, sensitivity/importance, and level of concern/interest.</li> <li>Proposed mitigation measures to address negative social impacts and any proposed enhancement measure.</li> <li>Proposed means of monitoring and managing social impacts over time.</li> <li>The existing recreational opportunities associated with the site, how these will be impacted by the project, and any design measures to improve the recreational amenity of the site.</li> <li>Detail the impacts on land users, including private landowners and users of public recreational facilities.</li> </ul>	The potential social impacts of the proposal are assessed in <b>Section 16</b> .
Address impacts on recreational fishing opportunities within the Darling River (Baaka), including Aboriginal cultural fishing, and assess opportunities to provide for public access, fishing opportunities and fishing facilities (for example, boat ramps, fish cleaning tables etc).	Potential impacts to recreational fishing are assessed in <b>Section 16.7.2</b> .



Requirement	Where addressed in this EIS
Key issue 8: Land	
<ul> <li>Include an assessment of the impacts of the project on soils and land capability of the site and surrounds, including:</li> <li>stability;</li> <li>acid sulfate soils;</li> <li>salinity; and</li> <li>soil erosion and sediment transport.</li> </ul>	Proposal impacts on soils and land are assessed in <b>Section 18.5</b> .
Include an assessment on landforms, including the short and long-term geotechnical stability of any new landforms and any seismic or subsidence impacts.	Landforms and geotechnical stability are addressed in <b>Section 18.5</b> .
Include consideration of land parcels potentially affected by construction of the weir, having regard to advice provided by DPE – Crown Lands (see Attachment A).	Land requirements are identified in <b>Table 3-2</b> . Land use and property impacts are considered in <b>Section 16</b> .
<ul> <li>Relevant policies and guidelines:</li> <li>Acid Sulfate Soils Planning Maps via Data NSW</li> <li>Acid Sulfate Soils Manual (Stone et al. 1998)</li> <li>Acid Sulfate Soils Laboratory Methods Guidelines (Ahern et al. 2004).</li> </ul>	The potential for acid sulfate soils at the new and existing weir sites is discussed in <b>Section 18.4.</b>
Key issue 9: Contamination	
Assess and quantify any soil and groundwater contamination and demonstrate that the site is suitable for the proposed use in accordance with SEPP 55.	Potential for existing land contamination is considered in <b>Section 18.4</b> .
Undertake a hazardous materials survey of all existing structures and infrastructure prior to any demolition or site preparation works.	Mitigation and management measure GS3 in <b>Table 18-5</b> requires a hazardous materials survey prior to partial removal and decommissioning of the existing weir.
Relevant policies and guidelines:	These policies and guidelines
<ul> <li>Managing Land Contamination: Planning Guidelines - SEPP 55 Remediation of Land (Department of Urban Affairs and Planning, 1998)</li> </ul>	were considered during preparation of the contamination assessment in <b>Section 18.</b>
<ul> <li>Sampling Design Guidelines (Environment Protection Authority, 1995)</li> </ul>	
<ul> <li>Consultants Reporting on Contaminated Land (Contaminated Land Guidelines) (Environment Protection Authority, April 2020)</li> </ul>	
<ul> <li>National Environment Protection (Assessment of Site Contamination) Measure (National Environment Protection Council, as amended 2013).</li> </ul>	

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Requirement	Where addressed in this EIS	
Key issue 10: Waste		
<ul> <li>Assess the predicted waste generated from the project during demolition and construction, including:</li> <li>classification of the waste in accordance with the current guidelines;</li> <li>estimates / details of the quantity of each classification of waste to be generated during the construction of the project, including bulk earthworks and spoil balance;</li> <li>handling of waste including measures to facilitate segregation and prevent cross contamination;</li> <li>management of waste including estimated location and volume of stockpiles;</li> <li>waste minimisation and reuse;</li> <li>lawful disposal or recycling locations for each type of waste; and</li> <li>contingencies for the above, including managing unexpected waste volumes.</li> </ul>	Waste impacts are assessed in Section 21.2.	
Assess the potential environmental impacts from the excavation, handling, storage and transport of the waste particularly with relation to sediment/leachate control, noise and air quality.	Sediment and leachate controls are provided in <b>Table 10-3</b> . Noise and vibration impacts, and air quality related to proposal waste are expected to be negligible, given the volume of waste generated is expected to be minor.	
Detail the measures that would be implemented to ensure that the construction and operation of the project is consistent with the aims, objectives and guidance in the NSW Waste Avoidance and Resource Recovery Strategy 2014-2021.	Mitigation measures to manage waste impacts are provided in Section 21.2.5.	
<ul> <li>Relevant Policies and Guidelines:</li> <li>Waste Classification Guidelines (Environment Protection Authority, 2014)</li> <li>EPA Waste Classification Guidelines (as in force from time to time)</li> <li>NSW Sustainable Design Guidelines Version 3.0 (Transport for NSW, 2013)</li> <li>NSW Waste Avoidance and Resource Recovery Strategy 2014-2021</li> </ul>	The relevant policies, strategic plans and guidelines have informed the waste impact assessment, as provided in <b>Section 21.2.1.</b>	
Key issue 11: Sediment, erosion and air quality controls		
Detail measures and procedures to minimise and manage the generation and off-site transmission of sediment, air quality and fine particles.	Erosion and sediment controls are identified in <b>Section 17.7</b> . Air quality controls are identified in <b>Section 21.1</b> .	



Requirement	Where addressed in this EIS
<ul> <li>Relevant Policies and Guidelines:</li> <li>Managing Urban Stormwater - Soils &amp; Construction Volume 1 2004 (Landcom)</li> <li>Approved Methods for the Modelling and Assessment of Air Pollutants in NSW (Environment Protection Authority, 2016)</li> <li>Guidelines for Development Adjoining Land Managed by the Office of Environment and Heritage (Office of Environment and Heritage, 2013).</li> </ul>	Measures to manage air quality impacts in accordance with the 'Blue Book' are provided <b>Table</b> 21-3. The principles of the EPA guidelines have been used in the assessment, refer to <b>Section 21.1</b> . The proposal is not located adjacent to land managed by the Office of Environment and Heritage (now National Parks and Wildlife Service directorate within the DPE). However the key principles of the policy that relate to erosion and sediment control have been considered in the assessment.
Key issue 12: Ecologically sustainable development (ESD)	
Detail how ESD principles (as defined in clause 7(4) of Schedule 2 of the Regulation) will be incorporated in the proposal. Include an assessment against an accredited ESD rating system or an equivalent program of ESD performance. This should include a minimum rating scheme target level.	ESD principles incorporated into the proposal are provided in <b>Section 21.5</b> . The proposal has been assessed against the ISCA sustainability principles in <b>Section 21.5</b> .
<ul> <li>Relevant Policies and Guidelines:</li> <li>NSW and ACT Government Regional Climate Modelling (NARCliM) climate change projections.</li> </ul>	The NARCliM climate change projections were used in the climate change assessment in <b>Section 21.4</b> .
Key issue 13: Transport	
Provide a Traffic Impact Assessment (TIA) prepared by a suitably qualified person in accordance with the Austroads Guide to Traffic Management Part 12, Transport for NSW Supplements to Austroads and the <i>Guide to Traffic Generating Developments</i> (Roads and Traffic Authority, 2002). The TIA is to be developed in consultation with Transport for NSW.	A traffic impact assessment is provided in <b>Technical Report 7</b> . Transport for NSW were consulted in November 2020.
Identify controls for transport and use of any dangerous goods in accordance with State Environmental Planning Policy No. 33 – Hazardous and Offensive Development, the Australian Dangerous Goods Code and Australian Standard 4452 Storage and Handling of Toxic Substances.	Dangerous goods and hazardous substances impacts are assessed in Section 5.2.7 of <b>Technical</b> <b>Report 7.</b>



Requirement	Where addressed in this EIS
<ul> <li>Propose a Driver Code of Conduct for heavy vehicles and peak project employee periods which could include, but not be limited to:</li> <li>Safety initiatives for project transportation through residential areas and/or school zones</li> <li>An induction process for vehicle operators and regular toolbox meetings.</li> <li>A public complaint resolution and disciplinary procedure.</li> <li>Consideration of the safe operation of vessels through navigable waters, both those involved in works and others navigating the area, in consultation with Transport for NSW Maritime.</li> </ul>	A Driver Code of Conduct will be prepared by the construction contractor, as outlined in Section 6.1 of <b>Technical Report 7.</b> Transport for NSW Maritime were consulted on maritime issues in November 2020. No maritime activities are proposed during operation of the proposal.
<ul> <li>Relevant Policies and Guidelines:</li> <li>EIS Guidelines - Road and Related Facilities (Department of Urban Affairs and Planning, 1996)</li> <li>NSW Planning Guidelines for Walking and Cycling (Department of Infrastructure, Planning and Natural Resources, 2004)</li> <li>Austroads Guide to Traffic Management Part 12</li> <li>Roads and Maritime Supplements to Austroads</li> <li><i>Guide to Traffic Generating Developments</i> (Roads and Traffic Authority, 2002).</li> </ul>	The policies and guidelines relevant to the traffic impact assessment are discussed in Section 2.2 of <b>Technical Report 7</b> .
Key issue 14: Noise and vibration	
Provide a quantitative assessment of the main noise and vibration generating sources during demolition, site preparation, bulk excavation, and construction. Outline measures to minimise and mitigate the potential noise impacts on surrounding occupiers of land.	Quantitative assessment of potential impact sources are provided in <b>Section 20.6</b> . Mitigation measures are outlined in <b>Section 20.7</b> .
<ul> <li>Relevant Policies and Guidelines:</li> <li>NSW Noise Policy for Industry 2017 (NSW Environment Protection Authority)</li> <li>Interim Construction Noise Guideline (Department of Environment and Climate Change, 2009)</li> <li>Assessing Vibration: A Technical Guideline 2006 (Department of Environment and Conservation, 2006)</li> </ul>	The policies and guidelines relevant to the noise and vibration impact assessment are discussed in Section 2.2 of <b>Technical Report</b> <b>8</b> .
Key issue 15: Bush fire	
Address bush fire hazard and, if relevant, prepare a report that addresses the requirements for Special Fire Protection Purpose Development as detailed in <i>Planning for Bush Fire Protection 2019</i> (NSW Rural Fire Service).	Bush fire hazards and risks are addressed in <b>Section 21.3</b> . The proposal does not comprise a development defined as Special Fire Protection Purpose, as stated in <b>Appendix G</b> . Consequently, a separate report has not been prepared. However, the principles of Planning for Bush Fire Protection have been addressed in <b>Section 21.3</b> .



Requirement	Where addressed in this EIS		
Key issue 16: Design			
<ul> <li>Address the scale and design of the proposed development, considering the impacts upon the visual amenity of the site, including:</li> <li>Identify how services and plant are integrated into the overall design of the proposed development.</li> <li>Provide details of any proposed landscaping, including the number of trees to be removed and the number of trees to be planted.</li> <li>Identify any services to be relocated or rerouted to facilitate the development.</li> <li>Address CPTED Principles.</li> </ul>	The proposal impacts on visual amenity are assessed in Section 17.6. Design plans for the proposal and the key features during construction and operation are provided in Section 2 and Appendix B. Proposed landscaping and vegetation clearing are provided in Technical Report 6. CPTED principles are addressed in Section 3.7		
Key issue 17: Staging			
Provide details regarding the staging of the proposed development (if any).	Construction staging for the proposal is outlined in <b>Section 3.6.5.</b>		
Key issue 18: Construction hours			
Identify proposed construction hours and provide details of the instances where it is expected that works will be required to be carried out outside the standard construction hours.	Proposed construction hours and work duration are provided in <b>Table 3-1.</b>		
Plans and documents			
<ul> <li>The EIS must include all relevant plans, architectural drawings, diagrams and relevant documentation required under Schedule 1 of the Regulation. Provide these as part of the EIS rather than as separate documents.</li> <li>In addition, the EIS must include the following: <ul> <li>high quality maps of the subject site and proposal;</li> <li>detailed plans, sections and elevation of the proposal;</li> <li>a site survey plan, showing existing levels, location and height of existing structures and site boundaries</li> <li>technical details and associated data for any completed surface and groundwater modelling</li> <li>a Sediment and Erosion Control Plan.</li> </ul> </li> </ul>	Plans of the proposal are provided in <b>Section 3</b> . Progressive site-specific erosion and sediment control plans will be prepared by the construction contractor in accordance with environmental management and mitigation measure SW2.		



Requirement	Where addressed in this EIS		
Consultation			
<ul> <li>During the preparation of the EIS, you must consult with the relevant local, State or Commonwealth government authorities, service providers, community groups and affected landowners.</li> <li>Local, State or Commonwealth government authorities, including the: <ul> <li>Central Darling Shire Council</li> <li>Biodiversity and Conservation Division of the Department of Planning, Industry and Environment</li> <li>Department of Regional NSW – DPI Fisheries</li> <li>Water Group of the Department of Planning, Industry and Environment</li> <li>Department of Planning, Industry and Environment – Crown Lands</li> <li>Environment Protection Authority</li> <li>Transport for NSW</li> <li>NSW Rural Fire Service</li> <li>NSW State Emergency Services</li> <li>Commonwealth Department of Agriculture, Water and the Environment</li> </ul> </li> </ul> <li>Specialist interest groups, including Local Aboriginal Land Councils</li> <li>The public, including community groups and adjoining affected landowners</li>	Consultation with agency stakeholders was carried out between 2019 and 2022 and is detailed in Section 5.		
The EIS must describe the consultation process and the issues raised, and identify where the design of the infrastructure has been amended in response to these issues. Where amendments have not been made to address an issue, a short explanation should be provided.	The EIS consultation process and issues raised by stakeholders are identified in <b>Section 5.4</b> . The responses to issues raised are provided in <b>Appendix D</b> .		
Further consultation after 2 years			
If you do not lodge an EIS for the infrastructure within 2 years of the issue date of these SEARs, you must consult further with the Planning Secretary in relation to the preparation of the EIS.	The environmental impact statement has been lodged within two years of the date of issue of the SEARs (28 August 2020).		
References			
The assessment of the key issues listed above must take into account relevant guidelines, policies, and plans as identified.	References are provided in Section 25.		



#### Appendix A.1 Bilateral agreement checklist

Attachment A to SEARs – Guidelines for preparing assessment documentation relevant to the EPBC Act for proposals being assessed under the NSW Assessment Bilateral – Wilcannia Weir Replacement (2020/8713)

Requirement	Where addressed in this EIS
Introduction	
<ol> <li>These guidelines provide information on assessment requirements in relation to matters of national environmental significance (MNES) in accordance with the New South Wales Bilateral Agreement relating to environmental assessment (2020). To meet requirements, the project must be assessed in the manner specified in Schedule 1 to that agreement including that the assessment documentation contains:         <ol> <li>An assessment of all impacts that the action is likely to have on each matter protected by a provision of Part 3 of the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).</li> <li>Enough information about the proposal and its relevant impacts to allow the Commonwealth Minister to make an informed decision on whether or not to approve.</li> <li>Information addressing the matters outlined in Schedule 4 of the Environment Protection and Biodiversity Conservation Regulations (2000).</li> </ol> </li> </ol>	A Biodiversity Development Assessment Report (refer to <b>Technical</b> <b>Report 2</b> ) and Aquatic Ecology Impact Assessment (refer to <b>Technical Report 3</b> ) have been prepared in accordance with these requirements.
<ul> <li>2) In the circumstance that a proposal has been determined to be a 'controlled action' requiring full assessment, the decision will identify which MNES protected under the EPBC Act have triggered for assessment. These are called the controlling provisions. Proponents are only required to provide an assessment of protected matters under the controlling provisions that have been triggered. Following is the list of controlling provisions: <ul> <li>i. listed threatened species and communities (sections 18 and 18A)</li> </ul> </li> </ul>	The environmental impact statement includes a Biodiversity Development Assessment Report (refer to <b>Technical Report 2</b> ) and Aquatic Ecology Impact Assessment (refer to <b>Technical Report 3</b> ) that assess the protected matters under the controlling provisions listed.
3) The proponent must consider each of the protected matters under the triggered controlling provisions that may be impacted by the action. The Department of Agriculture, Water and Environment has provided a list of threatened species and communities that are considered to be at risk of impact from the proposal at <b>Attachment 1</b> . Note that this may not be a complete list and it is the responsibility of the proponent to undertake an analysis of the relevant impacts and ensure all protected matters that are likely to be impacted are assessed for the Commonwealth Minister's consideration.	The threatened species and communities listed at Attachment 1 are considered in the Biodiversity Development Assessment Report (refer to <b>Technical Report 2</b> ) and Aquatic Ecology Impact Assessment (refer to <b>Technical Report 3</b> ) as applicable.

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Requirement	Where addressed in this EIS		
Relevant Regulations			
4) Assessment documentation prepared for the purposes of approval under the EPBC Act must, in addition to providing sufficient information for a decision, address the matters outlined in Schedule 4 of the Environment Protection and Biodiversity Conservation Regulations 2000 (Cth). The following includes requirements that have been identified as additional to the requirements prescribed in Schedule 2 of the NSW Environmental Planning and Assessment Regulations 2000. Proponents are advised to check that requirements in Schedule 4 of the EPBC Regulations have been appropriately addressed. http://www.austlij.edu.au/au/logis/cth/scopsel_reg/opaber2000697/	A checklist for matters outlined in Schedule 4 of the Environment Protection and Biodiversity Conservation Regulations 2000 is provided in <b>Appendix A.2</b> .		
Project Description			
<ul><li>5) The title of the action, background to the action of the action and current status.</li></ul>	Information on the proposal is summarised in <b>Table 3-1.</b>		
6) The precise location and description of all works to be undertaken (including associated offsite works and infrastructure), structures to be built or elements of the action that may have impacts on MNES.	The location of the proposal is described in <b>Section 3.2</b> . The structures proposed to be built are described in		
7) How the action relates to any other actions that have been, or are being taken in the region affected by the action.	Other projects in the vicinity of the proposal are described in <b>Section 22.3</b> . Potential cumulative impacts with these other projects are assessed in <b>Section 22.5</b> .		
8) How the works are to be undertaken and design parameters for those aspects of the structures or elements of the action that may have relevant impacts on MNES.	A description of how the proposal would be constructed is provided in <b>Section 3.6</b> .		
Impacts			
<ul> <li>9) The EIS must include an assessment of the relevant impacts of the action on the matters protected by the controlling provisions, including: <ol> <li>a description and detailed assessment of the nature and extent of the likely direct, indirect and consequential impacts, including short term and long term relevant impacts;</li> <li>a statement whether any relevant impacts are likely to be unknown, unpredictable or irreversible;</li> </ol></li></ul>	Matters protected by the controlling provisions are assessed in Sections 7 and 9 and Appendix D of <b>Technical Report 2</b> and Section 7.2 and Appendix B.1 of <b>Technical Report 3</b> .		
iii. analysis of the significance of the relevant impacts; and			
iv. any technical data and other information used or needed to make a detailed assessment of the relevant impacts.			

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Requirement	Where addressed in this EIS
Avoidance, mitigation and offsetting	
<ul> <li>10) For each of the relevant matters protected that are likely to be significantly impacted by the action, the EIS must provide information on proposed avoidance and mitigation measures to manage the relevant impacts of the action including: <ul> <li>i. a description, and an assessment of the expected or predicted effectiveness of the mitigation measures</li> <li>ii. any statutory policy basis for the mitigation measures</li> <li>iii. the cost of the mitigation measures</li> <li>iv. an outline of an environmental management plan that sets out the framework for continuing management, mitigation and monitoring programs for the relevant impacts of the action, including any provisions for independent environmental auditing</li> </ul> </li> </ul>	Avoidance and mitigation measures are detailed in Sections 8 and 10 of <b>Technical Report 2</b> and Section 10 of <b>Technical</b> <b>Report 3</b> .
v. the name of the agency responsible for endorsing or approving each mitigation measure or monitoring program.	
11) Where a significant residual adverse impact to a relevant protected matter is considered likely, the EIS must provide information on the proposed offset strategy, including discussion of the conservation benefit associated with the proposed offset strategy.	The need for biodiversity offsets and a biodiversity offset strategy are discussed in Sections 12.2 and 12.3 of <b>Technical</b> <b>Report 2</b> and Section 9 of <b>Technical Report 3</b> .
<ul> <li>12) For each of the relevant matters likely to be impacted by the action the EIS must provide reference to, and consideration of, relevant Commonwealth guidelines and policy statements including any: <ol> <li>conservation advice or recovery plan for the species or community</li> <li>relevant threat abatement plan for a process that threatens the species or community</li> <li>wildlife conservation plan for the species</li> <li>management plan for Ramsar wetland</li> <li>management plan for a World Heritage property or National Heritage place</li> <li>Marine Bioregional Plan</li> <li>any strategic assessment.</li> </ol> </li> <li>[Note: the relevant guidelines and policy statements for each species and community are available from the Department of the Environment Species Profiles and Threats Database.]</li> </ul>	Guidelines and policy statements referenced in the assessment of matters protected by the controlling provisions are identified in Section6.3.2 and Appendix D of <b>Technical Report 2</b> and Section 2.3 and Appendix B.1 of <b>Technical Report 3</b> .
13) In addition to the general requirements described above, specific information is required with respect to each of the determined controlling provisions. These requirements are outlined in paragraphs 14-20.	Refer to the sections below.



