

Department of Climate Change, Energy, the Environment and Water

Billabong Creek Regulators

Response to Submissions – Main Report

May 2025



Acknowledgement of Country



Department of Climate Change, Energy, the Environment and Water acknowledges the traditional custodians of the land and pays respect to Elders past, present and future.

We recognise Australian Aboriginal and Torres Strait Islander peoples' unique cultural and spiritual relationships to place and their rich contribution to society.

Artist and designer Nikita Ridgeway from Aboriginal design agency – Boss Lady Creative Designs, created the People and Community symbol.

Billabong Creek Regulators

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Glossary of terms and abbreviations

Term	Description
Base case	Base case scenario. This is a computer modelling scenario comparable to current conditions, including the existing weirs at Hartwood and Wanganella as well as current water operations across the Yanco Creek system.
Basin Plan	The Murray-Darling Basin Plan (MDBA, 2012). The aim of the Basin Plan is to bring the Basin back to a healthier and sustainable level. The Basin Plan sets sustainable diversion limits for each catchment or group of catchments.
Change case	Change case scenario. This is a computer modelling scenario which represents the potential impacts of the operation of the proposal together with the concurrent operational changes across the Yanco Creek system as detailed in the operations plan. The concurrent operational changes include continued use of irrigation areas to more efficiently deliver water into the mid sections of the Yanco and Billabong creeks, and new environmental baseflow provisions.
Clearing area	This is the area required to construct the proposed infrastructure. Within this area it is assumed that all vegetation would be removed, including trees and ground cover vegetation. Borrow pits also include a clearing area.
Construction activity zone (CAZ)	The area surrounding and including the 'clearing area' that would be used for construction purposes. e.g. laydown, site sheds, parking. It is assumed topsoil will need to be removed/cleared, with some re-grading to create level areas with grubbing and clearing of small shrubs/grasses. Trimming of trees may be required. Tree removal would not occur in portions of the CAZ outside of a clearing area.
Cumulative case	Cumulative change case scenario. This is a computer modelling scenario which represents the potential impacts of the change case plus the operation of other new works proposed as part of the Yanco Creek Modernisation program. This is primarily the addition of the Forest Creek return flows project to the modelled cumulative change scenario. The Forest Creek return flows project will allow the diversion of excess flows in Forest Creek back into Billabong Creek.
Cumulative impacts	The combined impacts of the project on a matter with other relevant future projects (see the Department's Cumulative Impact Assessment Guidelines for State Significant Projects).
Determination	A decision by an approval authority for an SSI application to either approve the application subject to modifications or conditions or refuse the application.
Environmental impact statement (EIS)	An environmental impact statement prepared by the proponent to support a SSI application.
Mitigation	Actions or measures to reduce the impacts of the project.
Operations plan	The plan that outlines the operating requirements for regulating structure with the Yanco Creek system. The new operations plan is part of the NSW SDLAM program funded by the Australian Government.
Proponent	The proponent seeking approval for an SSI application or modification request.
Proposal	A proposed project that is not yet the subject of an approved SSI application.
Proposal footprint / proposal site	The proposal footprint (also known as the disturbance area) includes all locations, terrestrial and in-stream, where the proposal directly impacts the land surface or water body. This includes clearing areas, construction activity zones, access tracks and power supply routes.
Refinement	A change that fits within the limits set by the project description and does not change what the proponent is seeking approval for or require an amendment to the infrastructure application for the project.
State significant infrastructure (SSI)	Infrastructure that is declared to be State significant infrastructure under section 5.12 of the EP&A Act.

Term	Description
Submission	A written response from an individual or organisation, which is submitted to DPHI during the public exhibition of an EIS, amendment report or modification report for SSI.
Submissions report	A report prepared by the proponent to respond to the issues raised in submissions (see the State Significant Infrastructure Guidelines – Preparing a Submissions Report).

Abbreviations	Definitions
ABS	Australian Bureau of Statistics
ACHA (R)	Aboriginal Cultural Heritage Assessment (Report)
AEP	Annual exceedance probability
AHIMS	Aboriginal Heritage Information Management System
AHD	Australian Height Datum
ANZG	Australian and New Zealand Guidelines for Fresh and Marine Water Quality
AS	Australian Standard
BAM	Biodiversity Assessment Method
BCS	Biodiversity, Conservation and Science Group (former) now renamed Conservation Program, Heritage and Regulation.
BDAR	Biodiversity Development Assessment Report
BOM	Bureau of Meteorology
CEEC	critically endangered ecological community
CEMP	Construction Environment Management Plan
CLM Act	<i>NSW Contaminated Land Management Act 1997</i>
Cth DCCEEW	Department of Climate Change, Energy, the Environment and Water, Commonwealth (Cth)
CSIRO	Commonwealth Science and Industrial Research Organisation
Cth	Commonwealth
DP	Deposited Plan
DPE	NSW Department of Planning and Environment, now renamed as Department of Planning, Housing and Infrastructure
DPHI	NSW Department of Planning, Housing and Infrastructure
DPI	NSW Department of Primary Industries
DPIRD Fisheries	NSW Department of Primary Industries Regional Development - Fisheries
DPIE	NSW Department of Planning, Industry and the Environment
EIS	Environmental impact statement
EP&A Act	<i>Environmental Planning and Assessment Act 1979 (NSW)</i>
EP&A Regulation	<i>Environmental Planning and Assessment Regulation 2021</i>
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999 (Cth)</i>
ESCP	Erosion and Sediment Control Plan
EWR	Environmental water requirement
FM Act	<i>Fisheries Management Act 1994 (NSW)</i>

Abbreviations	Definitions
GL	Gigalitre
GPS	Global Positioning System
ICNG	Interim Construction Noise Guideline (DECC, 2009)
IHM	Important habitat mapping
km	kilometre
LEP	Local Environmental Plan
LGA	Local government area
L/s	Litres per second
m	metre
MDBA	Murray-Darling Basin Authority
ML	Megalitre
ML/d	Megalitre per day
MNES	matters of national environmental significance (under the EPBC Act)
NARCLiM	NSW and ACT Government Regional Climate Modelling
NSW	New South Wales
NSW DCCEEW	New South Wales Department of Climate Change, Energy, the Environment and Water formerly Water Infrastructure NSW
NSW EPA	NSW Environment Protection Authority
PAD	Potential Archaeological Deposit
PCT	Plant community type
PMF	Probable maximum flood
POEO Act	<i>Protection of the Environment Operations Act 1997</i>
RAP	Registered Aboriginal Party
SAII	Serious and irreversible impact
SCADA	Supervisory control and data acquisition (a control system for supervision of machines and processes)
SDLAM	Sustainable diversion limit adjustment mechanism
SEARs	Secretary's environmental assessment requirements
SEPP	State Environmental Planning Policy. A type of planning instrument.
SES	NSW State Emergency Service
SSI	State Significant Infrastructure
TEC	Threatened ecological community
TMP	Traffic Management Plan
TfNSW	Transport for NSW
TBDC	Threatened Biodiversity Data Collection
WQO	NSW Water Quality Objectives

Summary

The Proposal

New South Wales Department of Climate Change, Energy, the Environment and Water (NSW DCCEEW) is proposing to replace two existing weirs along Billabong Creek with new regulators (the proposal). The two existing weirs to be replaced are Hartwood Weir and Wanganella Weir, both built in the early 20th century and currently in states of declining condition and functionality. Billabong Creek is within the Yanco Creek system in south-west New South Wales as shown on Figure S1.

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

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

On 5 December 2024, DPHI requested NSW DCCEEW to provide a written response in the form of a Submissions Report. This report is to provide a response to comments raised during display of the EIS by the community and government agencies. This report has been prepared having regard to the Department of Planning, Housing and Infrastructure *State significant infrastructure guidelines – preparing a submissions report – Appendix C to the state significant infrastructure guidelines (2024)*.

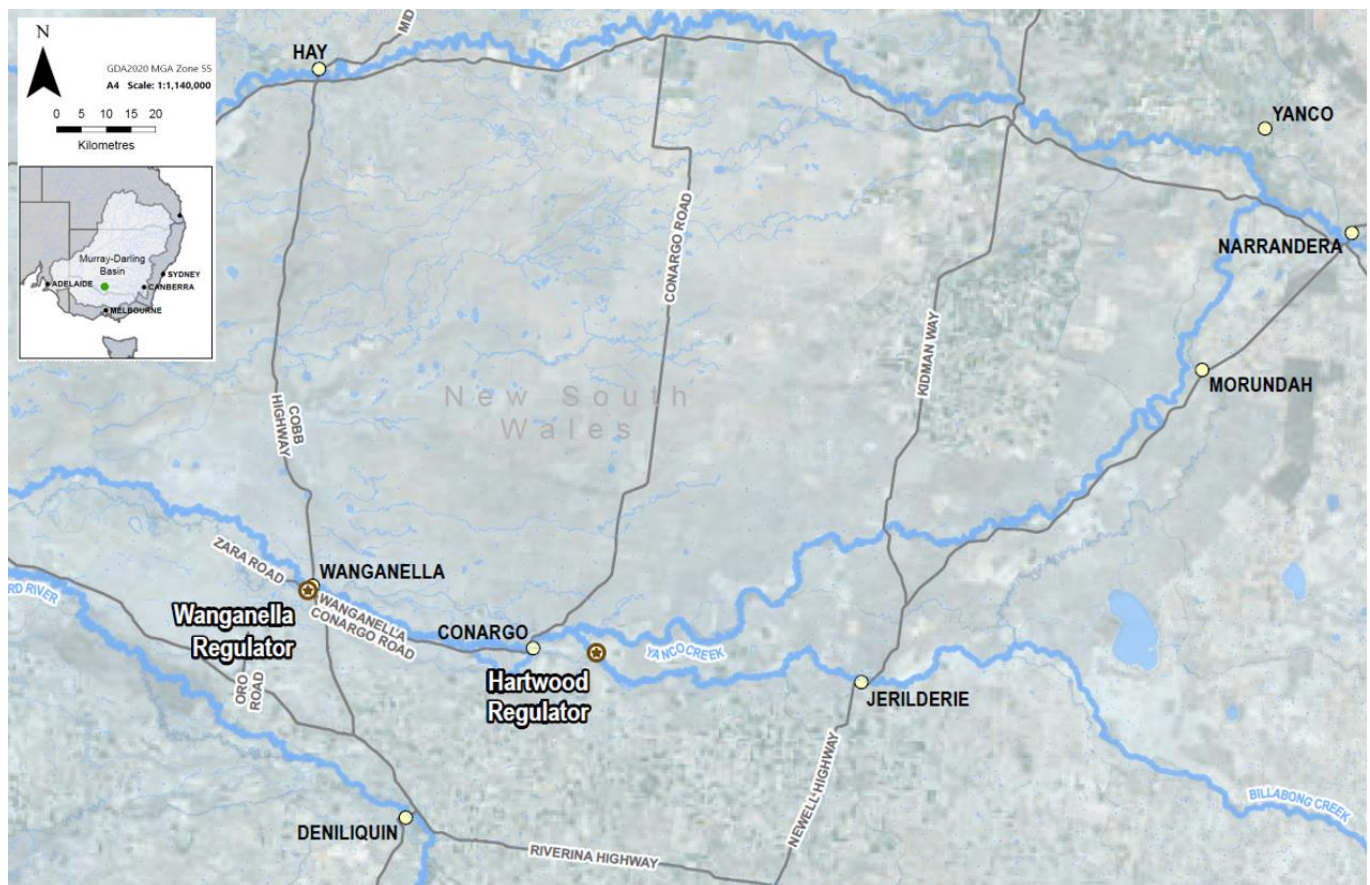


Figure S1: Location of the proposal

Summary of submissions

DPHI received 18 submissions during the exhibition of the EIS and provided copies of the submissions to NSW DCCEEW. The submissions received during the exhibition period were from the following:

- 16 submissions from public agencies, consisting of one from the local council, and 15 from other government agencies
- two submissions from members of the public

The submissions and agency advice are available to be viewed on the DPHI Major Projects website: [Billabong Creek Environmental Water Regulators | Planning Portal – Department of Planning and Environment](#).