Requirer	nent	Where addressed in this EIS
KEY ISSU	JES	
Biodiver	sity (threatened species and communities)	
14) The comm comm descr specie vicinit likely	EIS must identify <u>each</u> EPBC Act listed threatened species and nunity likely to be impacted by the action. For any species and nunities that are likely to be impacted, the proponent must provide a iption of the nature, quantum and consequences of the impacts. For es and communities potentially located in the project area or in the ty that are not likely to be impacted, provide evidence why they are not to be impacted.	EPBC Act listed threatened ecological communities are discussed in Section 7.3 of <b>Technical</b> <b>Report 2</b> and threatened plants and animals are discussed in Sections 7.4 and 7.5 of <b>Technical</b> <b>Report 2</b> and Section 4.3.2 of <b>Technical Report 3</b> . Assessment of the nature, quantum and consequences of impacts on species and communities is discussed in Sections 9.1 to 9.3 and Appendix D of <b>Technical</b> <b>Report 2</b> and Section 7.2 and Appendix B.1 of <b>Technical Report 3</b> .
15) For be im	<u>each</u> of the EPBC Act listed threatened species and communities likely to pacted by the action the EIS must provide a separate:	Sections 6.2 and 6.4, and 7.3 to 7.5 and Appendix D
a)	description of the habitat (including identification and mapping of suitable breeding habitat, suitable foraging habitat, important populations and habitat critical for survival), with consideration of, and reference to, any relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plans;	of <b>Technical Report 2</b> and Section 4.3 and Appendix A of <b>Technical Report 3</b> provide a description of any habitat present for MNES.
b)	details of the scope, timing and methodology for studies or surveys used and how they are consistent with (or justification for divergence from) published Australian Government guidelines and policy statements;	Details of survey methods are described in Sections 5 and 6 of <b>Technical Report</b> <b>2</b> for communities and threatened species
c)	description of the relevant impacts of the action having regard to the full national extent of the species or community's range;	respectively and Section 3.3 of Technical Report 3.
d)	description of the specific proposed avoidance and mitigation measures to deal with relevant impacts of the action;	Impacts to EPBC Act listed biodiversity are described
e)	identification of significant residual adverse impacts likely to occur after the proposed activities to avoid and mitigate all impacts are taken into account;	in Sections 7 and 9 and Appendix D of <b>Technical</b> <b>Report 2</b> and Section 7.2 and Appendix B.1 of
f)	a description of any offsets proposed to address residual adverse significant impacts and how these offsets will be established;	<b>Technical Report 3</b> . Avoidance and mitigation
g)	details of how the current published NSW Biodiversity Assessment Method (BAM) has been applied in accordance with the objects of the EPBC Act to offset significant residual adverse impacts; and	measures are detailed in Sections 8 and 10 of <b>Technical Report 2</b> and



Requirement	Where addressed in this EIS
<ul> <li>h) details of the offset package to compensate for significant residual impacts including details of the credit profiles required to offset the action in accordance with the FBA and/or mapping and descriptions of the extent and condition of the relevant habitat and/or threatened communities occurring on proposed offset sites.</li> <li>[Note: For the purposes of approval under the EPBC Act, it is a requirement that offsets directly contribute to the ongoing viability of the specific protected matter impacted by a proposed action and deliver an overall conservation outcome that improves or maintains the viability of the MNES i.e. 'like for like'. In applying the BAM, residual impacts on EPBC Act listed threatened ecological communities must be offset with Plant Community Type(s) (PCT) that are ascribed to the specific EPBC listed ecological community. PCTs from a different vegetation class will not generally be acceptable as offsets for EPBC listed communities.]</li> </ul>	Section 10 of Technical Report 3. Application of the BAM is described in Sections 4 to 6 and Sections 8 to 12 of Technical Report 2. The need for biodiversity offsets and a biodiversity offset strategy are discussed in Sections 12.2 and 12.3 of Technical Report 2 and Section 9 of Technical Report 3. Note: It is assumed that the reference to "the FBA" here is intended to say, "the BAM".
16) Any significant residual impacts not addressed by the Biodiversity Assessment Method may need to be addressed in accordance with the Environment Protection and Biodiversity Conservation Act 1999 Environmental Offset Policy.	The need for biodiversity offsets and a biodiversity offset strategy are discussed in Sections 12.2 and 12.3 of <b>Technical</b> <b>Report 2</b> and Section 9 of <b>Technical Report 3</b> .
Other approvals and conditions	
17) Information in relation to any other approvals or conditions required must include the information prescribed in Schedule 4 Clause 5 (a) (b) (c) and (d) of the EPBC Regulations 2000.	Section 4.3
Environmental Record of person proposing to take the action	
18) Information in relation to the environmental record of a person proposing to take the action must include details as prescribed in Schedule 4 Clause 6 of the EPBC Regulations 2000.	Appendix K
Information sources	
19) For information given in an EIS, the EIS must state the source of the information, how recent the information is, how the reliability of the information was tested; and what uncertainties (if any) are in the information.	References are provided in Section 25. Uncertainties are addressed in Section 24.4.

52 K

Requirement	Where addressed in this EIS
Attachment 1 – Protected matters relevant to the Wilcannia Weir Replacement Pr	oject (2020/8713)
Based on the information available in the referral, the Department of Agriculture, Water and Environment considers the proposed action is likely to have a significant impact on the following matters of national environmental significance, including but not limited to: Listed threatened species and communities	An assessment of the potential impacts of the proposal on species listed under the EPBC Act is provided in <b>Technical</b> <b>Report 2</b> and <b>Technical</b> <b>Report 3</b> and summarised in <b>Section 12</b> and
<ul> <li>Coolibah – Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions (Coolibah – Black Box Woodlands) – endangered</li> </ul>	
<ul> <li>Murray Cod (Maccullochella peelii) – vulnerable</li> </ul>	Section 15 respectively.
<ul> <li>Silver Perch (<i>Bidyanus bidyanus</i>) – critically endangered.</li> </ul>	
The Department of Agriculture, Water and the Environment also considers that there is a real chance or possibility that the project's activities will significantly impact on the following:	
<ul> <li>Grey Falcon (Falco hypoleucos) – vulnerable</li> </ul>	
<ul> <li>Atriplex infrequens – vulnerable</li> </ul>	
<ul> <li>Menindee Nightshade (Solanum karsense) – vulnerable.</li> </ul>	



# Appendix A.2 Environment Protection and Biodiversity Conservation Regulations 2000 checklist

Requirements under Schedule 4 – Matters to be addressed by draft public environment report and environmental impact statement	Where addressed in this EIS
1 General information	
1.01 The background of the action including: (a) the title of the action;	EIS declaration
(b) the full name and postal address of the designated proponent;	EIS declaration
(c) a clear outline of the objective of the action;	Section 1.1.2
(d) the location of the action;	EIS declaration
(e) the background of the development of the action;	Section 1.1.1
(f) how the action relates to any other actions (of which the proponent should reasonably be aware) that have been, or are being, taken or that have been approved in the region affected by the action;	Section 22.3
(g) the current status of the action;	Section 1.1.1
(h) the consequences of not proceeding with the action	Section 2.1
2 Description	
2.01 A description of the action, including: (a) all the components of the action;	Section 3.4
(b) the precise location of any works to be undertaken, structures to be built or elements of the action that may have relevant impacts;	Section 3.2
(c) how the works are to be undertaken and design parameters for those aspects of the structures or elements of the action that may have relevant impacts;	Section 3.6
(d) relevant impacts of the action;	Sections 7 to 22
(e) proposed safeguards and mitigation measures to deal with relevant impacts of the action;	Appendix E
(f) any other requirements for approval or conditions that apply, or that the proponent reasonably believes are likely to apply, to the proposed action;	Section 4.3
<ul><li>(g) to the extent reasonably practicable, any feasible alternatives to the action, including:</li><li>(i) if relevant, the alternative of taking no action;</li></ul>	Section 2.2
(ii) a comparative description of the impacts of each alternative on the matters protected by the controlling provisions for the action;	Section 2.2
(iii) sufficient detail to make clear why any alternative is preferred to another;	Section 2.2
<ul><li>(h) any consultation about the action, including:</li><li>(i) any consultation that has already taken place;</li></ul>	Section 5.3
(ii) proposed consultation about relevant impacts of the action;	Section 5.5.1
(iii) if there has been consultation about the proposed action—any documented response to, or result of, the consultation;	Section 5.4
(i) identification of affected parties, including a statement mentioning any communities that may be affected and describing their views.	Sections 5.2 and 5.4

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Requirements under Schedule 4 – Matters to be addressed by draft public environment report and environmental impact statement	Where addressed in this EIS	
3 Relevant impacts		
3.01 Information given under paragraph 2.01(d) must include: (a) a description of the relevant impacts of the action;	Sections 7.6, 8.5, 9.6, 10.5.2, 11.6, 12.6, 13.6, 14.6, 15.6, 16.7, 17.6, 18.5, 19.6, 20.6, 21.1.4, 21.2.4, 21.3.4,	
(b) a detailed assessment of the nature and extent of the likely short term and long term relevant impacts;		
(c) a statement whether any relevant impacts are likely to be unknown, unpredictable or irreversible;	21.4.4 and 22.5	
(d) analysis of the significance of the relevant impacts;		
(e) any technical data and other information used or needed to make a detailed assessment of the relevant impacts.		
4 Proposed safeguards and mitigation measures		
4.01 Information given under paragraph 2.01(e) must include: (a) a description, and an assessment of the expected or predicted effectiveness of, the mitigation measures;	Sections 7.6, 8.5, 9.6, 10.5.2, 11.6, 12.6, 13.6, 14.6, 15.6, 16.7, 17.6, 18.5, 19.6, 20.6, 21.1.4, 21.2.4, 21.3.4, 21.4.4 and 22.5	
(b) any statutory or policy basis for the mitigation measures;	Sections 7.1, 10.1, 11.1, 12.1, 13.1, 14.1, 15.1, 16.1, 17.1, 19.1, 20.1, 21.1.1, 21.2.1, 21.3.1, and 21.4.1	
(c) the cost of the mitigation measures;	A quantity surveyor's report has been provided to the Department of Planning and Environment.	
(d) an outline of an environmental management plan that sets out the framework for continuing management, mitigation and monitoring programs for the relevant impacts of the action, including any provisions for independent environmental auditing;	Section 24.6.3	
(e) the name of the agency responsible for endorsing or approving each mitigation measure or monitoring program;	Section 4.1	
(f) a consolidated list of mitigation measures proposed to be undertaken to prevent, minimise or compensate for the relevant impacts of the action, including mitigation measures proposed to be taken by State governments, local governments or the proponent.	Appendix E	



Requirements under Schedule 4 – Matters to be addressed by draft public environment report and environmental impact statement	Where addressed in this EIS
5 Other approvals and conditions	
<ul><li>5.01 Information given under paragraph 2.01(f) must include:</li><li>(a) details of any local or State government planning scheme, or plan or policy under any local or State government planning system that deals with the proposed action, including:</li></ul>	
(i) what environmental assessment of the proposed action has been, or is being, carried out under the scheme, plan or policy;	Section 4.1
(ii) how the scheme provides for the prevention, minimisation and management of any relevant impacts;	Appendix E
(b) a description of any approval that has been obtained from a State, Territory or Commonwealth agency or authority (other than an approval under the Act), including any conditions that apply to the action;	Section 4.1
(c) a statement identifying any additional approval that is required;	Section 4.3
(d) a description of the monitoring, enforcement and review procedures that apply, or are proposed to apply, to the action.	Section 3.5.1 and Appendix H
6 Environmental record of person proposing to take the action	
<ul> <li>6.01 Details of any proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against:</li> <li>(a) the person proposing to take the action: and</li> </ul>	Appendix F
(b) for an action for which a person has applied for a permit, the person making the application.	Not applicable
6.02 If the person proposing to take the action is a corporation—details of the corporation's environmental policy and planning framework.	Appendix F
7 Information sources	
7.01 For information given in a draft public environment report or environmental impact statement, the draft must state: (a) the source of the information; and	Section 25
(b) how recent the information is; and	Section 25
(c) how the reliability of the information was tested; and	Sections 7.2, 8.1, 9.2, 10.2, 11.2, 12.2, 13.2, 14.2, 15.2, 16.2, 17.2, 18.1, 19.2, 20.2, 21.1.2, 21.2.2, 21.3.2, 21.4.2 and 22.2
(d) what uncertainties (if any) are in the information.	Section 24.4

### Appendix A.3 Environmental Planning and Assessment Regulation 2021 checklist

For Env	m and content requirements under sections 190 and 192 of Division 5 of the ironmental Planning and Assessment Regulation 2021	Where addressed in this EIS
190	Form of environmental impact statement	
(1)	An environmental impact statement must contain the following information—	
(a)	the name, address and professional qualifications of the person who prepared the statement,	EIS declaration
(b)	the name and address of the responsible person,	EIS declaration
(c)	the address of the land—	
	(i) to which the development application relates, or	EIS declaration
	<ul> <li>(ii) on which the activity or infrastructure to which the statement relates will be carried out,</li> </ul>	
(d)	a description of the development, activity or infrastructure,	EIS declaration
(e)	an assessment by the person who prepared the statement of the environmental impact of the development, activity or infrastructure, dealing with the matters referred to in this Division.	EIS declaration
(2)	The person preparing the statement must consider—	
(a)	For State significant development—the State Significant Development Guidelines, or	Not applicable
(b)	For State significant infrastructure—the State Significant Infrastructure Guidelines.	
(3) pers	An environmental impact statement must also contain a declaration by the son who prepared the statement of the following—	
(a)	the statement has been prepared in accordance with this Division, and	
(b)	the statement contains all available information that is relevant to the environmental assessment of the development, activity or infrastructure, and	
(c)	the information contained in the statement is not false nor misleading.	
192 Content of environmental impact statement		
(1) An environmental impact statement must contain the following—		
(a)	a summary of the environmental impact statement,	Executive summary
(b)	a statement of the objectives of the development, activity or infrastructure,	Section 1.1.2
(c)	an analysis of feasible alternatives to the carrying out of the development, activity or infrastructure, considering its objectives, including the consequences of not carrying out the development, activity or infrastructure,	Section 2.2
(d)	an analysis of the development, activity or infrastructure, including—	Section 3
	(i) a full description of the development, activity or infrastructure, and	



For Env	Form and content requirements under sections 190 and 192 of Division 5 of the Environmental Planning and Assessment Regulation 2021Where addressed in this EIS								
	(ii)	a general description of the environment likely to be affected by the development, activity or infrastructure, together with a detailed description of those aspects of the environment that are likely to be significantly affected, and	Sections 3.2, 7.5, 8.4, 9.5, 10.5, 11.5, 12.5, 13.5, 14.5, 15.5, 16.5, 17.5, 18.4, 19.5 and 20.5						
	(iii)	the likely impact on the environment of the development, activity or infrastructure, and	Sections 7.6, 8.5, 9.6, 10.5.2, 11.6, 12.6, 13.6, 14.6, 15.6, 16.7, 17.6, 18.5, 19.6, 20.6, 21.1.4, 21.2.4, 21.3.4, 21.4.4 and 22						
	(iv)	a full description of the measures to mitigate adverse effects of the development, activity or infrastructure on the environment, and	Sections 7.6.3, 8.6, 9.7, 10.7, 11.7, 12.7, 13.7, 14.7, 15.7, 16.8, 17.7, 18.6, 19.7, 20.7, 21.1.5, 21.2.5, 21.3.5, 21.4.5 and 21.5.2						
	(v)	a list of any approvals that must be obtained under another Act or law before the development, activity or infrastructure may lawfully be carried out,	Section 4.3						
(e)	a con the m	npilation, in a single section of the environmental impact statement, of neasures referred to in item (d)(iv),	Appendix E						
(f)	the re infras the p	easons justifying the carrying out of the development, activity or structure, considering biophysical, economic and social factors, including rinciples of ecologically sustainable development set out in section 193.	Sections 21.5 and 23						



## Appendix B. Detailed maps and plans





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	REV.	PLAN No.
Darling River Survey Plan 1 of 3		– SHEET 01 OF 11

D/S - Design or Prefered Location of Cross Section P/U - Pick up or survey location of Cross Section



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72.3	7	1.1	70.0	68.4	67.C	64.9	62.7	61.7	61.7	61.4	61.0	60.5	60.5	60.5	60.5	61.6	61.1	61.7	62.5	64.0	65.2	67.1	0.69.0	69.6	3.27	73.2	
									0.021	0.332	0.695	0.828	0.826	0.869	0.843	0.176	0.625	0.000									
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-40.178	007.00	-33.468	-30.383	-27.607	-25.246	-22.395	-19.166	-16.738	-16.295	-14.351	-10.403	-6.810	-3.101	-0.752	0.000	1.546	3.854	6.590	10.014	14.504	18.529	21.649	24.733	28.926	34.616	44.371	

Cross Section D 3

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65.579	63.854	63.222	62.733	62.482	62.567	62.646	62.702	62.943	62.956	63.011	62.964	63.671	65.054	67.034	69.062	72.386	72.908
-30.675	-24.860	-21.655	-19.881	-17.807	-16.541	-12.588	-5.936	0.000	0.317	5.304	11.269	15.426	18.935	22.409	25.855	30.990	42.605

Cross Section D 6

REV. PLAN No.





Datum59

RIVER BED LEVELS

Depth

OFFSET

SYSTEM:

DISCIPLINE:

FACILITY NAME:

LOCATION CODE:

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LAST AMENDED:

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DARLING WATER LEVELS

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72.393 72.494 72.532 72.527 2.633 2.633

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Cross Section D 13 Horizontal Scale 1:500 Vertical Scale 1:500

SURVEY: 23/01/20

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71.413 70.125 68.681 66.934 64.256

-30.080 -28.334 -26.096 -23.501 -19.805 -15.293 -14.760

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REV. PLAN No. Wilcannia - Darling River **Cross Section Survey Sections** SHEET 05 OF 11 D9 to D14

		[					
62.648	64.754	66.045	69.047	70.504	71.286	72.233	
12.298	17.812	20.149	25.441	28.180	30.824	44.626	

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64.750	66.264	68.420	71.216	73.184	72.627	
16.762	20.009	23.875	28.126	31.612	47.651	

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12.124	62.350	63.559	65.033	66.685	68.254	70.009	71.068	72.648	
0.1.0	18.517	21.310	24.068	27.010	29.359	32.040	35.446	59.655	

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RIVER BED LEVELS	71.36	71.41	69.80	68.23	66.65	64.93	62.87	61.86	61.56	61.62	615	61.72	62.66	64.17	65.31	66.65	70.01	71.57	73.17	73.12	73.14
Depth																					
DARLING WATER LEVELS																					
OFFSET	-47.648	-40.033	-34.511	-29.415	-25.790	-20.621	-15.569	-9.713	-4.526	-1.215	4 7 44	6.020	10.486	13.198	17.499	21.518	26.467	29.549	32.052	40.355	44.692
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65.384 64.058 63.323

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RIVER BED LEVELS

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61.170 61.157 61.597 61.660 61.660

0.427 0.440 0.000

62.763 64.042 65.450

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REV. PLAN No. Wilcannia - Darling River **Cross Section Survey Sections** NW, N1 to N5



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117.07	72.263	72.533	
21.703	39.709	51.675	

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72.462	73.320	
37.309	48.239	

73.142	73.241	
53.770	67.881	





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**Cross Section Survey Sections** N6 to N14

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**SHEET 07 OF 11** 



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RIVER BED LEVELS	71.695	71.331	70.494	68.462	66.181	65.568	65.087	64.790	64.263 63 767	107.00	03.013	62.285	62.153	62.370	62.787	63.765	64.327	65.000	65.925	67.386	67.927	71.833	72 053	000.27
Depth									0000	0.000	7.GL .U	1.480	1.612	1.395	0.978									
DARLING WATER LEVELS									20 7GE	00.700	697.69	63.765	63.765	63.765	63.765									
OFFSET	-32.219	-29.661	-25.264	-21.877	-18.176	-17.342	-15.926	-14.612	-12.582	-9.130	-9.144	0.000	0.907	7.043	14.122	18.889	21.100	24.578	27.001	28.985	31.689	38.087	46 210	40.4.10
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70.122 68.124 67.280 65.689

-24.554 -22.315 -20.746 -18.117

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RIVER BED

DARLING WATER LEVELS

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Cross Section E 6 Horizontal Scale 1:500 Vertical Scale 1:500 DATE OF SURVEY: 20&21/0:	//2020	Cross Section E 6		Cross Sec Horizontal Vertical Sc DATE OF	tion E 7 Scale 1:500 Cross Section E 7 ale 1:500 SURVEY: 20821/01/2020
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64.186 64.724 65.005 65.960 66.109

6.302 8.156 11.335 14.878 16.215

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8.089 1.517

1.076 26.667 71.226

42.476



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65.038	63.717	63.348	62.892	62.381	62.338	62.176	62.567	63.047	63.799	65.759	67.470	68.016	69.488	70.271	72.474	74.366	74.656	74.660
	0.048	0.417	0.873	1.384	1.427	1.589	1.198	0.718										
	63.765	63.765	63.765	63.765	63.765	63.765	63.765	63.765										
-20.014	-16.013	-11.022	-6.074	-1.189	0.000	4.446	10.302	16.872	19.158	23.279	24.824	26.292	31.065	32.473	35.746	38.997	55.061	66.040

Cross Section E 2



REV. PLAN No.



as confidential and must not be disclosed to any third party.

PLOT DATE: 4/08/2020 9:56:56 PM

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REV. PLAN No. **SHEET 09 OF 11** E9 to E16

64.129	62.719	60.991	59.307	59.368	59.513	59.685	61.871	64.196	65.277	68.232	70.944	74.310	77.360	77.669	
		3.069	4.753	4.692	4.547										
		64.060	64.060	64.060	64.060										
-21.548	-15.403	-8.923	-2.253	0.000	5.397	11.783	15.372	18.431	22.328	28.004	33.395	38.947	44.776	55.928	









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Datum60											Γ			ζΙ					
RIVER BED LEVELS	74.025	73.821	72.229	70.889	65.869	64.945	64.409	64.081	63.734	63.436	63.197	63.135	64.048	64.104 ce 20e	C22.00	69.492	71.510	74.246	74.096
Depth								0.019	0.366	0.664	0.903	0.965	0.052	-0.004					
DARLING WATER LEVELS								64.100	64.100	64.100	64.100	64.100	64.100	64.100					
OFFSET	-44.565	-41.113	-33.379	-30.666	-20.987	-13.945	-9.855	-7.378	0.000	3.086	5.752	8.413	14.905	15.610	21.032	24.924	27.738	32.471	49.698
	Cross Horizo Vertica DATE	Secti ntal Sc al Sc OF S	ion E 21 Scale 1:50 ale 1:500 SURVEY:	00 208	21/01/2020		-		Cross Se	ctio	n E	21			-				









Wilcannia - Darling River **Cross Section Survey Sections** E17 to E25



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64.067	64.036	63.394	62.308	61.935	61.703	61.885	63.190	66.266	68.280	70.311	74.342	73.506	73.999	74.601
0.033	0.064	0.706	1.792	2.165	2.397	2.215	0.910							
64.100	64.100	64.100	64.100	64.100	64.100	64.100	64.100							
-12.154	-11.433	-9.015	-4.209	0.000	2.621	10.374	14.745	24.074	28.855	33.576	37.694	40.842	43.884	52.795

Cross Section E 22

**SHEET 10 OF 11** 

REV. PLAN No.