Of the submissions received:

- two submitters registered support for the proposal (one private individual and Edward River Council)
- no submitters registered an objection to the proposal
- 16 submitters registered comments on the proposal.

Main issues and responses

The majority of issues raised by agencies related to:

- the operations plan
- design details
- hydrology and flooding and potential impacts associated with these aspects
- the Biodiversity Development Assessment Report (BDAR), biodiversity surveys and offsets
- contaminated land.

The most common issue raised by the community related to impacts to land use and access.

A summary of the responses to the submissions is presented below with more detailed responses provided in the following chapters.

Operations plan

Clarifications were requested on the status of the operations plan.

The Yanco Creek System operations plan remains in draft form, as consultation is ongoing with key stakeholders including WaterNSW. This plan requires ongoing refinement and inclusion of any necessary conditions of approval specific to operations. NSW DCCEEW are not seeking approval of the operations plan as part of this application.

Design details

Requests were made to NSW DCCEEW by multiple agencies to maintain consultation on design details as the proposal progresses.

WaterNSW has been and will continue to be involved in the design of the regulators. DPIRD-Fisheries will continue to be consulted throughout the detailed design stage of the regulator and fishway development.

Clarifications requested on design elements to minimise erosion.

Currently the design includes energy dissipation within the concrete regulating structures in the form of a primary and secondary stilling basin and a concrete apron downstream of the secondary stilling basin. Rock beaching has been designed upstream, downstream and on the sides of the structures to provide additional protection in both the operational and flood flows through Billabong Creek.

Explanation requested on how the new regulators will be an improvement.

The current structures at Hartwood and Wanganella have limited flexibility in operations. Hartwood Weir currently has drop boards which can alter the water level behind the weir, however these take significant manual effort to remove or deploy. Wanganella has degraded to the point where the drop boards cannot be used at all. The new regulators are to be fully remotely automated with upstream levels along with the flows being electronically monitored and adjusted remotely, noting the fishway gates will be manually operated. This will allow precise volumes of water from the regulators to be delivered downstream when required by water users and the environment. They would also allow the capture of any excess water releases from upstream rather than the existing situation where there is no capture of excess water releases.

Hydrology and flooding

Multiple clarifications were requested on details of the source model and hydrology and flooding models, in order to understand their functionality, breadth of analysis and scenarios assessed.

The eWater Source Model is the hydrological model covering the area of the Murrumbidgee Regulated Water Sharing Plan. Its overarching objective of the model is to represent the key physical and management processes and interactions that affect water availability and use within the whole Murrumbidgee Valley. Outputs from the hydrological model were used in the flood modelling and in the development of hydraulic models.

The following scenarios were assessed in the hydraulic model:

- maximum operating flow with
 - full supply level (top of yellow zone)
 - maximum operating level (bottom of yellow zone)
 - minimum operating level (bottom of green zone).
- maximum operating flow with
 - full supply level (top of yellow zone)
 - maximum operating level (bottom of yellow zone)
 - minimum operating level (bottom of green zone).

Request for confirmation on what impacts may occur to adjacent land

The hydrology report shows that there would be no impact on water users due to the operation of the new regulators.

There are impacts to private landholders adjacent to the creek at Wanganella. Three properties would experience minor increases in flood levels for small flood events (up to the 20 per cent AEP), however would experience decreases in flood levels in larger flood events (greater than 2 per cent AEP) as the Wanganella flood bypass channel becomes operational. The flooding does not impact dwellings in Wanganella Village rather it is confined to their backyards.

Request for further modelling of climate change predictions

There was no requirement under the SEARs or the SDLAM program to model climate risk projections for hydrology. However, under a drier climate, with less water availability, the ability to re-regulate any surplus water in the Yanco Creek System would be expected to improve the operational resilience of the system compared to the current structures. Climate change impacts were modelled for flooding impacts.

Request for further detail on changes in the upper and lower sections of the Yanco/Billabong Creek system based on the reduction in water in moving through the system.

The EIS assessed potential impacts up and downstream of the proposed new regulators. This assessment concluded that there will be little alteration of the hydrology of the Yanco/Billabong creek system in the area of investigation. This is due to the changes expected from the proposal to be equal or lesser upstream and downstream of the investigation area. In addition, there has been consideration of sensitivity to tailwater conditions downstream of the regulators.

Biodiversity

Various requests for further clarifications, detail and mapping to support the findings of the BDAR and for mitigation measures to provide more detail.

The BDAR has been amended to respond to the further information requested. This is provided as Appendix D of this report. This includes further detail provided on:

- areas mapped as non-native vegetation and vegetation zones
- indirect impacts
- prescribed impacts including Human-made structures, Connectivity, Water quality, waterbodies and hydrological processes and Vehicle strike
- mitigation measures.

Request for additional survey effort to look for evidence or suitable habitat for the following species in accordance with relevant guidelines.

Additional site survey was conducted in February 2025 and has been recorded in the amended BDAR. Survey was carried out for the following species and their habitat:

- Australian Bustard
- Raptor breeding
- Pink Cockatoo breeding
- Superb Parrot breeding
- Koala
- White-bellied Sea Eagle.

In addition, survey for the grey snake was also carried out.

Contaminated land

Further contamination assessment was requested in relation to impacts from Wanganella rural landfill.

A Moderate risk was identified in the area of the Wanganella rural landfill south-west of the proposed construction activity zone for the Wanganella flood bypass channel. In consultation with the NSW EPA and Edward River Council, a targeted site investigation was proposed and conducted along the southern boundary of the bypass channel works construction activity zone, in April 2025. This assessment comprised:

- Six boreholes drilled to a depth of up to four metres below ground level, depending on subsurface geology, using a solid flight auger. Contamination samples collected from the cuttings at regular depth intervals.
- Upon completion of the drilling, each of the six boreholes was converted into ground gas monitoring wells. Gas monitoring was carried out the following week.

Land use and access

Several concerns were raised regarding impacts from construction traffic at Wanganella , damage to roads and movement of livestock on the Cobb Highway travelling stock route.

Construction impacts would be managed through development of the construction traffic management sub-plan, prior to construction. This would be carried out as the construction methodology and agreements with land owners are finalised. This will include a road dilapidation survey and the requirement to make good any damage that may occur during the construction works.

All relevant agreements and permits will be sought for works which may impact Travelling Stock Routes prior to any works commencing. Consultation will be carried out with Local Land Services and known stock managers who may plan on using the route during the construction period.

What amendments and refinements are proposed

Following completion of the EIS, further design refinements have been identified. These have been developed following consultation with WaterNSW and construction contractors and where further design has been completed. The refinements comprise:

- Hartwood – installation of a communication mast (a pole with an antenna at the top). Its purpose is to provide fourth generation network coverage to enable the control system to function.
- Hartwood – construction vehicle reversing area at Forest Creek block bank
- Hartwood – two construction vehicle passing bays adjacent to the main access track
- Hartwood – one additional electricity pole and one replacement electricity pole for an existing overhead electrical line within the proposal footprint
- Wanganella – refining the construction and operational access track from Zara Road to Wanganella Regulator, to reduce access from two places to one in order to improve road safety.

The impacts of the refinements are minor and only the BDAR has required updating to reflect the change in project scope

Updated mitigation measures

The EIS identified the proposed approach to environmental management and the mitigation measures that would be implemented to avoid or minimise the potential impacts of the proposal. These measures were collated in Appendix F of the EIS.

After consideration of the issues raised in the submissions and additional work undertaken since exhibition (described in Chapter 3 (Actions taken since exhibition) of this report), the mitigation measures have been updated to:

- make additional commitments to respond to issues raised in the submissions and improve the proposal's environmental performance
- modify the wording in some instances so that the intent of the measure is clearer

Some new measures have been added, and the wording of some measures has been updated.

The full set of updated mitigation measures is provided in Appendix A (Updated mitigation measures) of this report. These are NSW DCCEEW's commitments to avoiding and minimising the potential impacts of the proposal as far as practicable.

Project justification summary

The proposed amendments, refinements and clarifications described in Chapter 3 (Actions taken since exhibition) of this report, issues raised in agency and community submissions and advice, and responses to the issues raised, do not change the justification of the proposal, as outlined in the EIS.

The proposal is needed to improve the efficiency of water management in Billabong Creek by improving the ability to deliver the right amount of environmental and consumptive (town and irrigation) water to the right place at the right time, and to improve the passage of native fish through the system. The proposal would assist delivery of improved environmental outcomes compared to current conditions. This would support the aim of the Murray-Darling Basin Plan adopted in November 2012 and NSW DCCEEW's Yanco Creek modernisation program which aims to upgrade of infrastructure to enable smarter use of water in the Yanco Creek system. It would also fulfill relevant commitments that the NSW Government has made to the Australian Government under the SDLAM program.

In summary the proposal would contribute to the modernisation program through a focus on delivering improved environment outcomes through upgraded infrastructure and smarter use of water. The objectives of the Billabong Creek Regulators proposal are to:

- modernise ageing infrastructure
- provide service for water users

- improve fish passage
- improve delivery of environmental water.

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

Next steps

This Submissions Report is available on the DPHI website planningportal.nsw.gov.au/major-projects/projects/billabong-creek-environmental-water-regulators. DPHI will consider this Response to Submissions during its assessment of the project.

DPHI will prepare an assessment report for consideration by the Minister for Planning and Public Spaces, who will then decide whether or not to approve the proposal (with the amendments and refinements outlined in this report) subject to conditions.

If approved, NSW DCCEEW would continue to engage with the community, government agencies and other stakeholders during the design and construction phases of the proposal.

1 Introduction and background

1.1 Proponent

New South Wales Department of Climate Change, Energy, the Environment and Water
4 Parramatta Square, 12 Darcy Street, Parramatta NSW 2150
ABN: 27 578 976 844

1.2 Introduction

New South Wales Department of Climate Change, Energy, the Environment and Water (NSW DCCEEW) is proposing to replace two existing weirs along Billabong Creek with new regulators (the proposal). The two existing weirs to be replaced are Hartwood Weir and Wanganella Weir, both built in the early 20th century and currently in states of declining condition and functionality. Billabong Creek is within the Yanco Creek system in south-west New South Wales as shown on Figure 1.1.

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

The proposal is subject to environmental and planning approvals under Part 5 Division 5.2 of the NSW Environmental Planning and Assessment Act 1979 (EP&A Act). An Environmental Impact Statement (EIS) has been prepared to support the application for approval and address the Secretary's Environmental Assessment Requirements (SEARs) issued by the NSW Department of Planning, Housing and Infrastructure (DPHI) on 17 October 2024. The EIS was exhibited by DPHI from 1 November 2024 to 28 November 2024.

On 5 December 2024 DPHI requested NSW DCCEEW to submit a response to the issues raised in submissions to the EIS in accordance with section 5.17(6)(a) of the EP&A Act. This Response to Submissions identifies and responds to the issues raised during the public exhibition of the EIS.

The proposal is not subject to approval under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). A referral was submitted to Commonwealth DCCEEW in 2024 and they determined that the impacts on Matters of Environmental Significance were not significant and hence the proposal was not a controlled action and did not require approval under the Act.