-35.234 -31.026 -27.286 -22.549 -20.366 17.213 546 58.837 2.414 12.434 2.070 10.831 24.609 1.466 55.387 3.533 OFFSET Cross Section E 31 Horizontal Scale 1:500 Cross Section E 31 Vertical Scale 1:500 DATE OF SURVEY: 20&21/01/2020 SYSTEM: DESIGNED SCALES SHEET WaterNSW FACILITY NAME: A3 LOCATION CODE: FILE REPORT JOB DRAWN 29/01/2020 DISCIPLINE: DRAWING TYPE: VERIFIED APPROVED APPROVED IP COPYRIGHT RESERVED This drawing is the property of Water NSW. It must not be DRAWING STATUS: Issue CHECKED 29/01/2020 copied without prior written consent and must be returned LAST AMENDED: -on request. The information shown on it is to be regarded PLOT DATE: 4/08/2020 9:57:06 PM GW as confidential and must not be disclosed to any third party.

DARLING WATER LEVELS

# Wilcannia - Darling River

E26 to E30





### Appendix C. Statutory compliance table

The following statutory compliance table identifies all the relevant NSW and Commonwealth statutory requirements for the proposal and identifies where they have been addressed in the environmental impact statement.

Legislation	Relevance to the proposal	Where addressed in the EIS
NSW legislation		
Aboriginal Land Rights Act 1983 (NSW)	<ul> <li>The Aboriginal Land Rights Act 1983 establishes the NSW</li> <li>Aboriginal Land Council and local Aboriginal land councils. The Act requires these bodies to:</li> <li>Take action to protect the culture and heritage of Aboriginal persons in the council's area, subject to any other law</li> <li>Promote awareness in the community of the culture and heritage of Aboriginal persons in the council's area.</li> <li>The preamble of the Act states that land was traditionally owned and occupied by Aboriginal people and accepts that as a result of past government decisions, the amount of land set aside for Aboriginal people was reduced without compensation. To redress the loss of land, Aboriginal land councils can claim Crown land which, if granted, is transferred as freehold title. 'Claimable Crown lands' includes Crown lands that are not lawfully used or occupied and that are not needed, nor likely to be needed, for an essential public purpose.</li> <li>Under Part 2 of the Aboriginal Land Rights Act 1983, claimable Crown lands do not include lands that are the subject of an approved determination of native title.</li> <li>As the proposal area is subject to determinations of native title (exclusive and non-exclusive), the proposal does not include any claimable Crown lands</li> </ul>	Native title determinations that apply to land within the proposal area are discussed in Section 16.1.2.
<i>Biosecurity Act</i> 2015	The <i>Biosecurity Act 2015</i> provides for the prevention, elimination, minimisation and management of biosecurity risks in NSW. Section 22 of the Act requires that any person who deals with any plant, who knows (or ought to know) of any biosecurity risk, has a duty to ensure the risk is prevented, eliminated or minimised so far as is reasonably practicable. The <i>Biosecurity Act 2015</i> is relevant because of the potential need to manage priority weeds during the construction and operation of the proposal.	The management of weeds is addressed in Section 12 and Technical Report 2.
Biodiversity Conservation Act 2016	The <i>Biodiversity Conservation Act 2016</i> identifies threatened species, ecological communities and key threatening processes and establishes a framework to avoid, minimise and offset the impacts of proposed development and land use change on biodiversity. Under section 7.9 of the <i>Biodiversity Conservation Act 2016</i> , any State significant infrastructure application is to be accompanied by a biodiversity development assessment report unless it is determined that the proposed development is not likely to have any significant impact on biodiversity values.	A biodiversity development assessment report has been prepared and is provided in <b>Technical</b> <b>Report 2</b> and summarised in <b>Section 12</b> .

Legislation	Relevance to the proposal	Where addressed in the EIS
Contaminated Land Management Act 1997	The <i>Contaminated Land Management Act 1997</i> outlines the circumstances in which notification to the Environment Protection Authority is required in relation to the contamination of land. This may become relevant during construction and / or operation of the proposal.	Contamination is assessed and further discussed in <b>Section 18.</b>
Crown Land Management Act 2016	The <i>Crown Land Management Act 2016</i> provides for the ownership, use and management of Crown land in NSW. The Act is relevant because the proposal is located on Crown Land.	The potential impacts of the proposal on land use, including Crown land, are considered in <b>Section 16</b> .
Fisheries Management Act 1994	The Fisheries Management Act 1994 provides for the conservation, protection and management of fisheries, aquatic systems and habitats in NSW. The Act is relevant as the proposal would directly and indirectly impact aquatic habitats and species.	An aquatic ecology assessment of the proposal has been prepared and is provided in <b>Technical</b> <b>Report 3</b> and summarised in <b>Section 13</b> .
Heritage Act 1977	The <i>Heritage Act 1977</i> provides for the conservation of buildings, works, relics and places that are of historic, scientific, cultural, social, archaeological, architectural, natural or aesthetic significance to the State. The Act is relevant as listed heritage items would be directly and indirectly impacted by the proposal.	A statement of heritage impact has been prepared and is provided in <b>Technical</b> <b>Report 5</b> and summarised in <b>Section 15</b> .
Land Acquisition (Just Terms Compensation) Act 1991	The Land Acquisition (Just Terms Compensation) Act 1991 controls the acquisition of land on just terms by authorities of the State with the objective of simplifying and expediting the compulsory acquisition process while ensuring compensation on just terms for the owners of land that is acquired by an authority of the State when the land is not available for public sale. The proposal does not require any land acquisition.	The land use impacts of the proposal are considered in <b>Section 16</b> .
Maritime Safety Act 1998	Maritime activity in NSW is governed by the <i>Marine Safety Act 1998</i> . The Act is relevant because the new weir would be a permanent obstruction to navigation along the Darling River (Baaka) at Wilcannia.	Traffic and transport impacts including impacts to navigation are considered in <b>Technical Report 7</b> and summarised in <b>Section 19</b> .
National Parks and Wildlife Act 1972	The <i>National Parks and Wildlife Act 1972</i> provides for the protection of Aboriginal objects and Aboriginal places in NSW. The Act is relevant because the proposal would directly and indirectly impact Aboriginal objects and places.	An Aboriginal cultural heritage assessment report has been prepared and is provided in <b>Technical</b> <b>Report 4</b> and summarised in <b>Section 14</b> .

Legislation	Relevance to the proposal	Where addressed in the EIS
Native Title (New South Wales) Act 1994	The <i>Native Title (New South Wales) Act 1994</i> operates to implement the Commonwealth <i>Native Title Act 1993</i> in NSW and to ensure consistency with the standards set in the Commonwealth Act. The Act is relevant to the proposal because it is located on land that is subject to determinations of native title.	Native title that exists in the proposal area is identified in <b>Section 16.1.2</b> .
Protection of the Environment Operations Act 1997	<ul> <li>An environment protection licence is required for scheduled activities or development work listed by the <i>Protection of the Environment Operations Act 1997</i>. The proposal is not of a kind listed in Schedule 1 of the Act and would not require an environment protection licence under this schedule.</li> <li>In accordance with Section 43(d) of the Act, environment protection licences may also be issued to control the carrying out of nonscheduled activities for the purpose of regulating water pollution.</li> <li>Construction activities must comply with the requirements for the <i>Protection of the Environment Operations Act 1997</i>, including but not limited to the following sections:</li> <li>Sections 115 and 116 (regarding disposal of waste, leaks, spillages and other escapes)</li> <li>Sections 120 (regarding pollution of waters)</li> <li>Section 139 (regarding noise pollution)</li> <li>Section 167 (regarding the appropriate maintenance and operation of plant and equipment).</li> <li>The <i>Protection of the Environment Operations Act 1997</i> is relevant to the proposal as it has the potential to cause air, noise and water pollution.</li> </ul>	The potential impacts of the construction of the proposal and the partial removal of the existing weir have been considered in Section 7 to Section 21.5.1 and appropriate management and mitigation safeguards proposed.
Roads Act 1993	The <i>Roads Act 1993</i> aims to establish the rights and procedures for using, opening and closing public roads. The Act is relevant because the proposal includes works next to the Barrier Highway, which is a classified road.	Traffic and transport impacts are assessed in <b>Technical Report 7</b> and summarised in <b>Section 19</b> .
Rural Fires Act 1997	The <i>Rural Fires Act 1997</i> provides for the prevention, mitigation and suppression of bush fires, and aims to protect environmental, cultural and community assets from damage arising from fires. The Act is relevant because Water Infrastructure NSW has a duty under the Act to take steps to prevent the occurrence of bush fires on land under its control.	Bush fire risks are considered in <b>Section 21.3</b> .
Waste Avoidance and Resource Recovery Act 2001	The <i>Waste Avoidance and Resource Recovery Act 2001</i> encourages the most efficient use of resources in order to reduce environmental harm. The Act is relevant to the proposal as it would generate waste, particularly during the construction phase.	Waste management is considered in <b>Section 21.2</b> .



Legislation	Relevance to the proposal	Where addressed in the EIS	
Water Management Act 2000	The aims of the <i>Water Management Act 2000</i> are to provide for the sustainable and integrated management of the State's water sources for the benefit of both present and future generations. The Act implicitly recognises the need to allocate and provide water for the environmental health of rivers and groundwater systems, while also providing license holders with more secure access to water and greater opportunities to trade water through the separation of water licenses from land. Section 50 of the <i>Water Management Act 2000</i> allows for the preparation of water sharing plans, which establish rules for the sharing of water in a particular water source between water users and the environment, and rules for the trading of water in a particular water source. The <i>Water Management Act 2000</i> provides protection for basic landholder rights, which include domestic and stock rights, harvestable rights and native title rights. Sections 52 to 55 of the Act allow for extraction under these rights without the need for water access licences. The Act requires water sharing plans to protect basic landholder rights by taking these rights into consideration before designing rules for licenced water extractions.	The water sharing plans relevant to the proposal are discussed in Sections 7.1.2 and 9.1.1 for surface water and groundwater respectively. Water access licences held within the vicinity of the proposal are identified in Table 7-2.	
Water Sharing Plan for the Barwon- Darling Unregulated River Water Source 2012	<ul> <li>The Darling River (Baaka) is subject to the Water Sharing Plan for the Barwon-Darling Unregulated River Water Source 2012 (the Barwon-Darling WSP).</li> <li>The Barwon-Darling WSP includes: <ul> <li>A long-term average annual extraction limit for the river</li> <li>A long-term average sustainable diversion limit for the river</li> <li>Restrictions on the take of water to protect 'active environmental water' and to restore connectivity within and between water sources following an extended dry period</li> <li>Protection of access to water for basic landholder rights, town water supply, and for licensed domestic and stock purposes.</li> </ul> </li> <li>The Barwon-Darling WSP identifies the volume of water that is available for use each year, the demand for water along the river, limits (caps) on the availability of water, and planned environmental water to maintain fundamental ecosystem health and other specific environmental purposes. It also includes a resumption of flow rule that is designed to ensure that flows that follow a prolonged low or no flow period are able to pass through the system.</li> </ul>	Amendments are required to the Barwon-Darling WSP to reflect the proposed operation of the proposal as well as changes to gauging locations (including upgrades). These changes are discussed in <b>Section 7.1.2</b> . The impact of the proposal on the resumption of flow rule is provided in <b>Section 7.6.2</b> .	
Commonwealth legislation			
Environment Protection and Biodiversity Conservation Act 1999	The Environment Protection and Biodiversity Conservation Act 1999 is the primary Commonwealth legislation relating to the environment and provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities, and heritage places. Under Part 3 of the Act, proposed 'actions' that have the potential to significantly impact on matters of national environmental significance, the environment of Commonwealth land, and/or the environment generally when being carried out by an Australian Government agency, must be referred	The potential impacts of the proposal on species listed under the EPBC Act are assessed in <b>Technical</b> <b>Report 2</b> and <b>Technical Report 3</b> and summarised in <b>Section 12</b> and	

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Legislation	Relevance to the proposal	Where addressed in the EIS
	to the Australian Minister for the Environment for assessment. If the Minister determines that a referred proposal is a 'controlled action' under the Act, the approval of the Minister would be required.	Section 13 respectively.
	Preliminary considerations of the proposal were identified in a scoping report which identified the potential for significant impact on protected matters, and WaterNSW referred the proposal to the Australian Minister for the Environment (EPBC Referral 2020/8713). WaterNSW was notified on 11 August 2020 that the proposal is a controlled action, with the controlling provision being 'listed threatened species and communities' (sections 18 and 18A of the <i>Environment Protection and Biodiversity Conservation Act 1999</i> ).	
	The notification confirmed that the proposal will be 'assessed under the assessment bilateral agreement with NSW'. The final SEARs for the proposal include the assessment requirements in relation to the <i>Environment Protection and Biodiversity Conservation Act 1999</i> . These requirements have been assessed by the biodiversity assessment (see Section 12, Section 13, Technical Report 2 and Technical Report 3).	
	The proposal was transferred from WaterNSW to Water Infrastructure NSW on 1 September 2021. Water Infrastructure NSW wrote to the Commonwealth Department of Agriculture, Water and the Environment to notify them of the change in proponent.	
	Following consideration of the results of the assessment by the DPE in accordance with the <i>Environmental Planning and Assessment Act</i> 1979, the Australian Minister for the Environment will make a separate decision whether or not to approve the proposal under the <i>Environment Protection and Biodiversity Conservation Act</i> 1999.	
	In accordance with the bilateral agreement, the environmental impact statement prepared for the proposal must consider the assessment requirements of the <i>Environment Protection and</i> <i>Biodiversity Conservation Act 1999</i> for potential impacts on matters of national environmental significance (specifically listed threatened species and ecological communities). The bilateral agreement assessment is required in addition to those listed in the SEARs.	
Water Act 2007	The Commonwealth <i>Water Act 2007</i> provides a legislative framework for the management of the Murray-Darling Basin in the national interest. The Act establishes the Murray-Darling Basin Authority (MDBA) as an independent authority that has functions and powers, including enforcement powers, to ensure that Murray- Darling Basin water resources are managed in an integrated and sustainable way. The Act requires the MDBA to prepare the Murray- Darling Basin Plan.	The impact of the proposal on flows in the Darling River (Baaka) are assessed in <b>Technical Report 1</b> and summarised in <b>Section 7</b> .
	The MDBA prepared the Murray-Darling Basin Plan 2012 (the Basin Plan) which was signed into law in November 2012. The Basin Plan is a statutory instrument that provides a co-ordinated framework for water use across all basin states and the ACT. It is the guiding document from which the MDBA will formulate and implement policy. The aim of the Basin Plan is to restore the Basin to a	

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Legislation	Relevance to the proposal	Where addressed in the EIS
	healthier and sustainable level and to manage water use for both environmental and human needs. The Basin Plan is reviewed every 10 years to allow for emerging climate change patterns, new information, tools and techniques to be considered. The first review will be conducted in 2026.	
	In accordance with the Commonwealth <i>Water Act 2007</i> , the MDBA is required to set limits on the amount of water (both surface and groundwater) that can be taken from basin water resources on a sustainable basis, known as long-term average sustainable diversion limits. The Basin Plan requires all Murray-Darling Basin states to prepare water resource plans (WRPs) to meet the Basin Plan goal of recovering 2,075 gigalitres per year of environmental water by setting sustainable diversion limits on the amount of water available for urban, industrial and agricultural use.	
	Basin state governments are currently developing WRPs. Each WRP sets out the rules for how water is used at a local or catchment level, including new limits on how much water can be taken from the system, how much water will be made available to the environment, and how water quality standards can be met. Basin state governments are responsible for complying with WRPs and accounting for water taken from the river system.	
	The Basin Plan divides the Murray-Darling Basin into 19 surface water and 19 groundwater WRP areas. The proposal is located in the geographic area covered by the Barwon-Darling Watercourse surface water WRP area (SW12) and the Darling Alluvium groundwater WRP area (GW7).	
	The Basin Plan also divides the Murray-Darling Basin into 29 surface water and 80 groundwater sustainable diversion limit resource units. The proposal is located in the Barwon-Darling Watercourse surface water sustainable diversion limit resource unit (SS19) and the Upper Darling Alluvium groundwater sustainable diversion limit resource unit (GS42).	
	The NSW Government has formally submitted the proposed Barwon-Darling Watercourse WRP and Darling Alluvium WRP for assessment to the MDBA under the Commonwealth Water Act 2007. A recommendation on accreditation has not yet been made by the MDBA to the Commonwealth Minister for the Environment and Water.	
	MDBA and the NSW Government signed a bilateral agreement in June 2020 to bring key Basin Plan commitments into effect in anticipation of the WRPs (MDBA, 2020). The bilateral agreement ensures that better management of water for the environment remain in effect from 1 July 2020, even if WRPs have not been accredited by that date.	
	The Commonwealth <i>Water Act 2007</i> is relevant to the proposal because it is located within the Murray-Darling Basin and the area to which the Barwon-Darling Watercourse WRP and Darling Alluvium WRP apply.	

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Legislation	Relevance to the proposal	Where addressed in the EIS
Native Title Act 1993	The Commonwealth <i>Native Title Act 1993</i> seeks to recognise and protect native title. A successful native title determination results in the recognition of the rights, interests or uses claimed by the registered party, and any actions by government on that land must be consistent with the claim. The <i>Native Title Act 1993</i> provides a framework for the determination of native title claims and for negotiations and decision making regarding the use and management of native title lands and waters. Exclusive rights to land are only available on certain unallocated or vacant Crown lands.	Native title that exists in the proposal area is identified in Section 16.1.2.
	In accordance with section 234KA of the <i>Native Title Act 1993</i> , Water Infrastructure NSW has notified the Barkandji Native Title Group Aboriginal Corporation of the intent to construct the proposal on lands covered by native title and commenced negotiations to meet their obligations under this Act.	

## Appendix D. Community engagement table

Issue category	Issues raised	Where addressed in this EIS
Water quality	Central Darling Shire Council identified issues with water quality from the existing weir pool in low flow scenarios, where stagnation leads to blue-green algae blooms, salinity, turbidity issues with the drinking water.	Destratification of the weir pool when the new weir is in drought security operation mode would be achievable by operating the weir gates, but would be dependent on the volume of inflows to achieve destratification across the entire weir pool. Destratification of the weir pool when the new weir is in drought security operation mode is discussed in <b>Section 3.5.3</b> . Water quality is discussed in <b>Section 10</b> .
	Community members identified concerns with algal blooms and poor water quality.	As above.
	Concerns that stormwater drains in town may be defective and that testing and repairs are needed as stormwater feeds into the weir pool. Sewage system failures in town have the potential to end up in the river and the weir pool.	Water quality is discussed in <b>Section 10</b> . Council has separate plans to upgrade the Wilcannia Township Gravity Sewer Scheme, refer to <b>Section 22.3</b> .
Aquifer impacts	Concerns about raising the river level or creating a new weir pool downstream that could negatively affect the aquifer that supplies the emergency drinking water bores.	The groundwater assessment addresses the potential impact of the new town pool on the emergency drinking water bores, refer to <b>Section 9.6.2</b> .
Recreation opportunities	Enhancing recreational values of the river, particularly for children. Inclusion of a boat ramp. Importance of having a full weir pool for fishing and cultural practices. Provision of swimming areas. Enhancing tourism opportunities. Reuse or relocation of rocks from existing weir. Toilet facilities to be made available at the recreation area.	The importance of the river for recreation and cultural practices has been acknowledged in the development of the proposal. Further discussion of the social benefits of the proposal is provided in <b>Section 16</b> . A boat ramp has not been provided because it would not be consistent with the objectives of the proposal which are to secure water supply for the town. The reuse of rocks from the existing weir is discussed in <b>Section 17</b> . The proposal does not include toilet facilities at the community river place.

Issue category	Issues raised	Where addressed in this EIS
Weir design	Increase proposed weir height to five metres to increase water storage for upstream agriculture and irrigation usage. Safety of weir for kids swimming in the river in town in the new, deeper weir pool.	Like the existing weir, the proposed new weir would provide water for town water supply only; the provision of water for agriculture and irrigation use is outside the scope of the proposal objectives (refer to <b>Section 1.1.2</b> ). Recreation and safety matters are discussed in <b>Section 16</b> . An appropriate exclusion zone for the new weir will be identified as part of a safety in design process carried out during the detailed design phase of the proposal (refer to <b>Section 3.4.8</b> ).
Employment	Opportunity for local jobs / employment opportunities	As a consequence of the early identification of this issue, Water Infrastructure NSW has established a partnership with local training providers to deliver training, including on construction, that will improve opportunities for local employment, on the proposal and on other projects. Further discussion on the social benefits is provided in <b>Section 16</b> .
Temporary impacts to Victory Park Caravan Park	Council did not expect any impacts to business from the proposed short- term lease of the caravan park during decommissioning activities. Requested to review proposed mitigation measures for rehabilitation of the construction areas prior to public exhibition of the environmental impact statement.	Potential impacts to the Victory Park Caravan Park during construction of the proposal are discussed in <b>Section 3.6.5</b> and <b>Section 16.7.1</b> .

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### Appendix E. Mitigation and management measures table

A summary of the mitigation and management measures that will be implemented during the pre-construction, construction and operation phases of the proposal is provided in the table below. The mitigation measures compiled in this section have been developed to take into account the findings of all the environmental assessments carried out for the proposal. The mitigation measures may be revised in response to submissions raised during public exhibition and/or any further design changes following exhibition. A revised list of mitigation measures would be provided in the Submissions Report as required.