1.3 Overview of the proposal

The proposal described and assessed in the EIS involves replacing two existing weirs along Billabong Creek with new regulators immediately downstream of the existing weirs. The proposal is situated in rural south-west NSW at two principal locations within Edward River Local Government Area (LGA). The location of the proposal is shown on Figure 1.1 and comprise:

- Hartwood (about 10 kilometres east of Conargo village)
- Wanganella (one kilometre southwest of Wanganella village).



-  Regulator
-  Town
-  Major Watercourse
-  Main Road
-  Water Bodies



GDA2020 MGA Zone 55
A4 Scale: 1:1,140,000

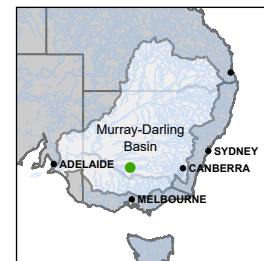
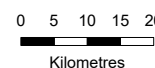


Figure 1-1 Location of the proposal



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highlighted ALL Sydney Projects 2112517054-GIS Maps Deliverables SDLAM, Version 12537054_RPT0002_SiteMaping_F00.aprx

The core structure of the two regulators is similar and would include:

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

An indicative layout of a regulator is shown in Figure 1.2. This example is of a five gate regulator with a fish passage (on the left) and trafficable deck for maintenance vehicles.



Figure 1.2: Indicative layout of a regulator

The proposal would also involve the following elements:

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

1.4 Purpose and structure of this report

NSW DCCEEW has prepared this report to address DPHI's request to submit a response to the submissions made to the EIS as received following completion of public exhibition on 28 November 2024 and required by the *State significant infrastructure guidelines – preparing a submissions report Appendix C to the state significant infrastructure guidelines March 2024* (DPHI, 2024).

This report identifies the issues raised during exhibition of the EIS and provides responses to those issues. It includes information regarding additional studies carried out since the exhibition of the EIS, identifies proposal amendments and refinements, clarifies certain information included in the EIS, and provides updated mitigation measures in response to the submissions.

The structure of the report is outlined below:

Chapter 1 – Introduction and background to the proposal

Chapter 2 – Analysis of submissions

Chapter 3 – Actions taken since exhibition

Chapter 4 – Response to agency submissions

Chapter 5 – Response to community submissions

Chapter 6 – Conclusion and next steps.

2 Analysis of submissions

2.1 Overview of submissions

DPHI received 18 submissions during the exhibition of the EIS and provided copies of the submissions to NSW DCCEEW. The submissions received during the exhibition period were from the following:

- 16 submissions from public agencies, consisting of one from the local council, and 15 from other government agencies
- two submissions from members of the public.

The submissions and agency advice are available to be viewed on the DPHI Major Projects website: Billabong Creek Environmental Water Regulators | Planning Portal - Department of Planning and Environment.

Of the submissions received:

- two submitters registered support for the proposal (one private individual and Edward River Council)
- no submitters registered an objection to the proposal
- 16 submitters registered comments on the proposal.

Each submission has been individually analysed to understand the issues raised. Section 2.2 describes how the submissions were analysed. Section 2.3 provides a breakdown of the submissions received.

2.2 Approach to analysing submissions and agency advice

2.2.1 Review of community submissions

Submissions from members of the public and organisations are referred to as ‘community’ submissions for the purposes of the report.

The analysis of community submissions involved identifying the issues raised and grouping the issues into the following five main issue types identified by the *State significant infrastructure guidelines – preparing a submissions report* (DPHI, 2024):

- **the proposal** (e.g. the site/corridor, the physical layout and design, uses and activities, timing)
- **procedural matters** (e.g. level or quality of engagement, compliance with the SEARs, identification of relevant statutory requirements)
- **impacts of the proposal** relating to economic, environmental and social issues (e.g. amenity, air, biodiversity, heritage)
- **the justification and evaluation of the proposal** as a whole (e.g. consistency of project with Government plans, policies or guideline)
- **issues that are beyond the scope** of the proposal (e.g. broader policy issues) or not relevant to the project.

These categories have been divided into sub-categories, such as location or environmental issue, where appropriate.

Responses to the issues raised in other community submissions are provided in section 4.16 (Response to community submissions), according to the issue categories. A response has been provided to each grouped issue summary, which may be relevant across a number of submissions.

Section 2.3 contains a table identifying community submissions using the submission identification numbers provided to submitters by DPHI. The table presents, for each submission, a cross reference to where the key issues raised have been addressed in section 4.16 of this report.

Each issue raised has been summarised meaning while the exact wording of a particular submission may not be included the intent of issues raised has been captured.

Where relevant, input to the responses was sought from the technical specialists who assisted with preparing the EIS.

2.2.2 Review of public agency and council submissions and advice

The agency and council submissions and advice were reviewed, and the issues raised have been summarised, generally in the order and topics provided in each submission. In some instances, related issues have been grouped under a single heading. The issues raised in each submission, and responses to these issues, are provided per agency in section 4 (Response to agency and council submissions) of this report.

2.3 Breakdown of submissions

A list of the submissions received and where the comments are responded to are provided in Table 2.1.

Table 2.1: List of submitters

Submission identification	Submitter	Where discussed in this report
1	Private individual – Andrew Sleight	5.2, 5.3, 5.4, 5.5
2	Private individual – Colin McCrabb	5.2, 5.3, 5.4
3	Edward River Council	4.2
4	WaterNSW	4.3
5	Biodiversity, Conservation and Science Group	4.4
6	Department of Primary Industries and Regional Development – Fisheries	4.5
7	NSW DCCEEW – Water Group	4.6
8	NSW EPA	4.7
9	Department of Planning, Housing and Infrastructure – Crown Lands	4.8
10	Dams Safety NSW	4.9
11	Transport for NSW	4.10
12	Murray Darling Basin Authority	4.11
13	NSW National Parks and Wildlife Service	4.12
14	NSW State Emergency Service	4.13
15	Heritage NSW – ACH	4.14

Submission identification	Submitter	Where discussed in this report
16	Heritage NSW – Heritage Council	4.15
17	Department of Primary Industries and Regional Development – Agriculture	4.16
18	DPHI Hydrology Review	4.17

The issues raised in the community submissions have been grouped in Table 2.2 by the five main issue types. One submission may discuss issues within multiple categories.

Table 2.2: Breakdown of submissions by the five main issue types

Issue categorisation	Number of issues raised by community
The proposal	2
Procedural matters	3
Impacts of the proposal	6
The justification and evaluation of the proposal	0
Issues that are beyond the scope	1

3 Actions taken since exhibition

3.1 Engagement overview

3.1.1 Exhibition activities

The EIS was exhibited from the 1 November 2024 until 28 November 2024. The full EIS and all technical appendices were published on the Major project planning portal at planningportal.nsw.gov.au/major-projects/projects/billabong-creek-environmental-water-regulators.

Written submissions were made to the DPHI planningportal.nsw.gov.au/major-projects/projects/on-exhibition. All submissions received have been placed on the proposal website.

Communication and engagement activities that supported the exhibition included:

- 4,313 email recipients
- 30 radio advertisements
- seven printed advertisements
- the Major project planning portal project page visited 265 times, 112 click-throughs and 65 downloads of the EIS summary document
- two community information sessions
- one stakeholder briefing.

Hard copies of the EIS were provided in the following locations:

- Edward River Council
- Wanganella Store.

Two community information in person events were held during the display period at the following locations:

- Wanganella Hall
- Conargo Hall.

The exhibition period was advertised in the following publications:

- Deniliquin Pastoral Times
- The Land
- 2QN (radio)
- Edge FM (radio).

Submissions received during this period, have been addressed in this report.

3.1.2 Ongoing engagement activities

Consultation with the community and stakeholders would continue throughout the detailed design and construction phases as required. This would include continuing with key consultation groups comprising Yanco Creek Design Focus Group. In addition specific consultation activities identified through this submissions process would be carried out.

3.2 Refining the proposal

3.2.1 Proposed changes to the proposal

Following completion of the EIS, further design refinements have been identified. These have been developed following consultation with WaterNSW and construction contractors and where further design detail has been developed. The refinements comprise:

- Hartwood – installation of a communication mast
- Hartwood – construction vehicle reversing area at Forest Creek block bank
- Hartwood – two construction vehicle passing bays adjacent to the main access track
- Hartwood – one additional pole and one replacement pole for an existing overhead electrical line within the proposal footprint
- Wanganella – refining the construction and operational access track from Zara Road to Wanganella Regulator.

3.2.2 Communication mast – Hartwood

3.2.2.1 Design change

A communication tower comprising a mast, is proposed to be installed next to the control hut, close to the Hartwood Regulator. This would be a permanent structure and is required by WaterNSW due to the remote location of the regulator at Hartwood. Its purpose is to provide fourth generation (4G) network coverage to enable the SCADA control system to function.

The design has been developed in consultation with WaterNSW and in accordance with AS1170 which outlines the design load requirements.

The structure would be around 30 metres in height and comprise a pole with an antenna at the top.

3.2.2.2 Potential impacts

The mast is located within the existing footprint of the proposed Hartwood Regulator. There would be no change to the footprint of the proposal, due to inclusion of the mast. Therefore, there would be no additional changes to vegetation clearance, hydrology, impact to heritage or changes to land use, to those identified within the EIS.

The only additional potential impact identified due to the installation of the communication mast would be changes to visual amenity.

The existing environment includes tree canopies up to around 20 metres in height and a number of existing overhead transmission line poles.

The sensitive visual receivers close to the location of the mast are:

- users of Conargo Road
- recreational users of Billabong Creek such as canoers
- landowners carrying out agricultural activities in the pastures around the site
- four residential receivers within five kilometres of the site, the closest of which is around two kilometres from the site.

Given the relatively flat topography, the distance from the mast and the unadorned nature of the mast, it is anticipated road users and residential receivers would not notice the mast. The occasional recreational user of Billabong Creek would have limited views of the mast from the creek as it would be installed within the proposed regulator infrastructure and its height would be screened from water level by existing and new vegetation. Landowners using the surrounding pastures may see glimpses of the mast, however its narrow structure would diminish this in the landscape.

Overall potential impacts from the communication mast are considered to be negligible.

3.2.3 Forest Creek block bank vehicle reversing area

3.2.3.1 Design change

An extension to the access track from Conargo Road to the Forest Creek block bank site is proposed for the construction period. This is to provide a small reversing area for construction vehicles backing out of the main construction activity zone at this location. This area is shown on Figure 3.1 and would comprise around an additional 365 square metres, part of which is located across an existing access track.

This area will be included in the access agreements currently being established with the land owner.

3.2.3.2 Potential impacts

The addition of the reversing area for the construction period would result in around 365 square metres of vegetation to be cleared. The addition of this vegetation clearance has been included in the amended Biodiversity Development Assessment Report provided in Appendix D of this report. This assessment identified that:

- Around 365 square metres is located within the Plant community type (PCT) 10 River Red Gum – Black Box woodland. However the area is adjacent to an existing footpath and no additional trees would be impacted.
- No additional impacts to the Plains-wanderer (*Pedionomus torquatus*) habitat.
- No additional impacts to Slender Darling Pea (*Swainsona murrayana*).

No additional impacts to Aboriginal cultural heritage are identified.

No other potential significant impacts are identified as a result of the reversing area being included in the proposal footprint.

3.2.4 Two vehicle passing bays

3.2.4.1 Design change

Two vehicle passing bays are proposed for the access track from Conargo Road to Hartwood Regulator, for the construction period. This is to allow construction vehicles to wait while other vehicles pass. One bay close to Conargo Road allows incoming vehicles to wait and the other bay would be situated close to the construction activity zone for exiting vehicles to wait.

The bays would be around 25 metres in length by five metres in width. These areas are shown on Figure 3.1 and would comprise around an additional 150 square metres combined.

The location of the passing bays were selected to minimise impacts to terrestrial biodiversity. By having the two bays this allows the access track to remain single lane, minimising overall impacts of the proposal.

These areas will be included in the access agreements currently being established with the land owner.

3.2.4.2 Potential impacts

The addition of the reversing area for the construction period would result in around 150 square metres of vegetation to be cleared. The addition of this vegetation clearance has been added to the amended Biodiversity Development Assessment Report provided in Appendix D of this report. This assessment identified that:

- around 150 square metres is located within the PCT 48 Curly Windmill grass – spear grass, wallaby grass grassland
- no additional impacts to the Plains-wanderer (*Pedionomus torquatus*) habitat.
- no additional impacts to trees
- no additional impacts to Slender Darling Pea (*Swainsona murrayana*).

No additional impacts to Aboriginal cultural heritage are identified.

No other potential significant impacts are identified as a result of the two passing bays being included in the proposal footprint.

3.2.5 Utility poles at Hartwood

3.2.5.1 Design change

A small section of the electricity cable alignment south of Forest Creek, at Hartwood, would use an existing overhead line. The works would require connecting with this existing electricity line on the northern side of Forest Creek. Minor upgrade works for the existing line would comprise removal of the old cable and re-stringing of a new cable south of Forest Creek between two poles. The existing electricity easement and access to that area would be used.

Further refinement of the electrical design, in consultation with Essential Energy, has determined that one of the existing poles should be replaced by a similar pole in the same position. This work is recommended to improve the connection point with the new cable and the existing network.

Also, due to a sag in the existing overhead line at this location an additional pole is proposed to be added between the two existing poles south of Forest Creek. The upgraded overhead cable for the proposal and the existing network cables would be reconnected onto the replacement and new poles.

3.2.5.2 Potential impacts

The replacement pole and new pole are both in the existing footprint of the proposal, which was surveyed and assessed within the EIS.

The method for installing the new pole would be as described in Section 3.3.5 of the EIS and entail installation of the pole in a pre-drilled hole via a mobile crane. Construction impacts would be minor and construction would be completed within a few days.

Access to the site would remain as described in the EIS, via existing Essential Energy easement and access routes from Conargo Road along private farm tracks to this section of the electricity network. No further vegetation clearance would be required and no additional impacts to heritage are identified.

Overall no significant additional impacts have been identified from the installation of the two electricity poles.

3.2.6 Refining access at Wanganella Regulator

3.2.6.1 Design change

Access to Wanganella Regulator from the southern side of Billabong Creek via Zara Road was included within the proposal and assessed in the EIS. This design included two access points off Zara Road, to provide a loop for construction traffic to manoeuvre easily within the construction activity zone. One of the access points would be retained for operation of the proposal.

Following further refinement of the access track design, the number of access points has been reduced to one. This is to provide increased sight distance in both directions through moving the access point further from a bend in Zara Road.

The new access layout is shown in detail in Appendix B.

3.2.6.2 Potential impacts

This change is located entirely within the existing construction activity zone footprint of the proposal and would not result in new areas of impact. There would not be any additional biodiversity, heritage, land use or hydrological impacts.

This refinement from two down to one access point which would be further from a bend in Zara Road, will reduce potential traffic safety impacts due to the proposal for users of Zara Road. This increased sight distance will provide improved visibility of the construction vehicle movements.

Overall there is a reduction in risks to construction and operation traffic and a reduction in risk to existing Zara Road users.

3.3 Undertaking further assessment of the proposal

3.3.1 Hydrology and flooding

Additional hydrology and flooding assessment has been undertaken since the EIS exhibition. This assessment has been undertaken to:

- assist with responding to issues raised in submissions and during consultation.

The hydraulic functions (previously known as hydraulic categorisations) are defined in the Flood Risk management manual: the policy and manual for the management of flood liable land (DPE, 2023) and are as follows.

- Floodway Areas – areas that convey a significant portion of water during floods. These areas are where flood behaviour is sensitive to changes in flow conveyance.
- Flood Storage Areas – areas outside of floodways that store a significant volume of water. These areas are where flood behaviour is sensitive to changes in flood storage.
- Flood Fringe Areas – areas within the extent of flooding for the event but are outside of both the floodway area and the flood storage area. These are considered not sensitive to the changes in flow conveyance or flood storage.

The hydraulic functions have been mapped with guidance from the Flood Function: Flood risk management guideline FB02 (DPE, 2023). Maps for 5 per cent AEP, 1 per cent AEP and PMF have been prepared and are presented in Appendix C of this report.

The findings of the updated assessments have been incorporated (where relevant) into the responses provided in Chapters 4 and 5 of this report.

3.3.2 Biodiversity

Additional biodiversity assessment has been undertaken since the EIS exhibition. This assessment has been included in the amended Biodiversity Development Assessment Report (BDAR) provided in Appendix D of this report. This assessment has been undertaken to:

- assist with responding to issues raised in submissions and during consultation
- assess the impacts of the proposed footprint refinements (see section 3.2 above)
- further progress commitments made in the EIS.

The principle updates to the BDAR are to provide further detail on the following issues:

- areas mapped as non-native vegetation and vegetation zones
- indirect impacts

- prescribed impacts including Human-made structures, Connectivity, Water quality, waterbodies and hydrological processes and Vehicle strike
- mitigation measures
- new survey methodologies and results for further site assessment conducted in February 2025, for the follow species:
 - Australian Bustard
 - Raptor breeding
 - Pink Cockatoo breeding
 - Superb Parrot breeding
 - Koala
 - White-bellied Sea Eagle
 - Grey snake.

The additional findings presented in the amended BDAR have contributed to improvements to the proposed mitigation measure and the outcomes in relation to biodiversity offset requirements.

The full details of the revised assessment are provided in Appendix D of this report.

The findings of the updated assessments have been incorporated (where relevant) into the responses provided in Chapters 4 and 5 of this report.

3.3.3 Contaminated land

Additional assessment to identify potential existing contaminated land risks within the proposal site, has been undertaken since EIS exhibition. This methodology and findings of this assessment is provided in a technical report in Appendix E of this report. This assessment has been undertaken to:

- assist with responding to issues raised in submissions and during consultation
- quantify likely risks from the existing Wanganella rural landfill
- further progress commitments made in the EIS.

A Moderate risk was identified in the area of the Wanganella rural landfill directly south-west of the proposed construction activity zone for the Wanganella flood bypass channel. A targeted site investigation was therefore conducted at this location at the end of April 2025. The assessment comprised:

- Six boreholes were drilled to a depth of up to four metres below ground level depending of subsurface geology, using a solid flight auger. Contamination samples were collected from the cuttings at regular depth intervals.
- Upon completion of the drilling each of the six boreholes was converted into ground gas monitoring wells. Gas monitoring was carried out the following week.

No exceedances of the investigation levels were identified. In summary, the results indicate:

- No asbestos was identified in the analysed samples.
- Results of BTEXN, PAH and TRH analytes were not detected above the limit of reporting (LOR), which is consistent with the field PID measurements which suggested low levels of volatile gases at the site.
- Assessment against investigation levels indicates a low risk to potential receptors.
- The gas monitoring readings indicated that there is no sub-surface methane or carbon monoxide present within the bores and very low levels of CO₂ and H₂S are present.

The results of soil sampling and ground gas monitoring did not identify a risk to construction workers or other potential receptors at the site to a depth of 4 metres.

The full details of the assessment are provided in Appendix E of this report. The findings of the updated assessments have been incorporated (where relevant) into the responses provided in Chapters 4 and 5 of this report.

3.3.4 Aboriginal Cultural Heritage

A revised Aboriginal Cultural Heritage Assessment Report (ACHAR) (Austral, 2025) is provided in Appendix F of this report. The report has been revised to respond to the comments raised during the display of the EIS by Heritage NSW and other government agencies. Aboriginal stakeholders were given 28 days to review the revised AHCAR and any comments received are considered within the revised report.

The revised assessment has not identified any change to the harm to Aboriginal sites, above what was identified at the EIS stage.

Small amendments have been made to mitigation measures (measures AH1-AH3 and one new measure AH7). There are detailed in the revised ACHAR and provided in Appendix A of this report.

The findings of the updated assessments have been incorporated (where relevant) into the responses provided in Chapters 4 and 5 of this report.

3.4 Clarification and corrections

3.4.1 Terminology relating to WaterNSW's role

A number of the technical reports referred to WaterNSW as being the owner of the new regulators. This should have stated that it is intended that WaterNSW will be the owner and operator of the new regulators.

3.4.2 References to the operations plan

A number of the technical reports referred to the operations plan as being final. This should have stated that the operations plan remains in draft form as consultation is ongoing with key stakeholders including WaterNSW.

The document used for assessment in the EIS was the draft Yanco Creek Systems Operations Plan (Department of Planning and Environment, November 2023). The hydrological and related impacts presented in the EIS accurately reflect the operational protocols outlined within the operations plan. It is noted that a 2024 revision of the operations plan was provided as an appendix to EIS, however the only differences between the two versions of the plan was that there had been some progression in discussions with WaterNSW on some governance measures. The operational criteria of the two versions of the plan which the modelling is based upon, were identical in both versions of the plan.

4 Response to agency and council submissions

4.1 Overview

This section provides responses to the issues raised in submissions from Edward River Council and NSW Government Agencies.

4.2 Edward River Council

4.2.1 Issue description: Support

Council is in support of the design refinements associated with the Project in contrast to the initial Scoping Report and makes no objection to the proposal subject to the below considerations.

Response

Noted – no further response required.

4.2.2 Issue description: Water

Consistency and water availability should not be impacted as a result of the Project. Access to quality water and consistent baseline flows would be an anticipated result from the construction of the two new regulators within the Billabong Creek to ensure users continue to have adequate water access from the creek catchment. Council is in support of the Project, should minimal change to the existing hydrology and characteristics of the Billabong Creek have negligible impact to licenced users, the environment and dependent local communities (namely the Conargo and Wanganella townships).

Response

The hydrology report shows that there would be no impact on water users and the environment due to the construction and operation of the new regulators (See section 4.2 of Appendix G of the EIS)

4.2.3 Issue description: Environmental impacts

Any environmental impact to the Billabong Creek catchment should have negligible effect on the environment, by way of native flora and fauna, critical habitat and site sensitive ecosystems (aquatic and terrestrial). All measures should be taken to prevent and reduce contaminated surface water runoff, soil disturbance, and increases in salinity and turbidity during the construction of the regulators and demolition of the weirs.

Response

The EIS has considered and assessed the concerns listed above. Management and mitigation measures have been developed to control activities and minimise negative impacts where they have been identified. The controls identified through this process will be included in the CEMP and relevant sub-plans. Updated measures are listed in Appendix A of this report. These include:

- Measures GW01-GW04: controls to protect groundwater
- Measures GE01-GW05: controls to protect geomorphology
- Measures CS01-CS04: controls to protect soils and minimise the risk of contamination.

4.2.4 Issue description: Social impacts

Council would anticipate that consideration for employee and skilled labourers' accommodation is thoroughly considered prior to the commencement of works to ensure suitable housing is available for the duration of the project. Deniliquin and supporting communities have low availability of housing and tourist and visitor accommodation, with this development alone projecting a workforce of 26 personnel per day during construction over an 18-month period (section 3.3 of EIS Main Report). Edward River Council is anticipating a significant influx of skilled workers with the nearby renewable energy zone projects set to commence in the near future, creating a high demand for the limited housing stock.

Noting the above, Council supports the employment of local tradespeople where suitably qualified to facilitate this project.