Ref	Impact/issue	Mitigation measure	Timing		
Hydrol	Hydrology				
HY1	Obstruction of flows during construction	<ul> <li>Plan and design the construction work to minimise hydrology impacts including:</li> <li>Schedule work that requires occupation of part of the riverbed to occur during periods of low flow</li> <li>Maximise the width of the river channel available for flows to pass instream construction sites.</li> </ul>	Pre- construction Construction		
HY2	Triggers for the filling phase	<ul> <li>In consultation with WaterNSW, investigate opportunities to refine the triggers for the filling phase with the aim of reducing the frequency of filling while ensuring that water security is maintained. The investigations should consider:</li> <li>Flows in tributaries downstream of Bourke Town Weir, including inflows from the Warrego River and Paroo River</li> <li>Anticipated flows from upstream of Bourke Weir</li> <li>Climatic conditions and prevailing weather.</li> </ul>	Pre-operation Operation		
НҮЗ	Optimisation of the translucency rule	The initial downstream flows resulting from the implementation of the translucency rule will be monitored to identify opportunities to optimise these flows. Based on the findings of this monitoring, the operations plan may be revised if opportunities are identified to increase downstream flows by modifying how the translucency rule is implemented. Any proposed revisions to the implementation of the translucency rule will be discussed with key stakeholders prior to the operations plan being updated.	Operation		
Geomorphology					
GE1	Riverbank stability	The riverbanks at the new weir site will be reformed and trimmed so as to tie-in as seamlessly as possible with the riverbanks upstream and downstream. Riverbank slopes and erosion protection will aim to reduce the risk of riverbank erosion occurring after completion of construction.	Construction		
GE2	Riverbank stability	During the reset phase, lowering of the weir pool level will be limited to a maximum of 0.2 metres per day to reduce the potential for riverbank erosion within the weir pool.	Construction		



Ref	Impact/issue	Mitigation measure	Timing
Ground	lwater		
GW1	Contamination of groundwater during construction	Emergency spill measures will be developed to avoid and manage accidental spillages of fuels, chemicals and fluids to minimise human health impacts and contamination of groundwater.	Construction
GW2	Increase in the water table near the new town pool	<ul> <li>Groundwater level data from monitoring bores GW040874 and GW040892 will be analysed 12 months and five years following the start of operation of the new weir and compared to data collected prior to the start of construction to verify whether the groundwater level increases are in line with predictions.</li> <li>If the monitoring finds that groundwater levels are higher than predicted further investigations will be carried out to understand the causes of this change.</li> <li>To assist in monitoring impacts to groundwater:</li> <li>A combined real-time water level and electrical conductivity logger will be installed in monitoring bore GW040892</li> </ul>	Operation
		<ul> <li>The existing real-time water level logger in monitoring bore GW040874 will be upgrades to also measure conductivity</li> <li>Records will be maintained of pumping times and rates from all of the emergency town water supply bores.</li> </ul>	
Floodir		from all of the emergency town water supply bores.	
F1	Localised flooding	The design of flow diversion works and cofferdams will take	Construction
	due to construction activities	into consideration and make clear reference to hydrological data and clearly identify the assumptions and criteria adopted.	construction
F2	Localised flooding due to construction activities	The design and crest level of the proposed cofferdams will take into consideration and make clear reference to hydrological data and clearly identify the assumptions and criteria adopted.	Construction
F3	Flood impacts to temporary and permanent works	<ul> <li>The construction contractor will develop a monitoring and flood preparedness response plan to:</li> <li>Detail procedures for monitoring catchment rainfall, river system flows (including tributaries), river water levels, and flow conditions at the construction sites</li> <li>Identify subsequent response actions that will be taken to ensure the protection of personnel, equipment, materials, the existing weir structure (including as modified), the new weir works, the river channel and environment, and any other aspects/items</li> <li>Establish contingencies such as, for example, provisions for the removal of pre-flooding (filling) of cofferdams if a response action flow trigger is reached and designated temporary cleared storage locations to standby equipment and materials.</li> </ul>	Construction



Ref	Impact/issue	Mitigation measure	Timing
F4	Flood impacts to temporary and permanent works	<ul> <li>River gauges in the Darling River nos. 425008         (Wilcannia Main Channel) and 425058 (Moorabin) will         be monitored to gain an understanding of prevailing         flows at the new and existing weirs. Upstream gauges on         both the main river and tributaries will also be         monitored for upstream flow conditions in advance of         flows arriving at Wilcannnia.</li> <li>Monitoring will be used to identify current and predicted         flow conditions in the river at Wilcannia and to provide         notification of likely significant flow events that may         impact the progress of the works or trigger         implementation of appropriate response actions.</li> </ul>	Construction
F5	Flood impacts to temporary and permanent works	Rainfall within the catchment will be monitored to identify significant events to provide early warning of the potential for increased river flows.	Construction
F6	Flood impacts to temporary and permanent works	The construction contractor will establish suitable temporary provisions for monitoring the level of any weir pool and how these levels correlate to flows past the construction sites.	Construction
F7	Flood impacts to temporary and permanent works	Response actions are to include the timing and duration of all key activities expressed in relation to river flows, weir pool levels and/or other relevant measures.	Construction
F8	Flood impacts to temporary and permanent works	Response actions may involve, but not be limited to, the withdrawal and later return of personnel, equipment, materials, temporary works and other items from the river and/or adjacent construction sites.	Construction
F9	Flood impacts to temporary and permanent works	Provisions will also be made for out-of-hours implementation of response actions.	Construction
Surface	e water quality		·
SW1	General	<ul> <li>A construction soil and water management plan will be prepared as a sub-plan of the construction environmental management plan and will outline measures to manage soil and water impacts associated with the construction works.</li> <li>The construction soil and water management plan will include but not be limited to:</li> <li>Measures to minimise/manage erosion and sediment transport within the construction footprint and offsite including requirements for the preparation of erosion and sediment control plans for all progressive stages of construction</li> <li>Details of measures to make site personnel aware of the key requirements of the plan by providing information within induction, toolbox and training sessions</li> <li>Details of the roles and responsibilities of personnel responsible for implementing the plan</li> </ul>	Pre- construction



Ref	Impact/issue	Mitigation measure	Timing
		<ul> <li>Details of measures for the inspection and maintenance of erosion and sedimentation controls</li> <li>Measures to manage stockpiles including locations, sediment controls and stabilisation</li> <li>Measures to manage accidental spills including the requirement to maintain materials such as spill kits</li> <li>Measures to manage potential tannin leachate</li> </ul>	
		<ul> <li>Concrete waste management procedures</li> <li>A surface water quality monitoring program to monitor</li> </ul>	
		the performance of management measures.	
SW2	Erosion and sedimentation	Erosion and sediment control measures will be implemented at all works sites in accordance with the principles and requirements in <i>Managing Urban Stormwater</i> – <i>Soils and Construction Volume 1</i> (Landcom 2004) and Volume 2D (NSW Department of Environment, Climate Change and Water 2008), commonly referred to as the "Blue Book".	Pre- construction Construction
		Additionally, any water collected from work sites will be treated before being discharged to avoid contaminants from entering the Darling River (Baaka).	
		Erosion and sediment control measures will be identified in the construction soil and water management plan and will likely consist of cofferdams, diversion drains, sediment fencing, coir logs, catch drains, perimeter bunds, silt curtains and sediment basins.	
		Progressive site-specific erosion and sediment control plans will be prepared for work sites. These plans will include:	
		<ul> <li>Detailed consideration of staging and management in accordance with the Blue Book</li> </ul>	
		<ul> <li>Identification of site conditions for construction activities that could potentially result in erosion and associated sediment runoff</li> </ul>	
		<ul> <li>Identification of stockpile and storage locations and provide erosion and sediment controls around these</li> </ul>	
		<ul> <li>Methods to minimise potential adverse impacts of construction activities on the water quality within surrounding waterways and floodplains</li> </ul>	
		<ul> <li>Proposed types and locations of control measures such as sediment fencing, silt curtains and covering stockpiles</li> </ul>	
		<ul> <li>Progressive stabilisation and revegetation of exposed areas following disturbance as soon as is practicable.</li> </ul>	
		A suitably qualified erosion and sediment control specialist will be engaged where deemed appropriate to provide advice regarding erosion and sediment control including review of erosion and sediment control plans.	



Ref	Impact/issue	Mitigation measure	Timing
SW3	Working in watercourses	<ul> <li>To minimise stress on aquatic environments and protect water quality in the Darling River (Baaka) the following measures will be implemented:</li> <li>Implementing practices to minimise disturbance of banks (such as creating no access zones, minimising vegetation removal and installing rock gabions)</li> <li>Undertaking bank stability practices as soon as possible after installing instream structures</li> <li>Maintain minimum flows to assist in maintaining the viability of aquatic communities and preventing barriers to fish passage</li> <li>Undertake construction and demolition during low or no flow in the watercourse to minimise sediment loads downstream.</li> </ul>	Pre- construction Construction
SW4	Dewatering	<ul> <li>A dewatering management plan will be prepared as a subplan of the construction soil and water management plan and it will outline:</li> <li>The method for dewatering the cofferdams as well as discharges from sediment basins/water quality ponds</li> <li>Opportunities for using captured water on site, such as for dust suppression</li> <li>The method for monitoring discharge from temporary construction sediment basins and actions required for treatment or disposal if water quality does not meet Darling River (Baaka) water quality targets</li> <li>Supervision requirements</li> <li>Staff responsibilities and training</li> <li>Discharge to surface water will be carried out in accordance with the POEO Act or the requirements of any environment protection licence issued under the POEO Act for the proposal.</li> </ul>	Pre- construction Construction
SW5	Spills and leakages	<ul> <li>The construction soil and water management plan will outline site-specific control measures and required procedures to ensure containment of accidental spills and reduce the risk of the release of potentially harmful chemicals from spills entering the Darling River (Baaka).</li> <li>This will include:</li> <li>All fuels, chemicals and liquids will be stored on level ground at least 50 metres away from waterways (including existing stormwater drainage system, if present) and will be stored in a sealed bunded area within ancillary facilities</li> <li>An emergency spill kit will be provided at all ancillary facilities and construction work areas at all times. An emergency spill response procedure will be prepared to minimise the impact of accidental spillages of fuels, chemicals and fluids during construction.</li> </ul>	Pre- construction Construction



Ref	Impact/issue	Mitigation measure	Timing
		<ul> <li>Regular visual water quality checks (for hydrocarbon spills/slicks, turbid plumes and other water quality issues) will be carried out when working near the Darling River (Baaka).</li> </ul>	
SW6	Impact of stockpiles	Stockpiles will be managed to minimise the potential for mobilisation and transport of dust, sediment and leachate in runoff. This will include:	Construction
		<ul> <li>Minimising the number of stockpiles, area used for stockpiles and time that they are left exposed</li> </ul>	
		<ul> <li>Locating stockpiles away from drainage lines, waterways and area where they may be susceptible to wind erosion</li> <li>Stabilizing stabilizing establishing appropriate adjustant</li> </ul>	
		<ul> <li>Stabilising stockpiles, establishing appropriate sediment controls and suppressing dust as required.</li> </ul>	
SW7	Water quality	The location and details of all water quality controls (including but not limited to temporary sediment basins) will be further considered during the detailed design phase.	Detailed design Construction
		Diversion drains and erosion and sediment control measures will include but not limited to:	
		<ul> <li>Temporary drainage to construction sediment basins</li> <li>Inclusion of silt curtains around the work site</li> </ul>	
		<ul> <li>Control measures will be in place prior to commencement of any work. Material will only be stockpiled in designated areas that are more than 50 metres away from any watercourse.</li> </ul>	
SW8	Concrete work	To avoid ingress of concrete waste material into the Darling River (Baaka), the construction environmental management plan will outline procedures to capture, contain and appropriately dispose of any concrete waste. These procedures and the level of management required will be informed by concrete analysis which will be carried out before construction.	Detailed design Construction
SW9	Construction discharges	Prior to releasing construction water collected in sediment basins, water should be repurposed on site wherever possible. For instance, for dust suppression activities. Water that cannot be repurposed on site should be treated if necessary, prior to discharge.	Detailed design Construction
		Water quality monitoring should occur to confirm the suitability for any proposed reuse of water on site or prior to it being discharged downstream.	



Ref	Impact/issue	Mitigation measure	Timing
SW10	Water quality monitoring – construction	A construction surface water monitoring program will be developed in accordance with the ANZG (2018) and included in the construction surface water management plan to establish baseline conditions, to observe any changes in surface water quality that may be attributable to construction of the proposal and inform appropriate management responses. Monitoring during pre-construction and construction will occur at various locations along the Darling River (Baaka)	Pre- construction Construction
		Monitoring sites will be located upstream and downstream of the key construction activities and will include sampling for key indicators of concern.	
		The surface water quality monitoring program will be developed in consultation with WaterNSW and will aim to integrate with WaterNSW's existing water quality monitoring program at gauging stations 425008 (Wilcannia Main Channel) and 425058 (Moorabin).	
		Should the results of monitoring identify that the water quality management measures are not effective in adequately mitigating water quality impacts, additional mitigation measures will be identified and implemented as required.	
SW11	Water quality monitoring – commissioning	Operational surface water monitoring will occur following completion of construction until work sites have been rehabilitated to an acceptable condition and water quality issues associated with initial inundation of the new town pool have subsided.	Commissioning
Terrest	rial biodiversity		
BIO1	Clearing boundary	Prior to construction, the limits of the work zone, areas for parking and turning of vehicles, and plant equipment will be accurately and clearly marked out by a qualified surveyor. These areas will be located so that vegetation disturbance is minimised as much as possible, and the driplines of trees avoided.	Pre- construction Pre-clearing
BIO2	Native vegetation	Construction machinery, equipment, materials, work vehicles and stockpiles will be placed to avoid damage to surrounding vegetation and will be outside tree driplines.	Pre- construction Pre-clearing
BIO3	Training	Construction personnel will be informed of the environmentally sensitive aspects of the proposal area, including plans for impacted and adjoining areas of vegetation to be removed and mitigation measures for impacts to biodiversity.	Pre- construction Pre-clearing
BIO4	Minimise clearing area and impacts	Where possible, clearing of native vegetation will be avoided. Clearing of vegetation will be staged to allow for dispersal of potentially occurring fauna species. Habitat items such as hollow logs and coarse woody debris will be retained where possible, potentially by relocating these items to vegetation beyond the construction footprint.	Pre- construction Pre-clearing



Ref	Impact/issue	Mitigation measure	Timing
BIO5	Additional surveys	Supplementary surveys will be carried out for species credit matters to further validate presence/absence within the appropriate survey seasons required under the Biodiversity Assessment Method for Bindweed ( <i>Convolvulus tedmoorei</i> ), Slender Darling Pea ( <i>Swainsona murrayana</i> ) and Little Eagle ( <i>Hieraaetus morphnoides</i> ) nesting habitat.	Pre- construction
BIO6	Pre-clearing inspection	<ul> <li>An ecologist will be engaged in the weeks before clearing begins to:</li> <li>Identify any fauna that may have the potential to be disturbed, injured or killed as a result of clearing activities (e.g. nesting birds, large stick nests occupied by threatened diurnal raptors)</li> <li>Map the locations of any hollow-bearing trees and physically mark these habitat features to be protected</li> </ul>	Pre-clearing
		<ul> <li>during construction or considered during the clearing work (e.g. flagging tape)</li> <li>If there are hollows within the clearing boundary, conduct stag watching during the day and night to determine if these are being used by fauna, in particular forest owls or Major Mitchell's Cockatoo</li> <li>Check construction vehicles and any areas which have</li> </ul>	
		been excavated for fauna during pre-start activities.	
BIO7	Staged habitat removal	A staged habitat removal process is required for removal of habitat (hollow-bearing trees, habitat trees, and bushrock). Staged habitat removal minimises direct impacts on fauna by providing them with an opportunity to vacate hollows and relocate naturally. The process will include:	Construction
		<ul> <li>If possible, avoid clearing during breeding seasons for hollow-dependent fauna</li> </ul>	
		<ul> <li>Contact vets and wildlife carers before construction activities commence</li> </ul>	
		<ul> <li>Ensure a licensed wildlife carer and/or ecologist is present during vegetation clearing/habitat removal</li> </ul>	
		<ul> <li>Adopt a two-stage habitat removal strategy, for example clearing non-habitat trees first (i.e. shrubs, regrowth, ground cover) followed by habitat trees. Allow at least 24 hours for fauna to vacate habitat before removing habitat trees</li> </ul>	
		<ul> <li>Fell habitat trees carefully using equipment that allows habitat trees to be lowered to the ground with minimal impact (e.g. claw extension). Do not fell trees towards exclusion zones</li> </ul>	
		<ul> <li>Ensure a wildlife carer and/or ecologist inspects trees before and after felling. Capture and relocate non- injured fauna that are found in any felled trees to pre- determined habitat identified for fauna release to be undertaken by a licensed ecologist or wildlife carer.</li> </ul>	



Ref	Impact/issue	Mitigation measure	Timing
BIO8	Vegetation management plan	A vegetation management plan will be prepared as a sub plan of the construction environmental management plan and will detail the management of native trees, shrubs and other vegetation (including hollow-bearing trees) within the construction footprint. Key requirements in this plan will be included in the induction pack for all contractors.	Pre- construction Construction
BIO9	Fauna within excavations	Excavated areas such as pits/trenches will be inspected daily prior to commencing work to check for trapped fauna. Any trapped fauna must be removed by trained fauna handling personnel. Alternatively, fauna ramps (logs or wooden planks) will be installed to provide an escape for trapped fauna. If any pits/trenches remain open overnight, they will be securely covered, where reasonable and feasible.	Construction
BIO10	Fauna within work sites	Pre-start-up checks will be undertaken for possible fauna sheltering in excavated areas, construction machinery, equipment, construction vehicles and infrastructure, plant, and before relocating stored construction materials. Fauna must be removed by trained fauna handling personnel prior to starting any construction activities.	Construction
BIO11	Site rehabilitation	Revegetation of the riverbanks will be undertaken as soon as possible. A rehabilitation plan will be prepared as a sub plan of the construction environmental management plan. The rehabilitation plan will guide the long-term rehabilitation of applicable parts of the proposal. Such areas would include areas disturbed during construction that are not required to be maintained or cleared for the operation of the proposal.	Pre- construction Construction post construction
		The rehabilitation plan will focus on prevention of soil erosion and re-establishing local endemic plant species, restoration of riparian vegetation (i.e. weed control) to protect and improve threatened aquatic species habitat, and drought conditions during the establishment phase of the proposal.	
BIO12	Weed and pathogen management	<ul> <li>Weed management will be undertaken in areas affected by construction prior to any clearing works in accordance with the <i>Biosecurity Act 2015</i> to ensure they are not spread to the surrounding environment, including during transport for disposal off-site at a licensed waste disposal facility</li> <li>Priority weeds will be identified, mapped, and removed before clearing for construction, and their location recorded for use in an ongoing weed monitoring program</li> <li>During construction all personnel vehicles and</li> </ul>	Pre- construction Construction
		machinery driving to and from site will follow a protocol to prevent the spread or introduction of plant diseases, particularly <i>Phytophthora cinnamomi</i> , namely vehicles and machinery will be clean, including the tyres, footwear of personnel, and any equipment	
Ref	Impact/issue	Mitigation measure	Timing
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		<ul> <li>All weeds, propagules, other plant parts and/or excavated topsoil material that is likely to be infested with weed propagules that are likely to regenerate will be treated on site or bagged, removed from site and disposed of at a licensed waste disposal facility</li> <li>Wash down stations will be constructed at suitable locations to wash down vehicles and employee shoes to stop the spread of weeds, pathogens (including amphibian chytrid fungus, <i>Phytophthora cinnamomi</i> and exotic rust fungi) and the introduction of new species.</li> </ul>	
BIO13	Fauna strike	Vehicle movements within the construction footprint will be limited to a 20 kilometres per hour speed limit to reduce the risk of vehicle strikes to fauna. Drivers must stay vigilant for fauna during machinery operation and vehicle movements.	Construction Operation
BIO14	Groundwater dependent ecosystems	<ul> <li>A vegetation monitoring program will be developed in consultation with WaterNSW to monitor for changes in the vegetation integrity of groundwater dependent ecosystems as well as groundwater regime (e.g., declines in water level and increases in salinity). This will focus on plant community types immediately adjacent to the new town pool and additional floodplain plant community type sites immediately downstream of the new weir.</li> <li>The monitoring program will consider: <ul> <li>The level of detail (number of replicates, number of sites, distance from weir and distance downstream, survey timing, precision of measurement of variables) required to detect a level of change that indicates an impact</li> <li>Vegetation integrity data and associated groundwater data to detect if change is associated with groundwater and no other factors</li> <li>Data will be analysed soon after collection to facilitate prompt adaptive management actions and the mitigation of unforeseen impacts</li> <li>Site-specific trigger values (performance criteria) for corrective action. These could be based on vegetation integrity values.</li> </ul> </li> <li>Any negative effect on plant community type vegetation integrity will be considered in the form of an adaptive management plan that considers mitigation options for maintaining the health of affected plant community types, or additional offsets where applicable.</li> </ul>	Pre- construction Operation

Ref	Impact/issue	Mitigation measure	Timing		
Aquati	Aquatic biodiversity				
AB1	Aquatic fauna salvage	Aquatic fauna salvage will be conducted by a qualified ecologist. A pre-construction survey will be undertaken in areas that would be enclosed by silt curtains and during dewatering of cofferdams. Procedures for undertaking aquatic fauna salvage will be detailed in the biodiversity management plan prepared as a sub-plan of the construction environmental management plan.	Construction		
AB2	Removal of riparian and instream vegetation	Rehabilitation of disturbed areas of riparian and instream vegetation will be undertaken as soon as practical, progressively and in accordance with the rehabilitation strategy. Rehabilitation at both the new and existing weir sites will involve replacing topsoil and re-planting native trees and plants.	Construction		
AB3	Small fish, larvae and eggs could be entrained in the water supply pumps	Consider the installation of fish screens on pump inlets as part of the aquatic biodiversity offset for the proposal.	Detailed design		
AB4	The new town pool would create unsuitable habitat for River Mussels	In consultation with Fisheries NSW, investigate the practicality and feasibility of translocation of River Mussels from the new town pool prior to its inundation.	Pre-operation		
AB5	Sediment build-up in the fishway structure causing a barrier to fish passage	Inspections and maintenance of the fishway will be carried out on a regular basis to ensure that fish passage is not obstructed.	Operation		
AB6	Use of fishway during operation and surrounding habitat	Ongoing monitoring of the fishway and the surrounding aquatic habitat will be carried out following completion of construction and for the first two years during operation to document impacts/benefits on the aquatic ecosystem due to the new weir structure.	Operation		
Aborig	inal heritage		·		
AH1	Direct disturbance of Aboriginal heritage items	Detailed design and construction planning will avoid direct impacts on identified items/sites of Aboriginal heritage significance as far as reasonably practicable. The configuration of the construction compounds and associated access tracks will be reviewed, as far as practicable, to avoid and minimise impacts on Aboriginal heritage	Pre- construction		



Ref	Impact/issue	Mitigation measure	Timing
AH2	Removal of a culturally modified tree (24-5-208 (Union Bend Canoe Tree 7))	The scarred section of the tree will be 3D scanned to create an archival 3D model. Management outcomes for the tree following scanning will be developed in consultation with the local Aboriginal community. If the tree is relocated into the river to form a 'snag' or fish habitat, the location would be chosen to avoid impeding the function of the new weir.	Pre- construction
AH3	Management of salvaged items	A detailed salvage methodology will be prepared by a suitably qualified archaeologist in consultation with the RAPs. The methodology will be included in an Aboriginal cultural heritage management plan and will ensure any artefacts salvaged are managed in accordance with the requirements of the NPW Act. The salvage methodology will apply to both the collection of surface artefacts (AH5) and archaeological excavations	Pre- construction
		(AH4 and AH6). The salvage methodology will describe the process for consultation with the RAPs in accordance with the <i>Aboriginal Cultural Heritage Consultation Requirements for</i> <i>Proponents 2010</i> (Department of Environment, Climate Change and Water, 2010a). The RAPs will be engaged to assist in the salvage, which will be managed by an appropriately qualified archaeologist. The salvage methodology will specify how salvaged archaeological material will be analyzed and will specify	
		the temporary and long-term storage locations for this material. Analysis and reporting of archaeological material collected will be provided to Heritage NSW.	
AH4	Disturbance of hearth sites	Directly impacted hearths within the identified sites and within the construction footprint will be subject to salvage excavation to examine their subsurface structure and contents and to recover dateable material (e.g. charcoal). It is estimated that about 20 hearths will be directly impacted by the proposal.	Pre- construction
		Results of these excavations will be documented in an Aboriginal Archaeological Report.	