Response

NSW DCCEW and the construction contractor will work with the local accommodation providers to support local businesses, but also to manage cumulative impacts and the existing needs of the local tourist industry as well. Some of the construction of the new regulators would be undertaken by local contractors which would reduce the need to additional accommodation for construction personal.

4.2.5 Issue description: Traffic and access

Council would request that the condition of any existing road network utilised to deliver the project, including during construction, demolition, and ongoing operation, remain in a suitable and safe condition. Dilapidation of the roads should be assessed prior to works commencing and upon the completion of the project to ensure any impacted sealed and unsealed roads are not left in a damaged condition for local residents and users.

Should upgrades to existing intersections on major/high volume road networks be required to improve safety, these upgrades should be carried out prior to the commencement of regulator works at each location, and Council request notification prior to those works being carried out.

Response

NSW DCCEW will work with Council and Transport for NSW to manage potential impacts to roads local to the proposal. Mitigation measure TA4 (see Appendix A of this report) provides for completion of a dilapidation report. This will be undertaken prior to construction and any works to repair roads would be undertaken following completion of construction. In consultation with Council and Transport NSW, defects attributable to construction activities will be rectified or compensated. Any modifications to roads or intersections would be undertaken in consultation with the relevant road authority.

4.2.6 Issue description: Cultural heritage

Council requests the Proponent work closely with Local Aboriginal Land Councils and First Nations people with regard to the destruction and/or relocation of cultural heritage items. Within the EIS and supporting reports, it is identified the Proponent will be required to destroy items of heritage significance. Where possible, Council supports the potential relocation and exhibition of any removed items in nearby museums or town monuments to retain local cultural heritage items/relics. Should the opportunity arise to display these relics/items, Council request consultation be undertaken with the Local Aboriginal Land Councils and traditional owners.

Response

NSW DCCEW will continue to work with Local Aboriginal Land Councils and traditional owners to manage the potential impacts identified within the Aboriginal Cultural Heritage Assessment Report (Appendix M of the EIS).

NSW DCCEW will also continue to consult with the Edward River Council's Conargo Committee regarding the proposed relocation and display of part of an existing scar tree near Hartwood Regulator at Conargo.

4.3 WaterNSW

4.3.1 Issue description: Ownership of regulators

The EIS states that WaterNSW is the intended asset owner, some of the appendices state that WaterNSW would own and operate the new regulators once constructed. The appendices should be revised so that 'WaterNSW is the intended asset owner' as per the EIS.

Response

The technical reports to the EIS had already been finalised when the request from WaterNSW was received in regards to status of ownership. The EIS was still able to be updated prior to finalisation.

It is not proposed to update the technical reports with this terminology. A correction to the wording of WaterNSW's role is provided in section 3.4.1.

4.3.2 Issue description: Native title

The proponent is to confirm the result of their legal assessment on Native Title status for the land where the regulators are located. If Native Title is found to apply DCCEEWS is to advise on proposed future act pathways available/recommended to validate the proposal

Response

There is a Native Title Claim at Wanganella, but it is not registered and therefore is not currently active. If this status changes, consultation would be carried out with the Native Title claimant in accordance with Native Title Act 1993. Native Title is being considered across the whole of the SDLAM projects and would be managed by NSW DCCEEWS and DPIRD-Public Works.

4.3.3 Issue description: Dam break consequence categories

As the intended owner and operator of the two regulators post-construction, WaterNSW will submit the consequence category assessments to Dams Safety NSW for a Declaration determination and advise DCCEEWS of the outcome. If Dams Safety NSW determines that the regulators are to be Declared under the Dam Safety Act 2015, then conditions will need to be met prior to construction commencement in accordance with Dam Safety NSW requirements.

Response

It is noted that WaterNSW has submitted the Consequence Category Assessments for both Hartwood and Wanganella Regulators to Dams Safety NSW. If Dams Safety NSW determines that the regulators are to be Declared under the Dam Safety Act 2015, then requirements identified will be met prior to construction commencement.

4.3.4 Issue description: EIS Appendix U Draft Yanco Creek System Operations Plan

WaterNSW raised multiple queries regarding EIS Appendix U Draft Yanco Creek System Operations Plan (Operations Plan). These included:

- Annual Compliance Report/s focus solely on work approval conditions. It is recommended that these new conditions be incorporated into the work approvals.
- Publishing of Annual Compliance Report on the WaterNSW website
- Clarifications on smaller supplementary events.
- Consistency with general security rules.
- Performance measures used to assess compliance with the base flow rules.
- Obligations for native fish environmental flow provisions.
- Additional environmental provisions.

- Unregulated flow operations.
- Clarification on responsibility terminology.

Response

These issues are out of scope of the EIS. The proposal is limited to the new Hartwood and Wanganella Regulators within Billabong Creek and associated works. These issues will be discussed further with WaterNSW outside of the EIS approval process.

4.3.5 Issue description: EIS Appendix U Draft Yanco Creek System Operations Plan – operating rules

These rules (reference to page 62 and 67 of EIS Appendix U Draft Yanco Creek System Operations Plan) should ensure consistency with existing rules. References to water levels should be changed to refer to flows. Requirements for rates of rise and fall need to consider the practicalities involved with achieving them. Performance measures used to assess compliance with the rules need to consider these issues.

Response

NSW DCCEEW understands that the 100mm/day rate of fall in water levels is less than permissible rates of fall at some other WaterNSW regulators. This reduced rate of fall (e.g. 100mm/day compared to 150mm/day) was necessary to obtain key stakeholder support for the construction and operation of the new regulators.

Rates of rise and fall of water levels at Hartwood and Wanganella Regulators in the draft Operations Plan is currently not a WaterNSW Operating Condition meaning it is a guide only and not an enforceable requirement from a compliance perspective.

If DPHI sets planning approval conditions for WaterNSW to comply with for required rates of rise and/or fall, NSW DCCEEW will give due to consideration to operational practicalities associated with complying with these conditions. Considerations for example may include the tolerance/accuracy that each regulator can maintain a set upstream water level when operated in upstream control.

Potentially rates of rise and fall could be defined from a planning approval perspective over different time periods to account for operational practicalities. For example:

- A maximum 120mm rate of fall over a 24 hour period (includes a 20mm operational tolerance)
- A maximum 220mm rate of fall over a 48 hour period (includes a 20mm operational tolerance)
- A maximum 320mm rate of fall over a 72 hour period (includes a 20mm operational tolerance).

This type of approach would align with the intent of the draft plan (e.g. 100mm/day maximum rate of fall) while also making provision from a compliance perspective for operational limitations.

Further discussions are ongoing with WaterNSW to explore using flow volumes as a surrogate for rates of rises and falls.

4.3.6 Issue description: EIS Appendix B detailed maps and plans

WaterNSW has provided comments on the design drawings as part of a design review process managed by the proponent. Should the proposal be approved, the proponent is to continue engaging with WaterNSW to ensure that our comments are addressed in the final design.

Response

NSW DCCEEW will continue to consult with WaterNSW as the final design is developed. The Yanco Design Focus Group will continue to be consulted during detailed design.

4.3.7 Issue description: EIS Appendix E Consultation report

It is proposed that WaterNSW is intended to own, operate and maintain the regulators. There will be a range of assurance checks and activities throughout the project delivery phase that the proponent (DCCEEW) must meet prior to WaterNSW's formal acceptance of ownership.

Response

NSW DCCEEW will continue to consult with WaterNSW in regards to assurance checks, activities and outcomes, throughout the project delivery phase. A Delivery Deed between NSW DCCEEW and WaterNSW is currently being negotiated and will be finalised before construction commences. The Delivery Deed will detail assurance checks and activities through the project delivery phase.

4.3.8 Issue description: EIS Appendix G Hydrology Assessment - modelling

The Billabong River system has complex decision pathways and operational rules for river operations. There are specific operational rules for both Hartwood and Wanganella regulators based on downstream localised catchment contributions and river conditions. Given the releases have impact on lower flows, WaterNSW would like the proponent to confirm/demonstrate if these processes are modelled appropriately in the Murrumbidgee Source model. WaterNSW seeks to understand how the floodplain impacts are explicitly modelled in Source to provide confidence in flood estimates and concurrent flood impacts on stakeholders in the area for EIS considerations. There is also a need to document how uncertainty in flow estimations/flow distribution/local runoff contributions from long-term climate variability and change has been considered in this study.

Response

The eWater Source Model is the hydrological model covering the area of the Murrumbidgee Regulated Water Sharing Plan. The overarching objective of the model is to represent the key physical and management processes and interactions that affect water availability and use within the whole Murrumbidgee Valley. A review of the eWater Source Model is contained in Appendix H, of this report.

The model has sufficient representation of system scale inflows and operational rules within the study area for the models intended purpose. The eWater Source model has been calibrated to observed flows at key gauging stations. It is not a hydraulic model, therefore water entering floodplain is captured in the loss relationships. The impacts on flooding are captured by the hydraulic models developed for the study area and are covered in Appendix H of the EIS.

Climate variability is captured in the 130-year model run. All models have a degree of uncertainty, and there is the same uncertainty in the base case and the scenario models developed for this proposal.

There was no requirement to look at climate change for hydrology in the SEARS for the EIS. However, the impact of climate change on flooding was assessed.

4.3.9 Issue description: EIS Appendix G Hydrology Assessment – climate risk projections

While the report includes historical climate and flow data, there is an opportunity for greater integration of climate risk projections (e.g. CMIP6 and NARCLIM2.0). Given the increasing frequency, severity, variability, and intensity of climate impacts (e.g., droughts, floods), it is crucial to understand how these proposed regulators would perform under future climate scenarios, which could offer deeper insights into long-term sustainability and operational resilience. Some efforts can be made to build particular scenario-based simulations considering the inclusion of climate projections to investigate how projected changes, for example, temperature and rainfall patterns, might affect water availability and flow regimes in the future.

Response

There was no requirement in the SEARs or the SDLAM program to model climate risk projections. However, under a drier climate, with less water availability, the ability to re-regulate any surplus water in the Yanco Creek System would be expected to improve the operational resilience of the system compared to the current structures. The impact of climate change on flooding was assessed.

4.3.10 Issue description: EIS Appendix G Hydrology Assessment – flow variability

The report mentions that flow variability is expected to remain relatively stable across scenarios, but it would be useful to further explore particularly event-specific flow variability (e.g. stratified low, medium, and high flow events across different years). Specifically, how will the new regulators affect high-flow events, which are crucial for floodplain health? WaterNSW requests a more detailed analysis of flow variability during critical periods (e.g. flood seasons) which could provide insights into how these might affect both human and ecological water users.

Response

Both hydrologic and hydraulic modelling assessed changes to high-flows. The hydrologic modelling considered various different Environmental Watering Requirements (EWR's) and the hydraulic model considered various different flood flows. These assessments show that there are no significant changes to the hydrology or flooding.

Hydrology

EIS Appendix G Table 4-7, shows that flows that correspond to Large Freshes and larger flows increase at all Planning Units with the exception of Jerilderie where the 25th percentile and 20th percentile flows decreased by 2 per cent and 0.1 per cent respectively. As flows at Jerilderie are essentially unregulated (natural) flows these changes are not considered to be significant and within the modelling tolerance.

The wetland connection and floodplain connection flows EWRs in EIS Appendix G Table 4-9 all show no change or increases over the existing case with the exception of OL-L1_P at PU11 (Billabong Creek at Jerilderie to downstream of Hartwood Weir) and OS-S1 and OB-S2 at PU 13 (Lower Billabong and Intersecting Streams). These changes are less than 4 per cent and are considered to be insignificant.

Hydraulics

The hydraulic modelling demonstrated that there were no significant changes in flood levels within a modelling tolerance of ± 50 mm across a range of events. This information is provided in the EIS:

- Section 7 of Appendix H-Sub App D-Hartwood Hydraulic Modelling Report with a full set of flood impact maps presented in:
 - for operational flows Appendix F
 - for flood flows Appendix G
- Section 7 of Appendix H-Sub App E-Wanganella Hydraulic Modelling Report:
 - for operational flows Appendix D
 - for flood flows Appendix E.

Based on these results the regulators will not have a significant impact on high-flow events that are crucial for floodplain health.

4.3.11 Issue description: EIS Appendix G Hydrology Assessment – operational flexibility

The new automated regulators are expected to enhance operational flexibility. WaterNSW requests supporting information to substantiate this narrative.

Response

The current structures at Hartwood and Wanganella have limited flexibility in operations. Hartwood Weir currently has drop boards which can alter the water level behind the weir, however these take significant manual effort to remove or deploy. Wanganella has degraded to the point where the drop boards cannot be used at all. The new regulators are to be fully remotely automated with upstream levels along with the flows being electronically monitored and adjusted remotely, noting the fishway gates will be manually operated. This will allow precise volumes of water from the regulators to be

delivered downstream when required by water users and the environment. They would also allow the capture of any excess water releases from upstream rather than the existing situation where there is no ability to capture of excess water releases.

4.3.12 Issue description: EIS Appendix H Flood Assessment – inundation impacts

The proponent is to confirm that the maximum additional inundation impacts are within channel and do not impact adjoining private landholders.

Response

As stated in Section 7.3 Appendix H-Sub App E-Wanganella Hydraulic Modelling Report there are impacts to private landholders adjacent to the creek at Wanganella. Three properties would experience minor increases in flood levels for small flood events (up to 20 per cent AEP), however would experience decreases in flood levels in larger flood events (greater than 2 per cent AEP) as the Wanganella flood bypass channel becomes operational. The flooding does not impact dwellings in Wanganella Village rather it is confined to their backyards.

4.3.13 Issue description: EIS Appendix H Flood Assessment – flow rates

The commentary at section 4.1.1 states that there is about 89 per cent chance a flow rate of 2,900 ML/day at the Jerilderie Gauge 410016 will be equalled or exceeded, however note 1 in Table 4.1 indicates this probability should be 63 per cent. This is to be clarified.

Response

The probabilities have been reviewed and concluded there is about a 64 per cent chance a flow rate of 2,900 ML/day at the Jerilderie Gauge 410016 will be equalled or exceeded.

4.3.14 Issue description: EIS Appendix H Flood Assessment – downstream tailwater conditions

There needs to be a consideration of sensitivity to tailwater conditions downstream of the regulators.

Response

There has been consideration of sensitivity to tailwater conditions downstream of the regulators.

For Hartwood downstream boundary slope sensitivity (tailwater sensitivity) is presented in the EIS in Section 5.2.3 of Appendix H-Sub App D-Hartwood Hydraulic Modelling.

For Wanganella the downstream boundary on Billabong Creek was setup as a 1D rating table (HQ curve) after testing several different downstream boundary arrangements. This setup was found to be stable across the flow ranges of interest from 30ML/d to the PMF (approximately 40,000MLd). The curve was based on the results from a downstream TUFLOW that was built as part of the Reconnecting River Country project Work Package 21. This model was ultimately not progressed as it covered the proposed Caroonboon Regulator which did not form part of the final Yanco Creek Modernisation project.

The sensitivity of the model to the adopted downstream boundary condition was tested by adjusting the flow for a given water level by $\pm 10\%$. This roughly works out to be a $\pm 20\%$ slope change on the adopted average slope of 0.00012 m / m (or 0.012%) as shown in Figure 4.1. The results indicate that this variation would lead to flood level changes of approximately +60 mm and -40 mm at Wanganella Weir. Upstream of the weir, the influence diminishes significantly. Results show that the primary area of interest (Wanganella Weir) is located at a distance far enough from the boundary to be relatively insensitive to its effects.

For context these differences were less than those calculated for the Manning Sensitivity as reported in the EIS in Section 5.2 in Appendix H-Sub App E-Wanganella Hydraulic Modelling Report.

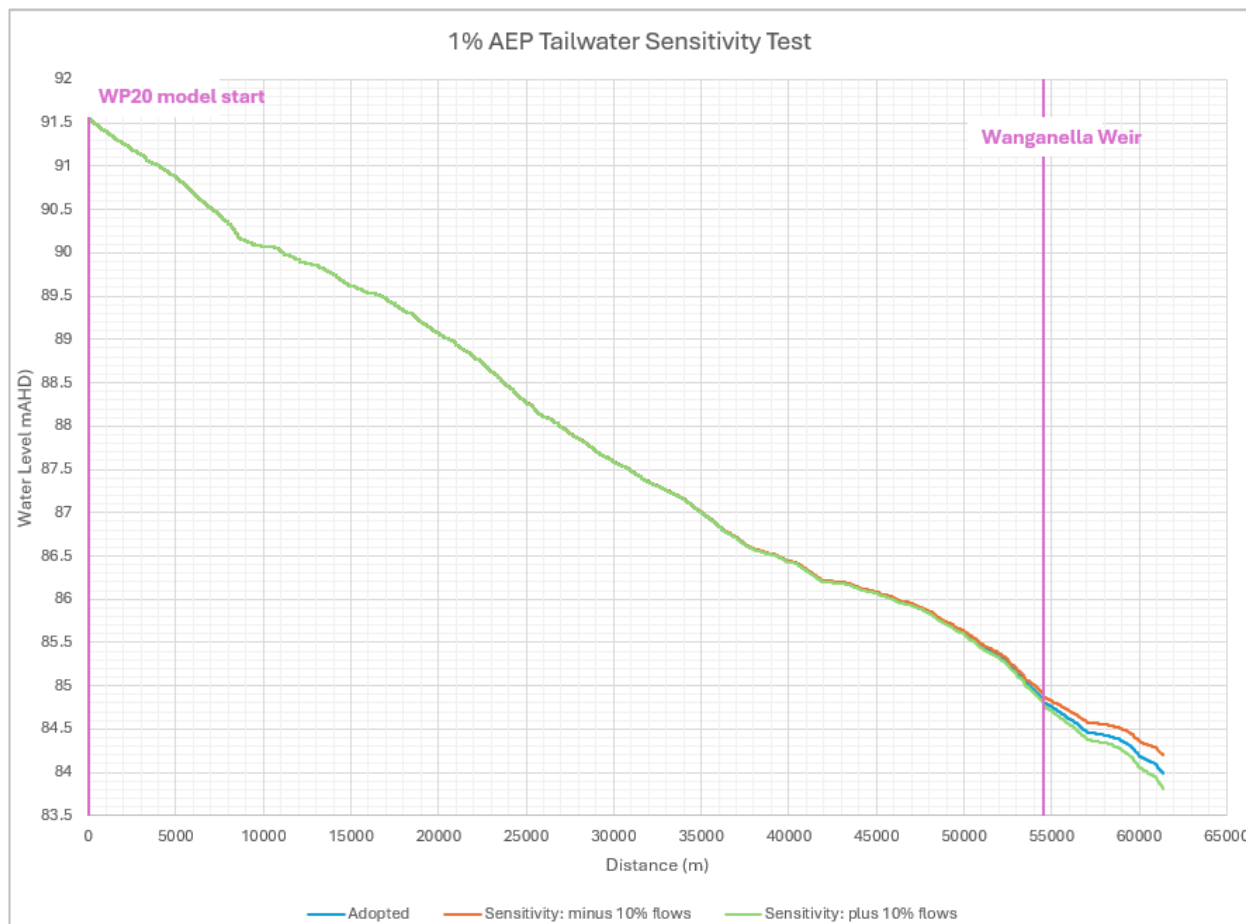


Figure 4.1: Wanganella - Downstream boundary WSL comparison along Billabong Creek

4.3.15 Issue description: EIS Appendix H Flood Assessment - cumulative impacts

Cumulative impacts are only considered for regulator-built scenarios for the 0.5 per cent and 0.2 per cent annual exceedance probability. While individual regulator impacts are presented, WaterNSW seeks to understand the combined cumulative impacts for both regulators.

Response

There is no hydraulic influence between the proposed regulators for the following reasons:

- The regulators are approximately 90 kilometres apart.
- There is a 13 metre level difference between the proposed Hartwood and Wanganella regulators.
- There are four other weirs between the two sites.

Given these conditions it is not physically possible for the Wanganella regulator weir pool to affect the tailwater level at Hartwood and therefore there is no need for a cumulative assessment.

4.3.16 Issue description: EIS Appendix I Groundwater Assessment

The proponent is to:

- register the two proposed groundwater monitoring points for the intended asset owner (WaterNSW) prior to construction
- provide the proposed groundwater monitoring points to the intended asset owner (WaterNSW) with proper and reasonable access for use during operations. This is to be resolved prior to construction
- refer the report to the DCCEE hydrogeology team for review

- The Hartwood Regulator pool target level for 1 May to 31 October (provide in Table 1-1 of EIS Appendix I): as this is different to what is stated in the draft Yanco Creek System Operations Plan. This should be the same for consistency.

Response

NSW DCCEEW will register groundwater monitoring wells that have been installed for the proposal. This information, including the monitoring points will be provided to WaterNSW. WaterNSW will have access to these wells during operation of the regulators.

Appendix I Groundwater Assessment was provided to the NSW DCCEEW-Water Group for review. Comments received from this Group are provided in section 4.6 of this report.

The number in Table 1-1 of EIS Appendix I for Hartwood 1 May to 31 October was incorrect. Instead of 95.28 metres above Australian Height Datum (mAHD), it should have stated 95.32 mAHD. The data used for the assessment was based correctly on the hydraulic and hydrology assessment as documented in the Yanco Modernisation – Murrumbidgee Source Model Runs and from field recordings from monitoring wells carried out for the proposal.

4.3.17 Issue description: EIS Appendix J Geomorphology Assessment

The proponent is to:

- ensure the risk of erosion and sediment impacts during operations is mitigated as far as practicable as part of the detailed design process, in consultation with WaterNSW
- section 4.4 of EIS Appendix J Geomorphology Assessment is to be reviewed and updated once WaterNSW comments on the flood impact and hydrology assessments are addressed.

Response

WaterNSW has been and will continue to be involved in the design of the regulators. Currently the design includes energy dissipation within the concrete regulating structures in the form of a primary and secondary stilling basin and a concrete apron downstream of the secondary stilling basin and fixed crest weir. Rock beaching has been designed upstream, downstream and on the sides of the structure to provide additional protection in both the operational and flood flows through Billabong Creek. In addition, a sheet pile cutoff has been included at the downstream toe of the concrete base of the structures to prevent erosion under the downstream base slab. The hardstand has been designed to enable overtopping during flood flows.

There are no significant changes to hydrology or flooding due to the proposal, that could alter the findings of the of EIS Appendix J Geomorphology Assessment.

4.3.18 Issue description: EIS Appendix K Surface water quality and aquatic ecology assessment

The following clarification and corrections should be made:

- The responsibility for reviewing and making updates to the draft Yanco Creek System Operations Plan, i.e. 'Plan Reviews' is yet to be determined. Table 6-1 states that this responsibility is for WaterNSW however that is not yet confirmed.
- There are references made to the Yanco Creek System Operations Plan with different dates (2020, 2022, etc). This should be reviewed and checked for consistency throughout this document, and other EIS reports.
- The Yanco Creek System Operations Plan 2022 referenced in section 1.5.3 is not finalised and is in draft form.
- Should the proposal be approved, there would be a commissioning period during which fish passage management and monitoring would be the responsibility of the proponent.