Ref	Impact/issue	Mitigation measure	Timing
AH5	Salvage of surface artefacts	Surface collection of artefacts within the construction footprint, from sites along the southern access track (part of 24-5-177, whole of 24-5-180) will occur in a corridor for five metres either side of the approximate centreline of the existing track. Collection will be undertaken by a qualified archaeologist in cooperation with members of the local Aboriginal community and include recording and documentation to professional standards in laboratory conditions. Collected artefacts will be held in temporary storage in Wilcannia at a location agreed with Wilcannia Local Aboriginal Land Council, and ultimately in long-term storage in the Barkandji Cultural Centre. Results of the surface collection will be documented in a salvage report	Pre- construction
AH6	Archaeological excavations	Archaeological excavations will be conducted at representative locations across the construction footprint to assess the potential for undiscovered subsurface archaeological material to be present, and to salvage a sample of this material. An archaeological excavation methodology will be prepared in in consultation with the RAPs. Findings of the archaeological excavations will be documented in an Aboriginal Archaeological Report. This report will contain recommendations specifying whether any further archaeological work should be undertaken. The report will be distributed to the RAPs for review and comment.	Pre- construction
AH7	Trimming of a culturally significant tree	The tree will remain in situ and be lopped to a position that will allow movement of the construction crane but above the upper extent of the cultural scar. Trimming of the tree will be undertaken by a tree surgeon and monitored by the RAPs.	Pre- construction
AH8	Indirect harm from visitors to the community river place	Opportunities to develop a heritage interpretation and education strategy will be investigated during detailed design, in consultation with the RAPs and the wider local Aboriginal community. This could include signage and other treatments to increase understanding and protection of the site.	Pre- construction
AH9	Partial removal and decommissioning of the existing weir	The rocks that make up the existing weir will be reused locally, where possible. The nature of re-use of the rocks will be developed in consultation with the RAPs and the wider local Aboriginal community. Possible actions include using the rocks in the community river place, or constructing new fish trap(s) in the river. It must be noted that new fish traps could not be placed within the safety offset zone of the new weir.	Pre- construction

Ref	Impact/issue	Mitigation measure	Timing
AH10	Minimising impacts during construction	<ul> <li>An Aboriginal cultural heritage management plan will be prepared in consultation with the RAPs. It will include measures to minimise impacts to Aboriginal heritage including:</li> <li>Unexpected finds procedure</li> <li>Detailed site salvage strategy</li> <li>Management and care and control plans for salvaged Aboriginal objects</li> <li>Plans and installation procedures for fencing and protective coverings</li> <li>Heritage components of induction package for construction workers and supervisors</li> <li>Outcomes of further investigations that occur after approval of the proposal.</li> </ul>	Construction
AH11	Monitoring of ground disturbing works	Monitoring of preliminary ground disturbance works will be undertaken by the RAPs during the construction phase. Any artefacts found will be collected, or other cultural remains identified. Monitoring should be undertaken by a team of four people, if four RAP representatives are available.	Construction
AH12	Avoiding impact to culturally modified trees	The four identified canoe trees (24-5-160 (Union Bend Canoe Tree 3), 24-5-185 (Old Wilcannia Weir Canoe Tree 3), 24-5-186 (Old Wilcannia Weir Canoe Tree 2) and 24-5- 187 (Old Wilcannia Weir Canoe Tree 1)) will be fenced prior to construction and construction site personnel will be made aware of their location and importance. Fences will be placed at a minimum five metre buffer outside the dripline of the trees. No works, including storage of materials or machinery, is to be undertaken within the fenced area around the tree.	Construction
AH13	Monitoring potential indirect impact	A monitoring program will be developed for scarred trees with potential to be destabilised. This monitoring will be carried out by the construction contractor, or the RAPs.	Construction
AH14	Avoiding indirect impact	Aboriginal sites will be temporarily fenced with high visibility material, and marked on site plans as areas to be avoided.	Construction
AH15	Avoiding accidental impact	A cultural heritage induction will be developed for all construction personnel attending the construction site. The induction will be delivered by the Barkandji community and developed by the RAPs and a qualified archaeologist.	Construction



Ref	Impact/issue	Mitigation measure	Timing
AH16	Unexpected finds	An unexpected finds procedure will be developed and included in the construction environmental management plan. It would set out procedures for dealing with Aboriginal objects, human remains and suspected humans remains found during the construction works.	Construction
		Where unknown human or suspected human skeletal remains are found on the site, works must stop in the immediate area, the area made secure from further disturbance and the Water Infrastructure NSW project manager notified.	
		In accordance with the <i>Coroners Act 2009</i> , the NSW Police must be called to enable them to investigate whether the remains are human and if they are associated with a crime. In the case where the NSW Police determine that the remains are historic, Heritage NSW and all RAPs will be notified of the historic heritage find.	
Non-At	ooriginal heritage		
NAH1	Corrosion risks to the Wilcannia Bridge	<ul> <li>To preserve the heritage fabric of the Wilcannia Bridge (LEP ID #I15), stabilisation of the existing corrosion damage and remediation works will be undertaken prior to the construction of the new weir as per the community proposal.</li> </ul>	Pre- construction Construction
		<ul> <li>Water Infrastructure NSW will continue to liaise with the DPE and Central Darling Shire Council to ensure remediation works to the Wilcannia Bridge are completed prior to the commissioning of the new weir.</li> </ul>	
NAH2	Partial removal and decommissioning of the existing Wilcannia Weir	<ul> <li>3D scan the existing weir to create a reality textured model.</li> <li>Prior to and during its partial removal and decommissioning, an archival photographic recording of the existing weir will be undertaken (by an appropriately experienced heritage professional) in accordance with <i>Photographic Recording of Heritage Items Using Film or Digital Capture</i> (Heritage Council of NSW, 2006) and <i>How to Prepare Archival Records of Heritage Items</i> (Heritage Council of NSW, 1998).</li> <li>The accompanying report to the archival recording will</li> </ul>	Pre- construction Construction
		include the collection of oral histories related to the weir from the local community.	



Ref	Impact/issue	Mitigation measure	Timing
NAH3	Social and historical values of the community	<ul> <li>A heritage interpretation plan for the existing Wilcannia Weir will be prepared to provide a framework for the interpretation of the item, set out key interpretive themes and identify appropriate communication strategies to relay social values and oral histories related to the existing weir.</li> <li>Opportunities for interpretation which will be considered during the development of the heritage interpretation plan include:         <ul> <li>Retention of some existing weir fabric in situ to mark its current location (provided this would not impede the operation of the new weir)</li> <li>Adaptive reuse of some of the weir fabric e.g. the sandstone rock fill, in the new community river place</li> </ul> </li> <li>Interpretive signage commemorating the history and location of the existing weir at a suitable location.</li> </ul>	Pre- construction Construction Operation
NAH4	Unexpected historic heritage or human remain finds	<ul> <li>An unexpected finds procedure will be developed for inclusion in the construction environmental management plan to provide a consistent method for managing any unexpected heritage or archaeological items (including unexpected human remains) for the duration of the demolition and construction phases of the proposal.</li> <li>Any human skeletal remains discovered during construction will be managed in accordance with <i>Skeletal Remains</i> - <i>Guidelines for the Management of Human Skeletal Remains under the Heritage Act 1977</i> (NSW Heritage Office, 1998).</li> <li>Other relevant legislation and guidelines for managing human skeletal remains discovered during construction include <i>NSW Health Procedures Exhumation of human remains</i> (NSW Department of Health, 2013), Public Health Regulation 2012 (NSW), <i>Heritage Act 1977</i> (NSW), <i>Work Health and Safety Act 2011</i> (NSW), <i>Coroners Act 2009</i> (NSW), <i>National Parks and Wildlife Act 1974</i> (NSW).</li> </ul>	Construction
NAH5	Heritage awareness during construction	Historical heritage awareness training will be undertaken by all site workers prior to commencement of demolition or construction works. This training will promote an understanding of potential heritage items in the area and the requirements of the unexpected finds procedure.	Pre- construction Construction
NAH6	Salvage of weir rocks	In consultation with the local community, rocks from the existing weir will be salvaged and reused in landscape remediation works including at the community river place and new and existing weir sites.	Construction



Ref	Impact/issue	Mitigation measure	Timing
Social,	land use and property		
S1	Community uncertainty	<ul> <li>A community communication strategy will be prepared for the proposal to facilitate communication with the local community including relevant government agencies, Central Darling Shire Council, adjoining affected landowners and businesses, and other relevant stakeholders that may be affected by the proposal. The strategy will:</li> <li>Identify people or organisations to be consulted during the delivery of the proposal</li> <li>Set out procedures and mechanisms for the regular distribution of information about the proposal</li> <li>Outline mechanisms to keep relevant stakeholders updated on site construction activities, schedules and milestones</li> <li>Outline avenues for the community to provide feedback (including a 24 hour, toll free project information and complaints line) or to register complaints and through which Water Infrastructure NSW will respond to community feedback</li> <li>Outline a process to resolve complaints and issues raised.</li> </ul>	Pre- construction Construction
52	Delivery of proposal benefits	<ul> <li>A social impact management plan will be prepared in consultation with key stakeholders to support the proposed engagement activities through to the completion of construction.</li> <li>The social impact management plan will outline: <ul> <li>Roles and responsibilities for stakeholders involved in the implementation of the plan</li> <li>How any local employment opportunities would be planned, communicated and managed</li> <li>How any local procurement and supply opportunities would be planned, communicated and managed</li> <li>Ongoing training and development opportunities</li> <li>Monitoring and reporting requirements and responsibilities.</li> </ul> </li> </ul>	Detailed design Construction
53	Temporary workforce accommodation	<ul> <li>A temporary workforce accommodation plan will be developed and will include:</li> <li>Requirements for consultation and early notification to local providers</li> <li>Measures to ensure no negative impacts to local rental accommodation are incurred</li> <li>Consideration of mobile accommodation facilities within existing campgrounds, in consultation with the owners and any local approval requirements</li> <li>Procedures to monitor and measure performance against the plan.</li> </ul>	Pre- construction Construction



Ref	Impact/issue	Mitigation measure	Timing
S4	Local health services	The contractor will monitor workforce demand for local health services as part of the construction health and safety plan, and consult with local health authorities on alternative arrangements should the need arise.	Construction
S5	Drinking water supplies	Water Infrastructure NSW will continue to liaise closely with Central Darling Shire Council during construction to manage the township's water supplies.	Detailed design Pre- construction Construction
S6	Recreational swimming, fishing and boating	Water Infrastructure NSW in partnership with local stakeholders will conduct water safety and awareness workshops with the community following completion of construction of the new weir and partial removal and decommissioning of the existing weir. The workshops will aim to make the community aware of the changed conditions for swimming, fishing and boating.	Construction Operation
S7	Victory Park Caravan Park	Water Infrastructure NSW will notify Central Darling Shire Council at least six months prior to the need to access Victory Park Caravan Park to decommission the existing weir to allow sufficient time for leasing and notification to potential travellers. Water Infrastructure NSW will consult with Central Darling Shire Council about the rehabilitation of disturbed areas at Victory Park Caravan Park.	Construction
Visual a	amenity		
LV1	Rehabilitation of the new weir site	The rehabilitation plan for the new weir site will be further developed in consultation with Wilcannia Local Aboriginal Land Council (for areas on the left side of the river) and the Wilcannia local community (for areas on the right side of the river).	Pre- construction Construction
LV2	Riverbank appearance at the new weir site	The disturbed riverbanks at the new weir site will be reinstated with materials that provide stability while also presenting as natural an appearance as possible.	Pre- construction Construction
LV3	Landscaping of the community river place	The concept landscape plan for the community river place will be further developed in consultation with Central Darling Shire Council and the local community. This will include identifying opportunities to reuse waste materials from the construction of the new weir and partial removal of the existing weir such as logs and rocks.	Pre- construction Construction
LV4	Rehabilitation of the existing weir site	The rehabilitation plan for the existing weir site including disturbed areas within Victory Park Caravan Park will be further developed in consultation with Central Darling Shire Council.	Pre- construction Construction



Ref	Impact/issue	Mitigation measure	Timing	
Geology, soils and contamination				
GS1	Salinity	<ul> <li>The construction soil and water management plan will include specific measures to manage construction within potentially saline soils, should they be identified, in accordance with the <i>Salinity Training Handbook</i> (NSW Department of Primary Industries, 2014). Specific measures will include, but are not limited to:</li> <li>Identification and management of saline discharge sites</li> <li>Testing to confirm the presence of saline soils in areas of salinity potential prior to disturbance</li> <li>Controls to manage soil erosion and offsite water migration for saline discharge sites</li> <li>Progressive stabilisation and revegetation of exposed areas following disturbance as soon as is practicable</li> <li>Ongoing groundwater monitoring for groundwater levels and salinity.</li> </ul>	Pre- construction Construction	
GS2	Soil and groundwater contamination	<ul> <li>The construction environmental management plan will include a procedure for managing unexpected contamination finds. The procedure will include:</li> <li>Requirements for the excavation, handling, storage and management of contamination soil or water. This will include requirements for segregating and signposting contaminated soil and water</li> <li>Requirements for the disposal of contaminated waste in accordance with the POEO Act and the <i>Protection of the Environment Operations (Waste) Regulation 2014.</i></li> </ul>	Pre- construction Construction	
GS3	Partial removal and decommissioning of the existing weir	Prior to partial removal and decommissioning of the existing weir, a hazardous materials audit will be carried out in accordance with Australian Standard (AS 2601-2001) <i>The demolition of structures.</i> Where hazardous materials are present, they will be managed to reduce the potential for contamination in accordance with the POEO Act and the <i>Protection of the Environment Operations (Waste) Regulation 2014.</i>	Pre- construction Construction	
GS4	Spills and leaks	<ul> <li>The soil and water management plan will include measures to ensure that:</li> <li>Vehicles and machinery are properly maintained to minimise the risk of fuel/oil leaks</li> <li>Routine inspections of all construction vehicles and equipment will be undertaken for evidence of fuel/oil leaks</li> <li>All fuels, chemicals and hazardous liquids will be stored within an impervious bunded area in accordance with Australian standards and NSW Environment Protection Authority guidelines</li> <li>Any on-site refuelling will occur in a designated area with impervious surfaces.</li> </ul>	Pre- construction Construction	



Ref	Impact/issue	Mitigation measure	Timing
GS5	Dangerous goods and hazardous materials	The storage, handling and use of dangerous goods and hazardous substances will be carried out in accordance with the Work Health and Safety Act 2011 and the Storage and Handling of Dangerous Goods Code of Practice (WorkCover NSW, 2005) and relevant Australian Standards.	Construction
Traffic	and transport		
Τ1	Construction traffic	<ul> <li>A construction traffic management plan will be prepared and implemented as part of the construction traffic management plan and will include:</li> <li>A driver code of conduct</li> <li>Confirmation of haulage routes and access locations</li> <li>Measures to maintain access and capacity to existing roads where possible</li> <li>Measures to minimise conflicts with pedestrians and cyclists</li> <li>Traffic control measures including signage at appropriate locations to notify road users of increased traffic volumes turning into and out of the southern access track from the Barrier Highway</li> <li>Management of oversized vehicles, including movements being undertaken outside of peak periods under police escort and in accordance with any OSOM permit conditions</li> <li>Requirements and methods to consult and inform the local community of impacts on the local road network due to construction and operation of the proposal</li> <li>Consultation with Transport for NSW, Central Darling Shire Council and Wilcannia Local Aboriginal Land Council to minimise traffic conflicts on roads surrounding the proposal</li> <li>Consultation with emergency services to ensure that procedures are in place to maintain safe, priority access for emergency vehicles</li> <li>A response plan for any construction-related traffic incident.</li> </ul>	Pre- construction
T2	Construction traffic at the new weir site	<ul> <li>Appropriate signage will be placed at the access points from Union Bend Road to the existing track along the northern bank of the Darling River (Baaka) to advise traffic of access restrictions during construction of the new weir.</li> </ul>	Construction
Т3	Maritime traffic during construction of the new weir	During construction of the new weir, a 50-metre signposted exclusion zone will be put in place both upstream and downstream of the new weir to restrict any maritime activities and improve safety around the construction site.	Construction



Ref	Impact/issue	Mitigation measure	Timing
Τ4	Construction traffic at Victory Park Caravan Park	Consultation with Central Darling Shire Council will be undertaken to minimise the impacts of the temporary closure of Victory Park Caravan Park during partial removal and decommissioning of the existing weir. Traffic management measures agreed in consultation with Central Darling Shire Council will be incorporated into the construction traffic management plan.	Pre- construction
Τ5	Operational traffic at the new weir	During operation of the proposal, appropriate signage will be placed along the existing track along the northern bank of the Darling River (Baaka) where it passes the new weir site to inform traffic of shared zone conditions.	Operation
Τ6	Maritime safety at the new weir	Water Infrastructure NSW will identify an appropriate exclusion zone for the proposed new weir as part of a safety in design process carried out during the detailed design phase of the proposal. Water Infrastructure NSW will involve relevant stakeholders in this process, including WaterNSW. Awareness of the exclusion zone and its location will be raised through signage. Fishing, swimming, canoeing, boating and other water-based recreational activities will be prohibited within the exclusion zone.	Pre- construction Operation
Noise a	nd vibration		
NV1	Management of construction noise	<ul> <li>A construction noise and vibration management plan will be prepared as a sub-plan of the construction environmental management plan, in accordance with Water Infrastructure NSW guidelines and policies including Australian Standard AS2436-2010 <i>Guide to noise and vibration control on construction, demolition, and maintenance sites</i>. The construction noise and vibration management plan will include measures, processes and responsibilities to manage noise and vibration and minimise the potential for impacts during construction.</li> <li>The construction noise and vibration management plan will:</li> <li>Identify nearby sensitive receivers</li> <li>Include a description of the construction activities equipment and working hours</li> <li>Identify relevant noise and vibration performance criteria for the proposal</li> <li>Outline standard and additional mitigation measures from the <i>Construction Noise and Vibration Guideline</i> (Roads and Maritime Services, 2016) and information about when each will be applied</li> <li>Outline requirements for the development and implementation of an Out-of-hours Work Protocol</li> <li>Describe community consultation and complaints handling procedures in accordance with the community communication strategy to be developed for the proposal.</li> </ul>	Pre- construction



Ref	Impact/issue	Mitigation measure	Timing
NV2	Time constraints and scheduling	<ul> <li>Wherever possible and safe, limit works to standard hours of construction</li> <li>If out of hours works occur, where possible, perform noisy work after 7:00am and prior to 11:00pm</li> <li>Limit the completion of out of hours works over consecutive nights.</li> </ul>	Construction
NV3	Equipment restrictions	Select low-noise plant and equipment. Ensure equipment mufflers operate in a proper and efficient manner.	Construction
NV4	Substitute methods	Where possible, use quieter and less vibration emitting construction methods.	Construction
MV5	Limit equipment use	Only have necessary equipment on-site and turn off when not in use.	Construction
NV6	Limit activity duration	Where possible, concentrate noisy activities at one location and move to another as quickly as possible.	Construction
NV7	Site access	Vehicle movements, including deliveries outside standard hours should be minimised and avoided where possible.	Construction
NV8	Equipment maintenance	Ensure all plant and equipment is well maintained and where possible, fitted with silencing devices.	Construction
NV9	Reduce equipment power	Use only the necessary size and powered equipment for tasks.	Construction
NV10	Quieter working practices	Include in the work site induction training on noise sensitivities, such as switching off equipment that is not in use. minimising talking and radio use when near sensitive receivers and configuring work sites to minimise the need for reversing.	Construction
NV11	Reversing alarms	Where possible, consider the application of less intrusive alternatives to reverse beepers such as 'squawker' or 'broadband' alarms.	Construction
NV12	Noise barriers	Consider the installation of temporary construction noise barriers for concentrated, noise-intensive activities.	Construction
NV13	Enclosures	Where practicable, install enclosures around noisy mobile and stationary equipment as necessary.	Construction
NV14	Use and siting of plant	Where possible, avoid simultaneous operation of two or more noisy plant close to receivers. The offset distance between noisy plant and sensitive receivers should be maximised Switch off equipment that is not in use; avoid idling.	Pre- construction Construction
NV15	Plan work sites and activities to minimise noise and vibration	Plan traffic flow, parking and loading/unloading areas to minimise reversing movement.	Construction
NV16	Minimise disturbance arising from delivery of	Where feasible, out-of-hours deliveries should be to the southern (left) side of the river at the new weir site rather than via Reid Street and Union Bend Road to the northern	Construction