- Wanganella Regulator minimum operating flow mentioned in section 5.2.2.2.1 states that normal operating limit is 80.95, however this does not appear to match the draft Yanco Creek System Operations Plan level which states this as 80.99. The flow and operating levels that form the basis of the assessment in this report should be checked and confirmed against the latest version of the draft Yanco Creek System Operations Plan.

Response

Clarifications relating to the Operations Plan and the status of WaterNSW in relation to the proposal, are provided in section 3.4 of this report.

NSW DCCEEW would be responsible for management and monitoring of the fishways during the commissioning of the regulators

Full Supply Level for the Wanganella Weir pool level is stated as 80.99 mAHD in the Yanco Operations Plan. A normal operating level was also calculated which considered the open regulator gate as having a crest level of 80.95 mAHD. This was based on a calculation for gate opening, target flow rate and target upstream level. This value was used for the Appendix I Surface water quality and aquatic ecology assessment, as the most appropriate operating level for this assessment.

The document used for assessment in the EIS was the draft Yanco Creek Systems Operations Plan (Department of Planning and Environment, November 2023). The hydrological and related impacts presented in the EIS accurately reflect the operational protocols outlined within the operations plan. It is noted that a 2024 revision of the operations plan was provided as an appendix to EIS, however the only differences between the two versions of the plan was that there had been some progression in discussions with WaterNSW on some governance measures. The operational criteria of the two versions of the plan which the modelling is based upon, were identical in both versions of the plan.

4.3.19 Issue description: EIS Appendix L Biodiversity development assessment report

Meeting all terrestrial biodiversity offset requirements are to be the responsibility of the proponent.

Response

It is likely that available credits would be sourced from the open market in accordance with the trading rules associated with the Biodiversity Offsets Scheme. Any shortfall in credits will be met by a payment into the Biodiversity Conservation Fund.

Payment would be made to retire all or part of the offset obligation through the Biodiversity Conservation Fund after NSW DCCEEW receive development approval under Part 5.1 of the EP&A Act, and before construction commences.

Offsets obligations are required to be concluded prior to completion of a project and therefore would be the responsibility of NSW DCCEEW.

4.3.20 Issue description: EIS Appendix M Aboriginal cultural heritage assessment

WaterNSW requests that:

- The report should be updated with the following correction: the proposed activity for Hardwood Weir includes mention of a pedestrian walkway at Wanganella Regulator which is not applicable. A reference to Hartwood Weir trafficable deck is mentioned in the row relevant to Wanganella Regulator (reference Table 10.2).
- It is notified of any unexpected finds at the Hartwood Regulator site during construction.
- The proponent to explore further opportunities to avoid, protect and minimise harm to objects during detailed design and construction phases.

Response

The minor errors in the description of the proposal within the EIS Appendix M Aboriginal cultural heritage assessment report are acknowledged. These errors have not affected the impact assessment, the conclusions or mitigation measures recommended. These have been updated in the revised ACHAR provided in Appendix F. The mitigation measures have been modified to provide further clarity in minimising and avoiding impacts.

WaterNSW will be notified in the event of any unexpected finds being discovered at the proposal sites, during the construction period.

During detailed design and the construction works, NSW DCCEEW will continue to consider Aboriginal culture heritage. Further opportunities to avoid, protect and minimise harm to objects would be sought, where possible.

NSW DCCEEW will continue to consult with WaterNSW heritage team, as needed, in relation to the proposal.

4.3.21 Issue description: EIS Appendix N Non-Aboriginal heritage assessment

The archival recording for Wanganella Weir during pre-construction is to be provided to the Council, not WaterNSW.

Response

NSW DCCEEW will provide archival records for Wanganella Weir to Edward River Council.

4.3.22 Issue description: EIS Appendix O Land use assessment report

WaterNSW requests the proponent to:

- Note the Yanco Creek System Operations Plan is in development and not finalised
- Provide WaterNSW with information on the existing lease and licence agreements in the proposal site(s). (i.e. Lot 28 DP756330 has a Crown Licence).
- Confirm the result of their legal assessment on Native Title status for the land where the regulators are located. If Native Title is found to apply, the proponent is to advise on proposed future act pathways available/recommended to validate the development

Response

Clarifications relating to the Operations Plan, are provided in section 3.4 of this report.

There are existing grazing leases on Crown Land both at the Wanganella and Hartwood Weir sites. Both weirs have existing licences in the form of a Work Approval.

Leases and licences with NSW Crown Lands for the new regulators, cannot be finalised until the proposal is approved. However there is ongoing consultation with NSW Crown Lands and the single private property impacted to ensure that when the project is approved, leases and licences can be obtained rapidly. Copies of all relevant leases, licences, easements and acquired land would be provided to WaterNSW

There is a Native Title Claim at Wanganella, but it is not registered and therefore is not currently active. If this status changes, consultation would be carried out with the Native Title claimant in accordance with Native Title Act 1993. WaterNSW would be consulted with in the event of this situation.

4.3.23 Issue description: EIS Appendix O Land use assessment report – inundation

WaterNSW requests the proponent to provide appropriate property mitigation for private property that may or will experience additional flooding, such as through an inundation easement. This property mitigation is to be in place prior to handover of the proposed assets to WaterNSW.

Response

Inundation events will be confirmed during the commissioning phase and if there are any issues NSW DCCEEW will be responsible for addressing these prior to the assets being handed to WaterNSW.

The inundation modelling discussed EIS Appendix H Flood Assessment, demonstrates that there are no significant flood impacts resulting from the proposal. The majority of potential impacts identified during earlier stages of the proposal have been designed out and do not therefore require additional mitigation measures. This includes the following design features include specifically to manage potential flood impacts:

- The assessment identified potential flood impacts near Wanganella Township. This impact has been mitigated through the inclusion of the Wanganella flood bypass channel.
- The flood impact assessment identified that the originally proposed access track to the Hartwood Regulator crossed a flood runner. If this flood runner is blocked this would lead to a minor increase in flood levels upstream. The access track was modified to incorporate a floodway (a ford crossing) through this section to design out this potential impact.

Three properties in Wanganella Village would experience minor increases in flood levels for events up to the 20 per cent annual exceedance probability (AEP) and either no change or a decrease in flood levels for larger flood events due to the new flood bypass channel. The increase in flooding would not impact on houses or other infrastructure on the properties and would be confined to areas that are subject to flooding in larger events. NSW DCCEEW will consult with property owners to identify a preferred mitigation measure for flooding impacts and ensure implementation before handing over the Wanganella Regulator to WaterNSW.

During detailed design, modelling results would continue to be reviewed to identify if additional refinement of the proposal could result in further benefits to the environment or communities.

4.3.24 Issue description: EIS Appendix R Social impact assessment

WaterNSW notes the following:

- The Yanco Creek System Operations Plan is in development and not finalised (reference section 1.3.4).
- Land acquisition for proposed WaterNSW assets must involve ongoing consultation with WaterNSW (reference sections 5.1.1.1 and 5.1.1.2).
- WaterNSW supports positive outcomes for First Nations communities. While this mentions the potential to deliver cultural flows to Billabong Creek through the proposal, this is not specified in the draft Yanco Creek System Operations Plan. NSW DCCEEW is to work with First Nations communities to include this in the operations plan if this outcome is to be realised (reference Table 6.1).

Response

Clarifications relating to the Operations Plan, are provided in section 3.4 of this report.

NSW DCCEEW will continue to consult with WaterNSW in relation to land acquisition and the contents of the Operations Plan.

A comprehensive Aboriginal Community Engagement Strategy was developed to identify and engage Aboriginal stakeholders. Additionally, an Aboriginal Cultural Strategy was formulated to ensure opportunities for active participation of First Nations people in project matters affecting their cultural heritage. This strategy has been pivotal in safeguarding cultural practices, language,

knowledge, and identity throughout the project's assessment phase. NSW DCCEEW will continue to consult with First Nations community representatives through the development of the proposal.

There is not any clearly defined cultural water currently available for delivery within the Yanco Creek System. However, the draft operations plan identifies cultural flows in the section titled "Other operational considerations" in the event cultural flows become available for delivery within the system at some point in the future. The delivery of cultural water would likely be similar to the delivery of environmental water in the form of a formal water order lodged with WaterNSW by the relevant water access licence holder.

4.3.25 Issue description: EIS Appendix S Climate risk assessment report

- The CRA Executive Summary notes that:
 - RRC8.5 has been used for the assessment but under Section 3.6.5 SSP5-8.5 in Table 3.6 SSP5-8.5 is used. The proponent is to clarify this discrepancy.
 - Three timeframes (baseline, 2050, 2050, and 2090) – the proponent is to clarify if the second timeframe should be 2070.
- Section 1.5 notes that once NARCLiM 2.0 becomes available, consideration should be given to incorporating that data into future assessments. NARCLiM 2.0 was released in the second half of 2024. Per the above suggestion from the EIS, the proponent is to review if new data would change the assessment. Section 3.6.5: notes that the Cth DCCEEW have released a draft update to the Climate Change Considerations chapter in Australian Rainfall and Runoff guidelines, which advises using temperature projections to improve accuracy of projected rainfall intensity (Ball et al., 2019). Australian Rainfall and Runoff guidelines Book 1 Chapter 6 Climate Change Considerations was released in August 2024. The proponent is to confirm that the interim data used is still valid.

Response

'RRC8.5' was written in error and should have said RCP8.5. Both RCP8.5 and SSP5-8.5 projection scenarios were used and are appropriate for an assessment of this proposal.

Three timeframes 2050, 2070, and 2090 were used for the baseline assessment. 2050 written twice, was an error in the text.

The NSW and ACT Government Regional Climate Modelling (NARCLiM) version 2.0 and updates to the Australian Rainfall and Runoff guidelines were published shortly before the finalisation of the EIS and after the climate risk assessment was completed for the proposal. It should be noted that each new generation of NARCLiM does not aim to replace previous generations. For example, RCP8.5 (used in NARCLiM1.5) remain consistent with other models for the near future and are still useful for planning purposes. Increases in rainfall based on SSP5-8.5 to 2050 and 2090 aligns with current guidance in Australian Rainfall and Runoff guidelines 2024.

Due to the remote in-land location of the proposal sites, it is anticipated that any change to the risks or level of risk identified, due to the new data published with NARCLiM 2.0, would be minimal. The data used to support the Climate risk assessment remains valid for this proposal.

4.3.26 Issue description: EIS Appendix S Climate risk assessment report – flood assessment results

The Flood Impact Assessment (Appendix H) does not provide results for increases in flow rates for 0.5 per cent and 0.2 per cent floods that are noted as proxies for climate change scenarios in the SEARs, Increase in flow rates for the 1 per cent flood are provided and indicate a large increase from 15,552 Megalitre per day (ML/d) to 23,653 ML/d. WaterNSW seeks the results for the 0.5 per cent and 0.2 per cent flood events for both Hartwood and Wanganella to understand if these would increase the flows impacts to the proposal.

The Flood Impact Assessment (Appendix H, Sub Appendix B Risk Register), notes that the regulator is designed to cater for possible extended precipitation events in the catchment (Probable Maximum Precipitation). Allowance for flood surcharge is to be incorporated into the proposed operation of the dam. The proponent is to clarify how the design of the regulators has allowed for flood surcharge associated with increasing Probable Maximum Precipitation due to climate change.

Response

Flow rates have not been provided for the 0.5 per cent and 0.2 per cent flood events, as during these events the regulators would be overtopped.