Ref	Impact/issue	Mitigation measure	Timing
	goods to construction sites	(right) side of the river to avoid delivery vehicle noise within the township.	
NV17	Monitoring	Complete routine monitoring to evaluate construction noise levels and evaluate whether the mitigation measures in place are adequate or require revision.	Construction
Air qua	lity		
AQ1	Air quality	<ul> <li>The construction environmental management plan will include:</li> <li>Air quality management objectives consistent with any relevant published EPA and/or DPE guidelines</li> <li>Methods to manage work during strong winds or other adverse weather conditions to minimise dust</li> <li>A progressive rehabilitation strategy for disturbed or cleared areas to reinstate the construction footprint as soon as possible.</li> </ul>	Pre- construction
AQ2	Dust	<ul> <li>Dust suppression techniques will be implemented and incorporated into the construction environmental management plan, as outlined in the 'Blue Book' (Landcom, 2004), such as not carrying out dust generating works during high winds, water spraying of surfaces, covering stockpiles and covering surplus soils and materials during transportation</li> <li>Exposed and disturbed surfaces will be stabilised at construction sites that are not active.</li> </ul>	Construction
AQ3	Exhaust	<ul> <li>Appropriate vehicle and plant maintenance will be carried out to avoid excessive engine exhaust emissions</li> <li>Plant and equipment will be switched off when not in use.</li> </ul>	Construction
AQ4	Monitoring	<ul> <li>Regular inspections of construction sites will be carried out to ensure the air quality measures being implemented are effective</li> <li>Construction site induction or other training opportunities will be used to educate all site personnel on the importance of air quality management measures and their responsibilities to comply with such measures.</li> </ul>	Construction

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Ref	Impact/issue	Mitigation measure	Timing
Waste			
W1	Handling and/or disposing of waste	<ul> <li>A construction waste and resource management plan will be prepared for the proposal and will include, but not limited to the following:</li> <li>Identification of waste types and volumes that are likely to be generated by the proposal</li> <li>Adherence to the waste minimisation hierarchy principles</li> <li>Waste management procedures to manage the handling and disposal of waste, including unsuitable material or unexpected waste volumes</li> <li>Identification of reporting requirements and procedures for tracking of waste types and quantities</li> <li>A resource management strategy detailing the process to identify reuse options for surplus materials</li> <li>Procedures for handling and storing waste so that it does not cause pollution of the environment or pose a risk to water quality in the Darling River (Baaka) surrounds</li> <li>A procurement strategy to minimise unnecessary procedures and processary</li> </ul>	Pre- construction
		consumption of materials and waste generation in accordance with relevant legislation and guidelines	
W2	Excess spoil and surplus unusable waste	<ul> <li>Excess spoil generated in the proposal area would be transported by truck to XXX and it would be managed and disposed of by the construction contractor in accordance with XXX</li> <li>If waste is stored temporarily on-site, stockpiling would be managed to ensure that it poses no risk of polluting the environment including in adverse weather conditions</li> <li>All waste, including surplus soils that cannot be reused will be classified in accordance with the <i>Waste Classification Guidelines</i> (Environment Protection Authority, 2014a), removed from the site if unsuitable for use on-site, and disposed of at a facility that can lawfully accept the waste in accordance with the POEO Act and the Protection of the Environment Operations (Waste) Regulation 2014. Disposal dockets will be retained and records kept for audit purposes.</li> </ul>	Construction
W3	Vegetation	<ul> <li>Vegetation and woody debris would be managed in accordance with the vegetation management plan prepared as a sub-plan to the construction environmental management plan. This plan would identify opportunities to reuse vegetation waste in the rehabilitation plan including:</li> <li>Placing logs in the new town pool to create aquatic habitat</li> <li>Reusing logs in in site rehabilitation works</li> <li>Reusing logs in landscaping the community river place including as informal seating</li> </ul>	Construction



Ref	Impact/issue	Mitigation measure	Timing
		<ul> <li>Reusing mulch in site rehabilitation works and in landscaping at the community river place.</li> </ul>	
W4	Construction site	<ul> <li>Construction site induction or other training opportunities will be used to educate all site personnel on the importance of minimising waste</li> <li>Keep construction work free of litter</li> <li>Provide self-contained portable ablution and toilet facilities at construction sites. These facilities will be located at least 20 metres from any drainage lines. Septic waste will be transported off-site by a suitably licensed waste transporter and disposed at a suitably licensed waste facility.</li> </ul>	Construction
Bush fi	re		
BF1	Construction in bush fire prone areas	<ul> <li>A bush fire emergency management plan will be in accordance with <i>Planning for Bush Fire Protection</i> (NSW Rural Fire Service, 2019) and in consultation with the NSW Rural Fire Service.</li> <li>The bush fire emergency management plan will include responsibilities associated with and details of: <ul> <li>Site specific hazards and risks for the proposal area</li> <li>Hot works procedures</li> <li>Procedures to maintain bush fire awareness</li> <li>Bush fire mitigation measures</li> <li>Fire preparedness actions including evacuation triggers, evacuation routes, mustering points, neighbourhood safe places</li> </ul> </li> <li>Instructions for sheltering in-vehicle if there are no other options.</li> <li>Construction and staff attendance on site will be suspended on days with Severe or greater forecast fire danger ratings, and construction hours will be reduced or moved to an earlier time on hot days (days above 40 degrees) to avoid work being undertaken during the hottest time of the day.</li> </ul>	Pre- construction, Construction
Climate	e change and greenhou	se gas emissions	
CC1	Greenhouse gas emissions	<ul> <li>The construction contractor will consider the following as a minimum to minimise potential greenhouse gas emissions:</li> <li>Preferential use of local materials (where feasible and available) to reduce quantities of fuel consumption associated with material transportation</li> <li>Delivery of materials with full loads where feasible</li> <li>All plant and vehicles will be maintained regularly to maintain fuel efficiency</li> <li>Where reasonable and feasible, recycle or reuse construction materials such as rocks.</li> <li>Consider the greenhouse gas intensity and sustainability of the materials selected</li> </ul>	Construction



Ref	Impact/issue	Mitigation measure	Timing
		<ul> <li>Consider fuel efficiency when selecting vehicles, plant and equipment to be used during construction work</li> <li>Switch off all vehicles, plant or equipment not in use for extended periods, eg switch of heavy vehicle engines during unloading</li> <li>Minimise the number of vehicle trips and distances</li> </ul>	
		travelled by making this an objective when planning the construction works including staging and sequencing of the works, managing spoil and materials delivery, and selecting locations for construction compounds and temporary materials laydown and storage areas.	
Sustain	ability		
SU1	Sustainability outcomes	<ul> <li>A sustainability management plan will be prepared as a sub-plan of the construction environmental management plan. The sustainability management plan will include:</li> <li>sustainability objectives and targets</li> <li>details of sustainability initiatives to be implemented during planning and delivery of the proposal</li> <li>timing and responsibilities for implementing sustainability initiatives</li> <li>measures to determine the effectiveness of the sustainability initiatives in achieving the sustainability objectives and targets.</li> </ul>	Pre- construction Construction
SU2	Local content	Local content will be considered during the procurement for the construction phase of the proposal. Water Infrastructure NSW will develop a sustainable procurement plan that require construction contractors to demonstrate their local content as part of the tender process, to ensure that construction contractors are engaging local participants from the training programs under the APIC Policy and to achieve the ISLP targets through the design and construction phases. A participant resource list would be provided with the tender documents and the APIC Policy requirement will be written into the construction contract.	Pre- construction Construction



## Appendix F. Proponent details and environmental record

Proposed development - Wilcannia Weir Replacement

EPBC Referral number - 2020/8713

EP&A Act Assessment number - SSI-10050

Designated proponent – Water Infrastructure NSW, a part of the Department of Planning and Environment. The proposal was transferred from WaterNSW to Water Infrastructure NSW on 1 September 2021. Both the State significant infrastructure application and EPBC referral for the proposal were originally made with WaterNSW as the proponent. Water Infrastructure NSW wrote to both the NSW Department of Planning and Environment and the Commonwealth Department of Agriculture, Water and the Environment to notify them of the change in proponent.

ACN/ABN - 20 770 707 468

Postal address – Level 30, 4 Parramatta Square, 12 Darcy Street, Parramatta NSW 2150

Water Infrastructure NSW was formed in 2020 to bring the planning, development and delivery of regional water infrastructure into one agency. Water Infrastructure NSW will deliver a wide range of projects across NSW that will contribute to the reliability, security and sustainability of the State's water resources.

Water Infrastructure NSW is committed to preserving the environment by minimising the risk of environmental impacts from its activities.

Requirement	Environmental record of the person proposing to take the action
Does the person taking the action have a satisfactory record of responsible environmental management? Explain in further detail	Water Infrastructure NSW has no history of prosecutions with respect to its environmental record.
Provide details of any past or present proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against either (a) the person proposing to take the action or, (b) if a permit has been applied for in relation to the action – the person making the application	Water Infrastructure NSW has not had any previous proceedings against it under Commonwealth or State law for the protection of the environment, conservation and sustainable use of natural resources.



Requirement	Environmental record of the person proposing to take the action
If it is a corporation undertaking the action will the action be taken in accordance with the corporation's environmental policy and framework? If the person taking the action is a corporation, provide details of the corporation's environmental policy and planning framework	<ul> <li>Yes</li> <li>Water Infrastructure NSW has developed an Environmental and Sustainability Policy that outlines its vision, purpose and approach to delivering water infrastructure. The key elements of the policy are: <ul> <li>Vision – To deliver water infrastructure solutions that enhance cultural and socio-economic outcomes for the communities of NSW in an environmentally responsible and sustainable manner</li> <li>Purpose – To build resilience in regional water supplies by developing and delivering critical water infrastructure projects. Water Infrastructure NSW designs sustainable, innovative and integrated infrastructure that is effective to operate and maintain and adaptable to future requirements including those resulting from climate change</li> </ul> </li> <li>Approach – Water Infrastructure NSW collaborates with industry partners and stakeholders across the water sector to deliver innovative infrastructure and water management solutions. It strives to ensure that sustainability and environmental management processes are applied consistently across its portfolio, from planning and design through to procurement and delivery. Water Infrastructure NSW works to enhance its internal processes and project delivery through continuous improvement initiatives driven by qualitative and quantitative data sourced through research, feedback, consultation and audits.</li> </ul>
Has the person taking the action previously referred an action under the EPBC Act, or been responsible for undertaking an action referred under the EPBC Act? EPBC Act No and/or Name of Proposal.	<ul> <li>Yes</li> <li>Water Infrastructure NSW has referred two actions under the EPBC Act:</li> <li>2021/9091 – Department of Planning, Industry and Environment / Water Management and Use / the Peel Valley / New South Wales / Replacement Pipeline between Dungowan Village and Calala</li> <li>2021/9012 – Water Infrastructure NSW (a Division within the NSW Department of Planning, Industry and Environment)/Water Management and Use/Dungowan Dam/New South Wales/Dungowan Dam Detailed Design Geotechnical Investigations.</li> </ul>



## Appendix G. Strategic planning review

### Strategic policy context

A review of strategic planning documents relevant to Western NSW and the supply of town water within the Murray-Darling Basin was carried out as part of the preparation of the environmental impact statement for the proposal and is summarised in the following sections.

### Appendix G.1 Commonwealth policy context

On 7 May 2018 the Commonwealth Government confirmed a \$3.3 billion package of commitments to support the Basin States and the Basin Plan, organised into five streams. One of which is focused on "improving outcomes for Indigenous people, and addressing social and economic impacts of the Murray-Darling Basin Plan".

Specifically, commitment 3g refers to the joint funding by the Commonwealth and NSW Governments to "support works for cultural gatherings and low impact water recreation, including options to refurbish weirs at Cunnamulla and Wilcannia" (Department of Agriculture, Water and the Environment, 2018).

#### G.1.1 Sustainable Rural Water Use and Infrastructure Program

Sustainable Rural Water Use and Infrastructure Program is a national program managed by the Department of Agriculture, Water and the Environment to invest in rural water use, management and efficiency.

The Commonwealth Government has committed funding of \$15 million to the proposal drawn from the Sustainable Rural Water Use and Infrastructure Program.

### Appendix G.2 State policy context

#### G.2.1 Building Momentum State Infrastructure Strategy 2018-2038

*Building Momentum State Infrastructure Strategy 2018-2038* (Infrastructure NSW, 2018) assesses infrastructure problems and solutions and provides recommendations to best grow the State's economy, enhance productivity and improve living standards.

The strategy recognises that different parts of NSW face different opportunities and needs. It recognises that regional NSW needs improvements to basic services like health, education and a reliable supply of drinking water.

The strategy includes an objective for water infrastructure to 'support the growth, productivity and liveability of metropolitan and regional communities by ensuring that water security, quality and wastewater services protect public health and the environment'. Key recommendations relevant to the proposal include:

- Assess the climate science capability required for water resource management and for infrastructure investment decision-making
- Develop a risk-based approach to identify priority infrastructure projects that protect drinking water safety in regional NSW towns.

The proposal is considered a priority infrastructure project as State significant infrastructure and is funded by the NSW and Commonwealth governments with the goal of meeting water needs and securing drinking water supply for Wilcannia.



#### G.2.2 NSW State Priorities

In June 2019 the NSW Premier released 14 priorities for the state. Amongst them is a target to increase the number of Aboriginal young people reaching their learning potential.

Water Infrastructure NSW has committed to the Aboriginal Procurement Policy, which aims to support employment opportunities for Aboriginal people including in government construction projects. The proposal includes a training and employment program delivered by TAFE NSW and partners to increase the employment opportunities available to Aboriginal community members. Further details are provided in **Section 5**.

#### G.2.3 NSW Water Strategy

The *NSW Water Strategy* (DPIE, 2021b) is a 20-year State-wide strategy to improve the security, reliability and quality of the State's water resources over the coming decades. The *NSW Water Strategy* addresses key challenges and opportunities for water management and service delivery across the State and set the strategic direction for the NSW water sector over the long-term. It is part of a suite of long-term regional strategies including the Western Regional Water Strategy.

The strategy outlines key priorities:

- Priority 1: Build community confidence and capacity through engagement, transparency and accountability
- Priority 2: Recognise First Nations/Aboriginal People's rights and values and increase access to and ownership of water for cultural and economic purposes
- Priority 3: Improve river, floodplain and aquifer ecosystem health, and system connectivity
- Priority 4: Increase resilience to changes in water availability (variability and climate change)
- Priority 5: Support economic growth and resilient industries within a capped system
- Priority 6: Support resilient, prosperous and liveable cities and towns
- Priority 7: Enable a future focused, capable and innovative water sector.

As stated in the strategy, "Every person in NSW has a right to expect access to safe drinking water for use at home and water security in their communities to sustain job creating businesses and healthy natural environments."

It is also important to acknowledge that "Water is also at the heart of Aboriginal people's connection to Country and culture, and First Nations are acknowledged as the traditional custodians of all of NSW's water resources. First Nations and Aboriginal people have rights and a moral obligation to care for water under their law and customs."

An action plan has been prepared to show what will be implemented from July 2021 to the end of June 2022 for each of the seven priorities. In developing and finalising the design and assessment for the Wilcannia Weir Replacement, Water Infrastructure NSW will continue to consult with the Barkandji Native Title Group Aboriginal Corporation regarding the proposal and greater Aboriginal access and ownership of water.

#### G.2.4 Western Regional Water Strategy

The NSW Government is preparing new regional water strategies that will bring together the best and latest climate evidence with a wide range of tools and solutions to plan and manage the water needs in each NSW region over the next 20-40 years. Led by the DPE, 12 regional water strategies are being prepared in partnership with water service providers, local councils, communities, Aboriginal people and other stakeholders across NSW. DPE will be working with communities to ensure local and traditional knowledge informs the strategies and that long-term water strategies serve regional communities, including Aboriginal people, the environment and industry.



A Western Regional Water Strategy is being developed to address the water-related challenges to support a liveable and prosperous Western region. The draft Western Regional Water Strategy will consider water supply, reliability and security.

#### G.2.5 Western Weirs Program

The Western Weirs Program is a study by Water Infrastructure NSW to investigate a whole-of-river system approach to the management of the Barwon-Darling and Lower Darling systems and their river infrastructure.

Water Infrastructure NSW has developed a strategic business case for the program. The program seeks to improve water security for towns in the Far West Region, including Aboriginal communities supplied by those towns, by evaluating infrastructure options to improve water security for towns and improve river flows along the Barwon-Darling and Lower Darling rivers (Baaka). The strategic business case also assesses alternative non-weir options that could have similar benefits for improving town water security.

A key driver of the study is to improve system flows, so any future improvements to the volume or quality of inflows to Wilcannia that are identified would be beneficial.

The strategic business case for the Western Weirs Program is being considered by Infrastructure NSW. Infrastructure NSW will determine if the program receives further funding to proceed to a more detailed analysis in a final business case.

Implementation of the Western Weirs Program may include all or some of the following:

- Construction of either new or upgraded weirs at towns incorporating gates and fishways
- Possible removal or lowering of some weirs that do not supply water for towns
- Alternative options to weirs to improve town water security.

Within Water Infrastructure NSW, the Wilcannia Weir Replacement project team has consulted regularly with the Western Weirs Program team to ensure that it is informed of the proposal's construction and operation, so that there is overarching consistency between the proposal and the various hydraulic modelling studies being undertaken for the Western Weirs Program.

#### G.2.6 Safe and Secure Water Program

The NSW Government established the \$1 billion Safe and Secure Water Program in 2017 to provide safe, secure and sustainable water and wastewater services to regional NSW towns. The program, managed by DPE, provides funding to non-metropolitan councils, local water utilities, county councils, water supply authorities and joint organisations for projects to ensure these organisations can continue to deliver their services safely and reliably. The Safe and Secure Water Program directs funds to projects based on a risk prioritising framework, identifying areas with the greatest risks of water security, water quality and human and environmental health (DPIE, 2019a).

Projects approved for funding under the Safe and Secure Water Program includes the Wilcannia Weir Upgrade, where \$30 million has been allocated to the proposal from both the NSW and Commonwealth governments.

#### G.2.7 Better Baaka Program

The NSW Government is investigating a range of measures for the Darling River (Baaka) system by taking a holistic and system-wide approach to water infrastructure planning and operation. The Better Baaka Program was launched in early 2021 and options are currently being investigated on projects and initiatives that can be progressed to deliver better environmental and social outcomes for the Darling River (Baaka) communities (NSW Government, 2021). The Better Baaka Program also aligns with broader policy and rules being investigated through the Western Regional Water Strategy.

A key focus of the Better Baaka Program is to deliver social and economic outcomes for local Aboriginal communities by enhancing tourism, education and employment opportunities. Wilcannia Weir is one of many initiatives in the program and the proposal would help achieve the target outcomes for the local community by increasing town water security, improving fish passage, improving water quality and providing employment and training opportunities.

#### G.2.8 NSW Floodplain Development Manual 2005

The *Floodplain Development Manual: The Management of Flood Liable Land* (Department of Infrastructure, Planning and Natural Resources, 2005) supports the Flood Prone Land Policy and guides local government in managing flood risk in their communities. The Flood Prone Land Policy promotes a balance of social, economic and environmental factors when considering whether certain development or use of the floodplain is sustainable.

#### G.2.9 NSW Aquifer Interference Policy

The *NSW Aquifer Interference Policy* (DPI Office of Water, 2012) applies to all aquifer interference activities under the WM Act and should be considered during the design and development of a project. The policy establishes three principles:

- 1) All water taken must be properly accounted for.
- 2) The activity must address minimal impact considerations for impacts on water table, water pressure and water quality.
- 3) Planning for measures in the event that the actual impacts are greater than predicted, including making sure that there is sufficient monitoring in place.

The WM Act defines an aquifer interference activity as that which involves any of the following:

- the penetration of an aquifer,
- the interference with water in an aquifer,
- the obstruction of the flow of water in an aquifer,
- the taking of water from an aquifer in the course of carrying out mining or any other activity prescribed by the regulations, and
- the disposal of water taken from an aquifer in the course of carrying out mining or any other activity prescribed by the regulations.

Examples of aquifer interference activities include mining, coal seam gas extraction, injection of water, and commercial, industrial, agricultural and residential activities that intercept the water table or interfere with aquifers. The Water Management (General) Regulation 2011 states that an aquifer interference activity also includes the extraction of sand and the extraction of road base material.

The Aquifer Interference Policy applies to all aquifer interference activities but has been developed in particular to address high risk activities such as mining, extractive industries, coal seam gas activities, large project requiring dewatering, injection works, activities with potential to contaminate groundwater.

#### G.2.10 Guideline for Controlled Activities on Waterfront Land – Riparian Corridors

The Natural Resources Access Regulator published the *Guidelines for Controlled Activities on Waterfront Land – Riparian Corridors* (Department of Industry, 2018) to help establish and preserve the integrity of riparian corridors.

The Natural Resources Access Regulator is responsible for all controlled activity approvals for work carried out in, on, or beside rivers, lakes and estuaries.



The proposal is a controlled activity on waterfront land under the WM Act. The proposal is exempt from obtaining a controlled activity approval however would follow the recommendations in the guidelines.

#### G.2.11 NSW Weirs Policy

The *NSW Weirs Policy* (NSW Government, 1997) is a component of the State Rivers and Estuaries Policy (NSW Water Resources Council, 1993). The aim of the Weirs Policy is to halt and where possible reduce and remediate the environmental impact of weirs. The following management principles underpin the Weirs Policy:

- 1) The construction of new weirs, or enlargement of existing weirs, shall be discouraged
- 2) Weirs that are no longer providing significant benefits to the owner or user shall be removed, taking into consideration the environmental impact of removal
- 3) Where retained, owners shall be encouraged to undertake structural changes to weirs to reduce their environmental impact on the environment.

The proposal would involve the construction of a replacement weir and a new fishway on the Darling River (Baaka), and the partial removal and decommissioning of the existing weir, to provide water security for the township as the existing weir is at the end of its functional life. The proposal is necessary to maintaining the essential social and economic needs of the community. The environmental impact statement has considered the environmental impacts of construction of the new weir and partial removal and decommissioning of the existing weir. The structural changes being applied to the new weir have been designed to reduce environmental impacts by maintaining a fishway for aquatic movement and including weir gates to control the weir pool level and downstream flows. Furthermore, the operational principles developed for the proposal require that flows are passed downstream (via the fishway) during normal operation mode to deliver improved environmental flows that are not possible with the existing weir.

Details of the weir design and operation are provided in Section 3.4 and Section 3.5.3 respectively.

#### G.2.12 Policy and Guidelines for Fish Habitat Conservation and Management

The *Policy and Guidelines for Fish Habitat Conservation and Management* (Department of Primary Industries, 2013) aims to maintain and enhance fish habitat for the benefit of native fish species, including threatened species, in marine, estuarine and freshwater environments. It seeks to ensure sustainable management and 'no net loss' of key fish habitats in NSW. The general policy applies to fish habitat conservation and management, and there are also guidelines for in-stream structures and barriers to fish passage, foreshore works and waterfront development, and waterway management.

The proposal has considered the policy and guidelines as part of the aquatic ecology assessment (refer to Section 13.1 and Technical Report 3).

#### G.2.13 Planning for Bush Fire Protection

*Planning for Bush Fire Protection* (NSW Rural Fire Service, 2019) seeks to provide for human safety (including fire responders) during bush fire events and minimise the effects of bush fires on property; while considering development potential, site characteristics and environmental protection. It is underpinned by several principles:

- Bush fire protection measures: preparations which assist building survival during bush fires and contribute to the safety of fire responders and members of the public located within a development on bush fire prone land. They may include any combination of the following: asset protection zones, construction, siting, design, access, water and other utilities, landscaping, and emergency planning
- *Risk:* protection measures are proportional to the threat or risk bush fires pose to a development. Note that regardless of any setbacks or protection measures, the safety of a development in a bush fire-prone area cannot be entirely guaranteed



- *Managing interfaces:* threats posed by bush fires are diminished by reducing the direct interface between developments and bush fire hazards
- *Good practice in planning and management:* planning for bush fire resilience though planning, building and operation of a development reduces risk and increases bush fire resilience of the development and its users.

Parts of the proposal site, in particular the area adjacent to the right bank of the new weir site, would be located in land mapped as Vegetation Category 3 bush fire prone land (NSW Rural Fire Service, 2020). As designated State significant infrastructure, the proposal is exempt from the requirement under the EP&A Act to comply with *Planning for Bush Fire Protection* (NSW Rural Fire Service, 2019). However, the guidelines recommend that State significant infrastructure projects should still apply the recommendations of the policy.

The proposal does not comprise a development that is described as a special fire protection purpose under section 100B of the *Rural Fires Act 1997, Planning for Bush Fire Protection* or Part 6 Section 46 of the Rural Fires Regulation 2013.

Water Infrastructure NSW has engaged with the NSW Rural Fire Service during its preparation of the preliminary concept design and environmental impact statement for the project.

Consideration of possible bush fire risks is provided in Section 21.3.

#### G.2.14 OCHRE – NSW Government Plan for Aboriginal Affairs: Education, employment and accountability

In 2013 the NSW Government released the OCHRE (Opportunity, Choice, Healing, Responsibility, Empowerment) Plan to support strong Aboriginal communities in which Aboriginal people actively influence and fully participate in social, economic and cultural life.

The OCHRE Plan is focused on:

'revitalising and promoting language and culture, creating opportunities, increasing people's capacity, providing choice and empowering people to exercise that choice, as well as giving them the tools to take responsibility for their own future' (NSW Government, 2013).

The proposal offers a positive opportunity to create cultural and economic opportunities for the Aboriginal community in Wilcannia. In particular, the consultation and engagement program for the development and delivery of the proposal has been structured to meet the needs of the Wilcannia Weir Replacement program, with a focus on authentic and transparent engagement.

#### G.2.15 Aboriginal Communities Water and Sewerage Program

The Aboriginal Communities Water and Sewerage Program aims to improve water supply and sewerage services in eligible Aboriginal communities in NSW. The program began in December 2008 and is a joint initiative of the NSW Government and the NSW Aboriginal Land Council. It aims to raise the standard of service by engaging local water utilities with expertise and experience in the management of water supply and sewerage systems to operate and manage water and sewerage infrastructure in these communities.

In 2018 routine operation and maintenance works were completed for Warrali Mission in Wilcannia. The program also involved the installation of a new gravity sewerage system and a new sewerage pump station for the community.

#### G.2.16 Crown Land 2031 – State Strategic Plan for Crown Land

The Crown Land 2031 State Strategic Plan (NSW Government, 2021) is a 10-year strategy to ensure Crown land can be put to best use to benefit communities. The key priorities of the Crown Land 2031 plan include:

- Strengthen community connections with Crown land
- Accelerate economic progress in regional and rural NSW
- Accelerate the realisation of Aboriginal land rights and native title in partnership with Aboriginal people
- Protect cultural heritage on Crown land
- Protect environmental assets, improve and expand green space and build climate change resilience

Crown land 2031 provides a commitment to uphold and progress land rights and native title interests in NSW, with outcomes including measurable contribution to national 'Closing the Gap' targets

Targeted outcomes to support cultural heritage protection includes for cultural heritage sites and Aboriginal sites on Crown land to be identified and protected in partnership with local communities.

The proposal would be located on Crown land, including Crown land managed by Central Darling Shire Council. The proposal would be consistent with the key priorities of the Crown Land 2031 Plan.

### Appendix G.3 Regional policy context

#### Making it Happen in the Regions: NSW Regional Development Framework

*Making it Happen in the Regions: NSW Regional Development Framework* (NSW Department of Industry, nd), sets out the strategic plan for co-ordination, decision making and effort across regional NSW. It sets out a model of investment in regional NSW that:

- Provides quality services and infrastructure in regional NSW ensuring a baseline of services across regional NSW
- Aligns efforts to support growing regional centres, acknowledging the needs of areas with strong growth in population, jobs or both
- Identifies and activates economic potential by looking across regional NSW for opportunities to change the
  economic outlook and activate local economies.

Under the Rebuilding NSW fund, \$1 billion has been allocated for water security, to progress towards the goal of ensuring essential services and infrastructure such as water is accessible for all people in regional NSW.

#### Far West Regional Plan 2036

The *Far West Regional Plan 2036* (DPE, 2017) is a 20-year plan for the future of Western NSW. The key set of initiatives and regional goals are:

- A diverse economy with efficient transport and infrastructure network
- Exceptional semi-arid rangelands traversed by the Barwon-Darling River (Baaka)
- Strong and connected communities.

The plan includes a list of directions to help achieve the three goals, including:

- Direction 5: Promote tourism opportunities
- Direction 9: Sustainably manage water resources for economic opportunities
- Direction 10: Enhance the economic self-determination of Aboriginal communities

- Direction 14: Manage and conserve water resources for the environment
- Direction 18: Respect and protect Aboriginal cultural heritage assets
- Direction 22: Collaborate and partner with Aboriginal communities
- Direction 26: Manage and conserve water resources for communities.

The proposal would directly strengthen the water related infrastructure of Wilcannia as it represents the replacement of an asset that is deteriorating and is not currently placed in a location that allows it to be most effective. The proposal would also seek to improve cultural connections between Aboriginal communities and the Darling River (Baaka) and to protect and maintain both environmental and cultural assets. It will also provide increased tourism opportunities and allow for better management of water through modern infrastructure solutions.

#### Barwon-Darling Long Term Water Plan Part A 2020

Long-term water plans guide the management of water for the environment over the longer term. Long-term water plans for nine river catchments in NSW have been finalised, including the Barwon-Darling river system.

The 20-year *Barwon-Darling Long Term Water Plan Part A* (DPIE, 2020a) identifies strategies for maintaining and improving the long-term health of the Barwon-Darling riverine and floodplain environment and ecological functions. The plan describes the flow regimes that are required to maintain or improve environmental outcomes.

The Murray-Darling Basin Plan establishes a framework for managing environmental water at the broader basin and catchment scale. This framework is supported by the long term water plans and the *Basin-wide Environmental Watering Strategy* (MDBA, 2019). Long term water plans apply to catchment-scale WRP areas (such as the Barwon-Darling WRP) and identifies priority environmental assets and functions, ecological objectives and targets, and environmental water requirements needed to meet those targets.

The Barwon-Darling Long Term Water Plan lists the following outcomes sought for the catchment:

- Maintain current species diversity, extend distributions, improve breeding success and numbers of native fish and threatened aquatic species such as mussels and snails
- Maintain the extent and improve the condition of native vegetation
- Maintain the current species diversity, improve breeding success and numbers of waterbirds
- Improve connections along rivers and between rivers and their floodplains for improved river system health.

Complementary measures that are needed to help achieve the objectives of the Barwon-Darling Long Term Water Plan are identified as follows:

- Addressing fish passage and habitat
- Planning effectively for climate change and short-term intensive drought
- Establishing community engagement mechanisms appropriate for the geographic extent.

#### **NSW Regional Water Statement**

The *NSW Regional Water Statement* (Department of Industry, 2019) sets out the government's approach to managing water resources, recognising the economic importance of secure water access to regional communities and balancing competing interests.



In order to ensure water security, the NSW Government is working with regional communities and planning for long term infrastructure solutions. Commitments include:

- Developing long-term regional water strategies to identify solutions to emerging challenges
- Investing in regional and local water infrastructure projects to secure water supply
- Supporting local water utilities to improve water services
- Implementing and updating water sharing plans that balance water use for everyone
- Delivering on our commitments under the Murray–Darling Basin Plan.

The *NSW Regional Water Statement* also acknowledges the cultural and spiritual significance to Aboriginal people and commits to ensuring the availability and quality of water to improve cultural connections to Country, social-well-being and the integrity of the natural landscape.

The proposal has been carefully developed with consideration to the cultural needs of the Barkandji people and is intended to ensure greater water security for the town.



# Appendix H. Outline operations plan



Wilcannia Weir Replacement Project

# Wilcannia Weir - Operational Plan

Revision 0.5: Working Draft for EIS submission

July 2022



NSW Department of Planning and Environment | dpie.nsw.gov.au

## Preamble

The Wilcannia Weir Operations Plan (the Plan) has been developed to provide an instrument of reference for river operations to guide decision using the new weir operational features, for the benefit of maintaining town water security, seek to minimise environmental impacts, and preserve cultural values.

# **Acknowledgment of Country**

The Department of Planning and Environment acknowledges the Traditional Owners and Custodians of the land on which we stand and pays respect to Elders past, present and future.

We pay our respects to the Barkandji Nation and elders past, present and emerging. They hold the memories, traditions, cultures, and hopes of the First Nations of this country.

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# **Terms and Acronyms**

#### Table 1: Acronyms

Acronym	Definition
CAPEX	Capital Expenditure
SSI	State Significant Infrastructure
CtF	Cease-to-flow
CtP	Cease-to-pump
DO	Dissolved oxygen
DPE	Department of Planning and Environment
EIS	Environmental Impact Statement
FSL	Full Supply Level
LGAs	Local Government Areas
MDBA	Murray Darling Basin Authority (MDBA)
ML	Megalitre
ML/a	Megalitres per annum
mg/L	milligrams per litre
NSW	New South Wales
0&M	Operation and Maintenance
SSI	State Significant Infrastructure
Water Infrastructure NSW	Water Infrastructure New South Wales

Terms	Definition
Allocation	The volume of water made available to water access licence or environmental water accounts in a given year by DPE – Water, which is determined within the context of rules in Water Sharing Plans
Bankfull flow	River flows at maximum channel capacity with little overflow to adjacent floodplains. These flows engage the riparian zone, anabranches, flood runners and wetlands located within the meander train. They inundate all in-channel habitats including benches, snags, and backwaters
Barkandji People	The Barkandji people are the largest Aboriginal group in the Wilcannia area and also hold native title in the North-West of NSW including areas of Broken Hill, Wilcannia, Menindee, Pooncarie, and Dareton
Barwon-Darling WSP	Water Sharing Plan for the Barwon–Darling Unregulated and Alluvial Water Sources 2012
Barwon Darling Long Term Water Plan	Barwon–Darling Long Term Water Plan Parts A and B. The NSW Long Term Water Plans aim to contribute to the achievement of the Murray Darling Basin Wide Environmental Strategy by identifying priority environmental assets and functions in a Water Resource Plan Area, ecological objectives and ecological targets for those assets and functions, and environmental water requirements (EWRs) needed to meet those targets and achieve the objectives
Myandetta Gauge	Gauging station gauging station 425038 Myandetta gauging station (31 km d/s of Bourke town weir)
Murray–Darling Basin Plan (Basin Plan)	The Basin Plan as developed by the Murray–Darling Basin Authority under the Commonwealth Water Act 2007
Consumptive water	Water that is removed from a water source such as water removed from a river for agriculture
Cultural water- dependent asset	A place that has social, spiritual, and cultural value based on its cultural significance to Aboriginal people. Related to the water resource
Cultural water- dependent value	An object, plant, animal, spiritual connection or use that is dependent on water and has value based on its cultural significance to Aboriginal people
Differential head	Difference between water surface levels upstream and downstream of a hydraulic structure
Discharge	The amount of water moving through a river system, most commonly expressed in megalitres per day (ML/d)
Entitlement	The volumetric quantity of water specified on the licence as being the maximum that can be taken during any year, subject to Allocation Announcement(s)
Environmental water	Water not available for consumption and includes HEW and PEW
Environmental water requirement (EWR)	The water required to support the completion of all elements of a lifecycle of an organism or group of organisms (taxonomic or spatial), consistent with the objective/target, measured at the most appropriate gauge. It includes all water in the system including natural inflows, held environmental water, and planned environmental water

### **Table 2: Terms and Definitions**

Terms	Definition
Existing Downstream gauge (Wilcannia Weir)	Darling @ Wilcannia Main Channel Gauge 425008 measuring flows in the main channel of the Darling (Baaka) River, downstream of the existing Wilcannia weir. This gauge will become submerged and be converted to a depth gauge and water quality measuring station once the new weir is commissioned
Flow regime	The pattern of flows in a waterway over time that will influence the response and persistence of plants, animals, and their ecosystems
Freshes	Temporary in-channel increased flow in response to rainfall or release from water storages. Table 10 in the Barwon Darling Long Term Water Management Plan Part A outlines what the levels of flow is that are considered to be Freshes in the Tilpa to Wilcannia reach of the Barwon-Darling River (Baaka) and the priority environmental objectives to maintain under these flow conditions
Headwater level (HWL)	Water level immediately upstream of a control structure that is not affected by any significant draw-down or related disturbance
Held environmental water (HEW)	Water available under a water access licence for the purposes of achieving environmental outcomes (including water that is specified in a water access right to be for environmental use)
Hydrology	The occurrence, distribution, and movement of water
Inflows	In the context of this Operations Plan, daily Inflows are defined as the change in storage (weir pool) level in the "town pool" plus releases in the previous 24 hours
Key ecological value	A species or community that is identified for its special conservation significance based on selected temporal and spatial criteria. Examples include Murray cod or river red gum woodlands
Large fresh (LF)	High-magnitude flow pulse that remains in-channel. These flows may engage flood runners with the main channel and inundate low-lying wetlands. They connect most in-channel habitats and provide partial longitudinal connectivity, as some low-level weirs and other in-channel barriers may be drowned out. Table 10 in the Barwon Darling Long Term Water Management Plan Part A outlines what the levels of flow is that are considered to be Large Freshes in the Tilpa to Wilcannia reach of the Barwon-Darling River (Baaka) and the priority environmental objectives to maintain under these flow conditions. This flow is in a similar range to C-Class flow defined in the Part 8, Division 2, 49A Table B of the Barwon-Darling WSP
Long Term Water Plan (LTWP)	A component of the Basin Plan. Long term water plans give effect to the Basin- wide environmental watering strategy (MDBA 2014) relevant for each river system and will guide the management of water over the longer term. These plans will identify the environmental assets that are dependent on water for their persistence, and match that need to the water available to be managed for or delivered to them. The plan will set objectives, targets and watering requirements for key plants, waterbirds, fish, and ecosystem functions. DPIE-BC is responsible for the development of nine plans for river catchments across NSW, with objectives for five, 10 and 20-year timeframes

Terms	Definition
Planned Environmental Water (PEW)	Planned Environmental Water is water that is committed by and defined by management plans (WSPs) for fundamental ecosystem health or other specified environmental purposes, either generally or at specified times or in specified circumstances and that cannot, to the extent committed, be taken, or used for any other purpose
NARCliM	The NSW and ACT Regional Climate Modelling (NARCliM) is a partnership between the NSW, ACT and South Australian governments and the Climate Change Research Centre at the University of NSW. NARCliM provides high resolution climate projections at a regional scale
Moorabin Gauge	Moorabin is the new gauging station (425058), 2.49 km downstream of the new weir site and 3.18 km upstream of the confluence of Woytchugga Creek and the Darling (Baaka) River
Riparian	The part of the landscape adjoining rivers and streams that has a direct influence on the water and aquatic ecosystems within them
Secure Yield	The highest annual water demand that can be supplied from a water supply headworks system while meeting the '5/10/10' design criteria. The 5/10/10 design criteria specify the maximum length and severity of drought restrictions- duration of restrictions does not exceed 5% of the time; Frequency of restrictions does not exceed 10% of years (i.e., 1 year in 10 on average); Severity of restrictions does not exceed 10%
Tailwater level (TWL)	Water level immediately downstream of a structure that is beyond the zone of any high energy flow and/or turbulent water
Trailing Inflows	Town pool inflows that occur after a weir Filing phase has been activated and prior to initial filling of the structure's drought full supply level storage
The Regional Water Strategy	Western Regional Water Strategy
Town Pool	The town pool is the new weir pool that is 4.92km in length from the old decommissioned weir to the new Wilcannia weir location in which Darling @ Wilcannia Main Channel Depth Gauge 425008 is located
Translucency	The management of the weir by the passing of some of the inflows to the "town pool", downstream of the weir structure, via the fishway or by operation of the weir outlet gates
Water sharing plan (WSP)	A management plan made under the NSW Water Management Act 2000 that sets out specific rules for sharing and trading water between the various water users and the environment in a specified water management area. It forms part of a WRP
Water-dependent system	An ecosystem or species that depends on periodic or sustained inundation, waterlogging, or significant inputs of water for natural functioning and survival

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## 1.0 About this plan

The Darling River (Baaka) at Wilcannia is the main drainage channel within the Barwon-Darling catchment area in the Murray-Darling Basin. The Barwon–Darling corridor connects all the rivers, lakes, and wetlands in the northern Basin; and then provides a connection to the southern Basin through the lower Darling River and connection to the Murray river at Wentworth, NSW.

There are 14 weirs on the Darling (Baaka) and Barwon rivers upstream of Wilcannia Weir that, together with weirs located downstream of Wilcannia, result in variable river flow conditions (particularly at low flows), with some reaches flowing (lotic between weir pools) and others non-flowing (lentic, within weir pools) at any one time. The river system is unregulated; however, it is highly impacted by headwater dams, regulated tributary catchments, water extraction and numerous low-level weirs.

The existing Wilcannia Weir is located at the township of Wilcannia, about halfway between Bourke and the Murray River and about 55 kilometres downstream of the confluence with the Paroo River. The Central Darling Shire Local Government Agency operates the existing Wilcannia town water supply using the local water utility license under the nominated works approval 85CA753418.

Water Infrastructure NSW proposes to replace the existing Wilcannia Weir with a new weir and partial demolish the existing weir. Upon completion of the Wilcannia Weir Replacement Project, the new weir will be owned and operated by WaterNSW.

The new weir is designed with dual operation mode capabilities for normal and drought periods with the weir crest held at 1 metre above the existing full supply level during drought periods (compared to existing weir). Dynamic storage operating rules would apply when the new weir is in normal operation mode and a translucency rule would apply when the new weir is in drought security operation mode.

These design features and operating rules would enable the new weir to provide adequate water security to Wilcannia while minimising impacts to flows in the Darling River (Baaka). Given the importance of the river to the community, the operational considerations in this plan are designed to meet community needs and expectations and maintains the strong connection people have to the river.

# 2.0 Operational Rules

The Wilcannia Weir has dual modes of operation, separated by transition phases to transfer between modes. The operational requirement for the structure aligned to these modes/phases is set out in this chapter, and summarised below:

- Normal mode (dynamic storage management) During normal operation mode the weir outlet gates will mostly be set at full supply level -1 metre (65.71 metres AHD) except at times of increased inflows. Fishway gates will always be fully opened in this mode.
- 2. Drought mode (security storage management) At the start of drought mode the weir will be at drought full supply level of 66.71 metres AHD. Fishway gates and main weir gates will be closed unless *Translucency rule* is activated, with drawn down of the storage based on town demand.
- 3. Filling phase This is a transitional phase from Normal Mode to Drought Mode. During the filling phase the storage volume will be raised to the drought full supply level (66.71 metres AHD). Fishway gates and main weir gates will be raised and both fully closed upon completion of phase.
- Reset phase This is a transitional phase from Drought Mode to Normal Mode. During the reset phase the storage level will be lowered to the full supply level 1 metre (65.71 metres AHD). Fishway gates and main weir gates will be lower with fishway gates fully open and Outlet gates at 65.71 metres AHD upon completion of phase.

Transition phases between the modes are triggered by forecasted upstream inflows at Myandetta' gauging station 425038. The transitional phases are short, lasting between 3 to 5 days.



### Figure 1: Decision Flowchart on rules for operation modes & phases of the Wilcannia Weir

## 2.1 Normal Mode – Dynamic Storage Management

In Normal mode the objective is to manage a dynamic storage where the discharge capacity of the weir will vary as the outlet gates are raised (closed) or lowered (opened) to minimise upstream headwater levels and control downstream energy dissipation.

## 2.1.1 Confirm activation of Normal Mode

Control references:

• *Myandetta' gauging station 425038* - provides flow volumes downstream of Bourke town weir.

Mode Activation conditions (over the same 24-hour period):

- a. Consistent gauge reading of a flows reading >250 ML/d from *Myandetta' gauging station* 425038, and;
- b. the Wilcannia Weir has concluded Reset Phase activities as defined in section 2.4 of this plan (Reset Phase Conclusion = Fishway gates fully opened & outlet gates at 65.71m AHD).

If the activation conditions are met, the Normal Mode of the structure is confirmed. No further operational adjustment is required (apart from monitoring), unless inflows over the weir outlet gates (at 65.71M AHD) become > 0.5 metres.

### 2.2.2 Normal Mode - Dynamic Storage Management

Control references:

- Darling @ Wilcannia Main Channel Depth Gauge 425008 provides daily Wilcannia weirpool AHD storage volume levels.
- Moorabin gauging station (425058) provides daily flow volumes downstream of the weir.

### Figure 2: Normal Mode – Storage management of high inlet flows – Decision flowchart



#### Site Implementation of Dynamic Management

The principal rule for operations in Normal mode is to ensure the discharge volume over the outlet gates does not exceed a threshold of 0.5 metres. This is demonstrated in **Figure 3** and tabulated in **Table 3**.

Inflows to the town pool identify by change in weirpool level (*Darling @ Wilcannia Main Channel Depth Gauge 425008*), in combination with the downstream gauging station (*Moorabin gauge - 425058*), will identify when this threshold is reached – requiring operational intervention.



#### Figure 3: Headwater rating curve during normal mode – dynamic management of storage

Note - No operation movements of fishway required will weir is in Normal Mode

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Moorabin gauging	Outlet Gates		
station (425058) – Total discharge (ML/day)	Outlet Gate AHD Level (metres)	Operational Movements – Refer to Darling @ Wilcannia Main Channel Depth Gauge 425008	Gates
≤60	65.71m	None	Opened
≤533	65.71m	None	
>534 to ≤794	65.71m to 66.21m	Progressive daily gates raising/closure to ensure max discharge volume over gates is not > 0.5 metres	
>795 to ≤1862	66.21m to 66.71m	Progressive daily gates raising/closure to ensure max discharge volume over gates is not > 0.5 metres	
>1862	66.71m to 64.71m	Drown out of structure complete with gates fully open to maximise waterway	

## 2.2 Filling Phase - Transition to Drought Mode

The primary objective during the filling phase is to fill the weirpool to 66.71m ADH in a manner that results in a progressive reduction in river flows and water levels, downstream of the Wilcannia weir.

### 2.2.1 Confirm activation of Filling Phase

Control references:

• *Myandetta' gauging station 425038* - provides flow volumes downstream of Bourke town weir.

Activation conditions (over the same 24-hour period):

- a. Consistent gauge reading of a flows reading <**250 ML/d** from *Myandetta' gauging station* 425038, and;
- b. the Wilcannia Weir is in normal mode over the same period. (Normal Mode = Fishway gates fully opened, & outlet gates at between 65.71m & 66.71m AHD).

If both activation conditions are met operational intervention is required with the implementation of progressive closure rule.

### 2.2.2 Progressive Closure Rule

Control references:

- Darling @ Wilcannia Main Channel Depth Gauge 425008 Provides daily Wilcannia weirpool AHD levels.
- Moorabin gauging station (425058) Provides daily flow volumes downstream of the weir.
- Outlet and fishway gates ADH Level at time of rule activation.

### Figure 4: Filling Phase – Progressive Closure Rule - Decision flowchart



All operational structure gate movements during activation are informed by:

- a. comparison between readings taken prior to operation and reading taken at the same time in the previous 24 hour period (in relation to flow readings downstream of the weir and weirpool level readings from within the weirpool), and;
- b. current ADH level of outlet gates, and;
- c. Outlet gate movements incremental closures reference in the following table.

#### Table 4: Discharge Rating Table – Progressive Closure

Control Reference	Control Readings (Daily)	Actions
<i>Moorabin gauging station (425058)</i> – Downstream flows of Wilcannia Weir	≥450 ML/day	300mm raising of outlet weir gates to reach 66.71m AHD
	≥200 to <450 ML/day	150 to 300mm raising of outlet weir gates to reach 66.71m AHD
	≥75 to <200 ML/day	50 to 150mm raising of outlet weir gates to reach 66.71m AHD
	<75 ML/day	<50mm raising of outlet weir gates to reach 66.71m AHD
Darling @ Wilcannia Main Channel Depth Gauge 425008	ADH level of weirpool	Aligned with fishway gate closure to the match the same AHD level.

Phase/Rule activities are concluded when Outlet Gates levels are at 66.71m AHD and fishway gates are fully closed.

To be defined prior to finalization of this Operations Plan: There is a consideration for the fishway to remain partly open when the outlet gates are at 66.71m AHD, to avoid what would be classify as a temporary pause in downstream flows prior to an excess inflows flowing over the fixed crest. Sequencing of fishway closure needs to further be developed with stakeholders before included in this plan.

## 2.3 Drought Mode – Storage Security Management

The weir and fishway gates would be closed during drought security mode once the filling phase to increase the storage capacity of the weir has completed (raising weir from FSL at 65.71 metres AHD to FSL +1 at 66.71 metres AHD).

## 2.3.1 Confirm activation of Drought Mode

Control references:

• *Myandetta' gauging station 425038* - provides flow volumes downstream of Bourke town weir.

Mode Activation conditions (over the same 24-hour period):

- c. Consistent gauge reading of a flows reading **<300 ML/d** from *Myandetta' gauging station 425038,* and;
- d. the Wilcannia Weir has concluded Filling Phase activities as defined in Section 2.2 of this plan.

(Filling Phase Conclusion = Fishway gates fully closed & outlet gates at 66.71m AHD).

If the activation conditions are met, the Drought Mode of the structure is confirmed. No further operational adjustment are required (apart from monitoring), unless during Drought mode there is an activation of the "Translucency rule".

### 2.3.2 Translucency Rule

Control references:

- Darling @ Wilcannia Main Channel Depth Gauge 425008 Provides daily Wilcannia weirpool AHD levels, identify if inflows have reached the "town pool"
- Moorabin gauging station (425058) Provides daily flow volumes downstream of the weir.
- Outlet and fishway gates ADH Level.

### Figure 5: Drought Mode – Translucency Rule - Decision flowchart



Translucency Rule Activation conditions (over the same 24-hour period):

Translucency rule activation can only occur when the following conditions are met:

- a. confirm occurrence of Inflows into the town pool demonstrated by an increase in AHD levels taken from the *Darling @ Wilcannia Main Channel Depth Gauge 425008,* and
- the AHD level of the weirpool at the time of confirmed inflows occurring was between the 66.71 metres AHD (drought full supply level) and 65.54 metres AHD (the drought full supply level minus 1.17 metres) range.

#### Site Implementation of translucency rule:

All operational structure gate movements during activation are informed by:

- a. headwater level of the weirpool storage at the time of inflows occurring, and
- b. the inflow volumes required to be passed downstream at that AHD, and

Once those factors are defined, the passing of inflows from the "town pool" downstream of the weir is a combination of the weir outlet and fishway gates, with discharge capacity's defined in **Table 5**.

Table 5: Head Water Ratings and Translucency Discharge Capacity Wilcannia Weir							
Heeducates	Fishway		Main Outlat	Chruschung	Tatal		

Headwater level of Weirpool (AHD)	Fishway discharge capacity (fishway fully open) (ML/day)	Weir gate level (AHD)	Weir Outlet gates discharge capacity at AHD (ML/day)	Structure Translucency discharge capacity (ML/day)	Total weir pool storage volume (ML)
65.54m (DFSL – 1.17m)	48	65.11m	302	0/350	4073
65.71m (NFSL = DFSL – 1.0m)	60	65.29m (NFSL)	290	350	4754.9
65.81m				350	5041.0
65.91m				350	5327.1
66.01m				350	5613.2
66.061m	129	65.71m (NFSL)	221	350	5759.1
66.11m				438	5899.3
66.21m (DFSL – 0.5m)	159	65.71 (NFSL)	374	533	6206.7
66.31m				585	6528.3
66.41m				637	6849.9
66.51m				689	7171.5

Headwater level of Weirpool (AHD)	Fishway discharge capacity (fishway fully open) (ML/day)	Weir gate level (AHD)	Weir Outlet gates discharge capacity at AHD (ML/day)	Structure Translucency discharge capacity (ML/day)	Total weir pool storage volume (ML)
66.61m				742	7493.1
66.71m (DFSL)	419	66.21 (DFSL – 0.5m)	375	794	7832.1

Where inflows exceed the translucency discharge capacity for the headwater level, the portion of inflow more than the discharge capacity would be banked and carried forward until able to be discharged either via the weir and fishway gates or by spilling over the crest of the new weir.

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## 2.4 Reset Phase – Transition to Normal Mode

### 2.4.1 Confirm activation of Reset Phase

### Control references:

- *Myandetta' gauging station 425038* provides flow volumes downstream of Bourke town weir.
- Darling @ Wilcannia Main Channel Depth Gauge 425008 provides daily Wilcannia weirpool AHD levels, identify if inflows have reached the "town pool"

Activation conditions (over the same 24-hour period):

- a. Consistent gauge reading of a flows reading >300 ML/d from *Myandetta' gauging station* 425038, and;
- b. the Wilcannia Weir is in Drought Mode as defined by section 2.3.1 of this plan (Drought Mode = Fishway gates fully closed, & outlet gates at 66.71m AHD), and;
- c. headwater level at of the storage volume (reference from *Darling @ Wilcannia Main Channel Depth Gauge 425008)* is > 65.29m AHD (NFSL)

If all the above activation conditions are met operational intervention is required with the implementation of progressive draw down rule.

### 2.4.2 Progressive Drawdown Rule

Control references:

- Darling @ Wilcannia Main Channel Depth Gauge 425008 Provides daily Wilcannia weirpool AHD levels.
- Moorabin gauging station (425058) Provides daily flow volumes downstream of the weir.
- Outlet and fishway gates ADH Level at time of rule activation.

### Figure 6: Reset Phase – Progressive Drawdown Rule - Decision flowchart



Site Implementation of progressive draw down rule:

All operational structure gate movements during activation are informed by:

- a. comparison between readings taken prior to operation movements and reading taken at the same time in the previous 24 hour period (in relation to flow readings downstream of the weir and weirpool level readings from within the weirpool), and;
- b. current ADH level of outlet gates, and;
- c. incremental gate openings as outline in the below table:

#### Table 6: Downstream discharge – Progressive Draw down

Control Reference	Control Readings (Daily)	Actions
<i>Moorabin gauging station (425058) –</i> Downstream flows of Wilcannia Weir	≥60.4 ML/day	Daily 100mm lowering of outlet weir gates to reach 65.71m AHD or until overtopping of Outlet gates = 0.5 metres.
Darling @ Wilcannia Main Channel Depth Gauge 425008	ADH level of weirpool	Aligned with daily incremental fishway gate opening to match the declining storage volume until Fishway gates fully opened.

Note: 339 ML/day maximum discharge at DFSL to lower storage 100mm/day

# 3.0 Governance

The Governance outlined in this chapter has been prepared from the information and feedback received from operator and regulatory stakeholders as part of a Project Control Working Group. Once the proposed governance approached has been formalised, it will be incorporated in final operational plan.

# **3.1 Operational Principles**

The Wilcannia Weir will be operated in accordance with number of guiding principles which seek to balance the environmental needs with urban water security for Wilcannia.

- 1. Wilcannia Weir is to be operated by WaterNSW (a state-owned corporation) in accordance with the legal requirements, including but not limited to:
  - a) Water Management Act 2000;
  - b) Water Sharing Plan for the Barwon-Darling Unregulated River Source 2012;
  - c) WaterNSW's Operating License;
- 2. The capturing of upstream flows for town water security, is in response to trailing upstream inflows only.
- 3. Seek the relevant approvals to avoid capturing upstream flows when activation conditions have been met but deemed not required, based on forecasting and/or system knowledge.
- 4. Provide maximum flow discharges from the storage through the fishway (based on capacity at various AHD storage levels) except during Filling Phase and Drought Mode (translucency rule).
- 5. When the weir enters the Filling Phase the outlet and fishway gates would be closed progressively to mitigate downstream flow impacts.

## 3.2 Amendments and Regulation of the Operations Plan

During the operational life of the Wilcannia Weir, it may be necessary (dependant on circumstances) to amend, seek dispensation for operation activities, or operate outside the defined rules, of the plan. These variations can be defined under 2x groups of either:

- a. a variation to avoid undertaking operation actions when activation criteria has been met, or
- b. a variation to undertake operational actions not defined within the operation plan.

Where such variations are deemed in line with operational principles, the following approach will be followed (illustrated in Fig 7):

- 6. Applicant (for example, from operator or other agencies or stakeholders) collates supporting information in relation to a variation request and prepares a submittal to DPE-Water.
- 7. Assessment by DPE-Water of the variation received, in discussion (where needed) with other regulatory agencies, will evaluate the consistency of the proposed change with relevant water planning instruments and approvals, and provide a direction on the variation at conclusion of assessment.



Figure 7: Decision Tree for applying & approving variation to the Operations Plan

Managing the process of consultation and approval to operate outside the rules in this operational plan or to make amendments and updates to this operations plan will be the responsibility of DPE Water.

## 3.3 Reporting

Any reporting requirements as part of the conditions of consent from the EIS determination will be incorporated into the current annual report on the Barwon Darling provided to DPE Water.

With WaterNSW having an online reporting portal for water quality monitoring data, the following measurements would be available and may provide trends to inform reporting as well as operational actions and improvements for future consideration.

Measure	Location	Type of report that could be useful
Inflow forecasts – 14x days travel period	Myandetta' gauging station (425038)	Time series graph with indication of trigger levels
Flow discharges	Moorabin gauging station (425058)	Time series graph with indication of operating mode
Weir pool level	Darling @ Wilcannia Main Channel Depth Gauge 425008	Time series graph with indication of mode
Dissolved Oxygen In "Town Pool"	Darling @ Wilcannia Main Channel Depth Gauge 425008	Time series graph with indication of operating mode
Dissolved Oxygen (if sensor is fitted)	Moorabin gauging station (425058)	Time series graph with indication of operating mode

Table 7: Available Measurements and Trends for Operational Management and Reporting

Measure	Location	Type of report that could be useful
Temperature of Storage Volume	Darling @ Wilcannia Main Channel Depth Gauge 425008	Time series graph with indication of operating mode
Salinity (Conductivity)	Darling @ Wilcannia Main Channel Depth Gauge 425008	Time series graph with indication of operating mode

## 3.4 Barwon-Darling Water Sharing Plan

Amendments are required to the Barwon-Darling WSP to reflect the proposed operation of the proposal as well as changes to gauging locations (including upgrades). The Department of Planning and Environment – Water (DPE Water) is responsible for water sharing plans including their amendment.

DPE Water has advised Water Infrastructure NSW that a new Barwon-Darling WSP is being developed to replace the 2012 plan and is expected to be placed on public exhibition in about April/May 2022. The amendments required to the Barwon-Darling WSP for the proposal would only be made after the public exhibition of the environmental impact statement for the proposal is completed. DPE Water would carry out targeted consultation on the amendments to the Barwon-Darling WSP.

The proposal represents a significant shift away from fixed crest weirs, which have been constructed in the Barwon-Darling River system since the 1900s. The proposal has varying gate operational parameters that need to be implemented based on modes of operation and their transition phases to maximise the passing of flows and fish passage in balance with providing town water security.

To be defined prior to finalization of this Operations Plan: This operations plan will be refined into a detailed operations plan in collaboration with Project Control Group members and DPE Water to extrapolate the relevant information to be inserted into the new Barwon-Darling WSP.

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# Appendix 1 - Background

Wilcannia is reliant on its weir to supply the town's water requirements, supplemented by some groundwater supplies of variable quality and quantity. While Wilcannia is a relatively small town, it services rural communities, local agricultural industries, and the Indigenous community. Due to the small storage volume and high evaporation rates, the weir is reliant on regular inflows to provide secure water supplies to the local community.



Figure 8: Existing Wilcannia Weir

Water Infrastructure NSW proposes to replace the existing Wilcannia Weir on the Darling River (Baaka) at Wilcannia, with a new weir located about five kilometres downstream of the existing weir. The existing weir would also be partially removed and decommissioned as part of the proposal. The proposal is in the Central Darling Shire local government area and will provide a more reliable town water supply for Wilcannia to meet long-term community needs.

## Wilcannia Weir Features

Key features of the new weir include:

- An increased storage capacity of about 7,832 megalitres of water when the weir gates and fishway gates are fully closed during drought mode
- A fixed crest portion of the weir of about 5.0 metres high and 26 metres wide
- A fishway about 120 metres long and 10.4 metres wide, next to the right bank (northern side) of the river to provide fish passage past the weir

- Two remotely operated 3.5m wide by 2.5m high overshot type weir outlet gates for control of the weir pool storage capacity and weir operating mode. The gates assist with flood passage and allow for controlled downstream flow discharge releases including for translucency purposes during Drought Mode. The gates also provide for downstream fish passage in conjunction with the fishway.
- Operational rules to provide a minimum flow for fish passage past the weir during normal operations (Legislative requirement)
- Conversion of the existing flow gauging station, located between the new and existing weirs, into a weir pool height gauging station
- Provision of a new flow gauging station (Moorabin) downstream of the proposed new weir
- Partial removal and decommissioning of the existing weir.

#### **Table 8: Weir Pool Comparisons**

Weir Pool Comparisons	Storage volume (ML)	
	Total	Accessible
Existing weir pool - 65.71m AHD (FSL)	4,207	2,173
New weir pool - normal operations mode (FSL) - 65.71m AHD (FSL)	4,755	2,577
New weir pool – drought security mode (FSL + 1m AHD) - 66.71m AHD (FSL)	7,832	5,654



Figure 9: Proposed New Wilcannia Weir Schematic Profile

The existing weir pool comprises four pools separated by rock bars (See **Figure 8**). Pool 1 extends about 5.43 kilometres upstream from the existing weir and includes the pumping infrastructure for the town supply. Due to the height of the rock bars the three pools upstream of Pool 1 become isolated quickly during a drought. When there is an increase in flow upstream, these weir pools currently need to be filled first before flow is passed through to Pool 1

The location of the new weir will result in a new town pool added across a 4.92km stretch. From **Figure 2**, the raising of the weir provides additional storage. When the weir pool is raised the water levels in all the pools will be higher than the rock bars This will allow inflows to pass through more quickly and getting the translucency benefit for those inflows that reach the new town pool.

The new Wilcannia weir will enable operation in accordance with 'translucency' rules. The principle behind the rule is to allow inflows to pass downstream to mitigate some of the impacts of an increased weir pool level, without compromising town water security. The secure yield for the weir has been calculated based on 0 ML/d inflows post a successful "Filling Phase" (i.e., existing FSL+1 weir pool volume is achieved), allowing inflows occurring during "Drought Mode" to be transparently passed downstream, between weir pool range existing FSL+1 to FSL.

Operational Modes and Phases	Triggers for Operational Mode/Phase	Outlet Gate Rules	Fishway Gates Rules	Structure Discharge Capacity
Normal Mode - post "Reset	Myandetta Gauge (425038)	Set at existing FSL	Opened – No Action	60 to 533 ML/d
Phase" only	Readings > 250ML/d Refer Section 4.1	Raised from existing FSL to FSL+0.5m		533 -794 ML/d
	R	Raised from existing FSL to FSL+1m – gates fully closed at upper extent of flow range		794 – 1861 ML/d
2		Lowered to existing FSL-1 m		1862 - 1961 ML/d
Filling Phase - post "Normal Mode" only	Myandetta Gauge (425038) Readings	Progressive Ga – existing FS	<i>te Closure Rule</i> L to FSL +1m	N/A
	< 250ML/d – refer to section 4.2			

#### **Table 9: Descriptions of Operational Modes**

Operational Modes and Phases	Triggers for Operational Mode/Phase	Outlet Gate Rules	Fishway Gates Rules	Structure Discharge Capacity
Drought Mode – post "Filling phase" only	Myandetta Gauge (425038) Readings < 300ML/d- refer to Section 4.3	<i>Translucency Rule</i> - existing FSL+1m to FSL		Refer to <b>Table 10</b>
Reset Phase – post "Drought mode" only	Myandetta Gauge (425038) Readings > 300ML/d - refer to Section 4.4	Progressive draw down Rule - existing FSL+1 to FSL		N/A

## Trigger Levels for Transitional Phases

Preliminary trigger levels for transition phases (filling/reset) between the normal and drought operation modes have been adopted based on the flow rate in the Darling River (Baaka) at the Myandetta gauging station (425038). The filling phase will be triggered by the weir begin in Normal Mode and flows over Bourke Weir falling below 250 megalitres per day with the reset phase triggered by weir being in Drought Mode and flows over Bourke Weir rising above 300 megalitres per day. A schematic of transitions between the modes of operation being triggered by flows over Bourke Weir is presented below:



Figure 10 - Schematic of transitions between the modes - triggered by flows over Bourke Weir

## **Monitoring Requirements**

Water quality and flow monitoring is required both at the headwater and tailwater of the weir for online monitoring of dissolved oxygen, salinity (conductivity), temperature, and water levels (for flow gauging).

WaterNSW operates water monitoring stations (gauging stations) across NSW to take systematic readings of water levels and flow rates in waterways. Gauging station number 425008 measures flows in the Wilcannia Main Channel of the Darling (Baaka) River, downstream of the existing weir. It also measures water temperature and electrical conductivity. This gauging station is located upstream of the new weir and would be inundated once the new weir commences operation.

A new gauging station was installed downstream of the proposed new weir site at the confluence of Woytchugga Creek and the Darling (Baaka) River. This gauging station, number 425058, is known as the Moorabin gauging station and is currently being used to measure water levels, electrical conductivity, water temperature and dissolved oxygen levels. This data is being correlated with historical date from existing gauging stations. Once the new weir is in operation, the Moorabin gauge will be used to measure flow rates downstream of the new weir pool, thereby serving the same function as the existing gauging station at Rock Bar.

The existing gauging station (425008 @ Wilcannia Main Channel) will be retained to monitor water levels in the weir pool. A dissolved oxygen sensor will be fitted to also measure dissolved oxygen levels in the weir pool. The gauging station will continue to measure water temperature and electrical conductivity.

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# **Appendix 2 – Reference Charts**

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Proposed Wilcannia Weir Replacement - Headwater & Tailwater Rating Curves





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