The Hartwood and Wanganella Regulators are not designed to surcharge during the Probable Maximum Precipitation under a climate change scenario. During such events the structure will be overtopped and the structures are designed with the expectation of overtopping. The risk involved in any potential structural failure has been assessed through respective Consequence Category Assessments for the regulators.

4.3.27 Issue description: EIS Appendix T Contamination assessment

A Phase 2 Environmental Site Assessment is to be conducted by the proponent to update and confirm any contamination risks, particularly around the Wanganella construction activities. The investigation primarily is to determine the inherent risk of potential contaminated soils from historical uncontrolled fill being used on the site and the inherent risk of contaminated groundwater entering the proposed infrastructure locations. This investigation should be conducted prior to construction commencing, to inform the CEMP and suitable mitigation measures which are to be carried out by the proponent and/or its contractor.

Response

The preliminary site investigation report identified potential contamination sources, receptors and exposure pathways within the study areas of both Hartwood and Wanganella Regulators. At both sites the potential for widespread and elevated contamination in soils, groundwater and surface water within the proposal site was assessed as Low.

A Moderate risk was identified in the area of the Wanganella Landfill directly south-west of the proposed construction activity zone for the Wanganella flood bypass channel. A targeted site investigation was therefore conducted at this location in late March, early April 2025.

A report of this investigation and its findings is provided in Appendix E of this report, and comprised:

- Six boreholes will be drilled to a depth of up to four metres below ground level depending on subsurface geology, using a solid flight auger. Contamination samples will be collected from the cuttings at regular depth intervals.
- Upon completion of the drilling each of the six boreholes will be converted into ground gas monitoring wells. Gas monitoring will be carried out the following week.

No exceedances of the investigation levels were identified. In summary, the results indicate:

- No asbestos was identified in the analysed samples.
- Results of BTEXN, PAH and TRH analytes were not detected above the limit of reporting (LOR), which is consistent with the field PID measurements which suggested low levels of volatile gases at the site.
- Assessment against investigation levels indicates a low risk to potential receptors.
- The gas monitoring readings indicated that there is no sub-surface methane or carbon monoxide present within the bores and very low levels of CO₂ and H₂S are present.

The results of soil sampling and ground gas monitoring did not identify a risk to construction workers or other potential receptors at the site to a depth of 4 metres.

4.4 Biodiversity, Conservation and Science Group

4.4.1 Issue description: Flooding – hydraulic categorisation of the floodplain

The Biodiversity, Conservation and Science Group (BCS) SEARs specifically required hydraulic categorisation (floodways and flood storage areas) of the floodplain to be mapped and to determine the compatibility of the proposed development with these hydraulic functions. The EIS does not include these elements.

Complete pre and post development flood function assessments and mapping for both the Hartwood and Wanganella Regulator sites for the 5 per cent annual exceedance probability (1 in 20 year), 1 per cent annual exceedance probability (1 in 100 year) and probably maximum flood events consistent with the Flood Risk Management Manual (2023) and the Flood Function guideline (FM02).

Response

The hydraulic functions (previously known as hydraulic categorisations) are defined in the Flood Risk management manual: the policy and manual for the management of flood liable land (DPE, 2023) and are as follows.

- Floodway Areas – areas that convey a significant portion of water during floods. These areas are where flood behaviour is sensitive to changes in flow conveyance
- Flood Storage Areas – areas outside of floodways that store a significant volume of water. These areas are where flood behaviour is sensitive to changes in flood storage.
- Flood Fringe Areas – areas within the extent of flooding for the event but are outside of both the floodway area and the flood storage area. These are considered not sensitive to the changes in flow conveyance or flood storage.

The hydraulic functions have been mapped with guidance from the Flood Function: Flood risk management guideline FB02 (DPE, 2023). Maps for 5% AEP, 1% AEP and PMF have been prepared and are presented in Appendix C of this report.

4.4.2 Issue description: Flooding – flood function for design events

Complete a detailed assessment of the impacts of the proposed developments on flood function for the following design events (1 in 20 year), 1 percentage Annual exceedance probability (1 in 100 year) and probably maximum flood events.

Response

For the Hartwood model, the differences in hydraulic categorisation between the existing and design conditions were negligible. Only minor changes were observed, primarily in the flood fringe category near the edge of the flood extent.

For the Wanganella model, the primary change in hydraulic categorisation between the existing and design conditions occurred near the town of Wanganella, where a proposed flood relief channel is located. In this area, the classification changed from flood storage to floodway, reflecting the increased conveyance function of the new channel as expected. As a result, the billabong which is linked to the flood relief channel experienced a corresponding reclassification from floodway to flood storage, due to reduced flow volumes. These changes in flood function are illustrated in Figure 4.2.

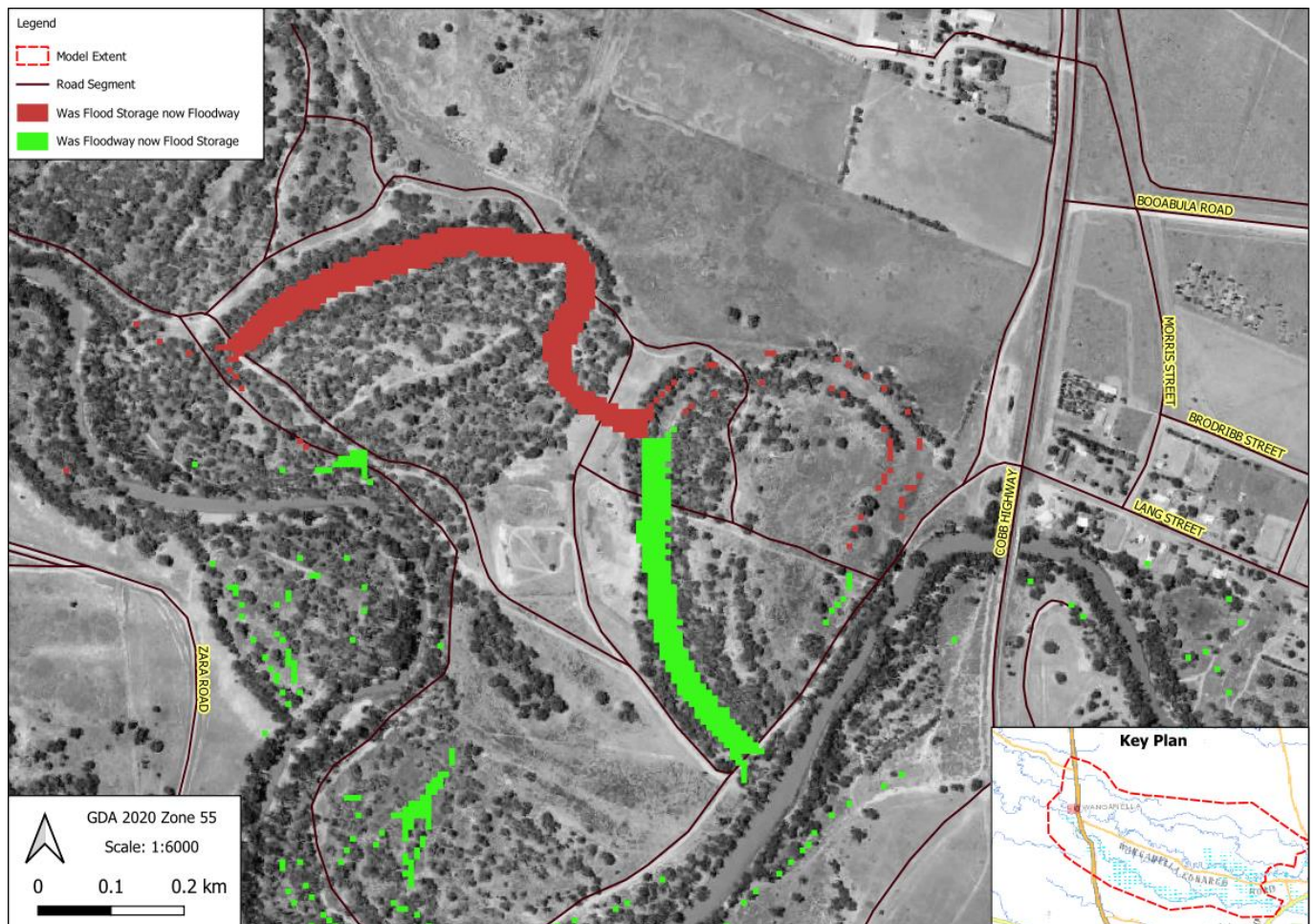


Figure 4.2: WP20 1% AEP Change in Floodway (from Existing to Design)

4.4.3 Issue description: Flooding – flood level impacts

Confirm the correct flood level impacts for the 20 per cent Annual exceedance probability (1 in 5 year) and 5 per cent Annual exceedance probability (1 in 20 year) flood flow scenarios at Wanganella and correct the reports as required.

Response

The information provided in Appendix H-Sub Appendix-E-Wanganella Hydraulic Modelling Report is correct.

4.4.4 Issue description: Biodiversity – Plains-wanderer

Further information is required to determine Serious and Irreversible Impacts (SII) to Plains-wanderer. Amend the BDAR and GIS data package to include a map displaying IHM for Plains-wanderer in relation to the subject land.

Response

Plains-wanderer Important Habitat Mapping (IHM) by NSW Department of Planning and Environment (2023a) was provided in the BDAR Figure 5-11. IHM shape files within the proposal footprint was provided in the GIS data package as Plains-wanderer species polygons. The region surrounding the proposal site have been uploaded via Biodiversity Offsets and Agreement Management System in the second BDAR data transmittal.

The Plains-wanderer SII assessment has also been updated to include more consideration of IHM in the region as well as the quality of habitat in the proposal footprint and quantum of impact.

See the 2025 Biodiversity Offsets and Agreement Management System submission folder and section 9.1.1 of the amended BDAR included as Appendix D.

4.4.5 Issue description: Biodiversity – Survey area

Flora threatened species target surveys should be conducted in accordance with relevant guideline and Threatened Biodiversity Database Collection. The guideline states that the maximum distance between traverses for herbs and forbs within open vegetation is 10 metres. The spatial data package presents distances wider than the recommended maximum distance.

Response

Surveys were conducted in accordance with the NSW Department of Planning, Industry and the Environment (DPIE) (2020) Surveying threatened plants and their habitats NSW survey guide for the Biodiversity Assessment Method. Surveys also considered additional requirements and notes regarding mapping of species polygons in the TBDC (NSW DCCEEW 2024a).

As stated in Table 5.3 of the BDAR systematic threatened flora traverses were undertaken in suitable habitat throughout the proposal footprint in September 2022, September 2023 and December 2023 based on 10 m spaced traverses targeting Slender Darling Pea (*Swainsona murrayana*) and other threatened herbs, in open country. Tracklogs indicating the general location of traverses as recorded by handheld Global Positioning System (GPS) units are shown on Figure 5.1 to Figure 5.4. It should be noted that tracklogs recorded in this way are subject to the accuracy of handheld GPS units and satellite coverage. Tracklogs typically include around 3-5m of GPS error, sometimes greater during periods of poor satellite connectivity, and so measuring traverse spacing at such fine scale is not necessarily accurate or practical. The focus during surveys was on maximising the chance of detecting a threatened species, if present, as against strict attention to transect spacing and alignment. Field ecologists spent more effort searching areas with apparently favourable micro habitat for threatened plants, as indicated by species rich native groundcover, and less effort in areas with unsuitable habitat such as waterbodies, dense growth of non-target native species, compacted soil, piled woody debris, dumped fill or dense weed infestations. Intensive targeted survey effort has been demonstrated, generally in accordance with the traverse spacing and other requirements of the threatened flora survey guidelines.

It should also be noted that Slender Darling Pea species polygons have been mapped over all contiguous habitat in associated vegetation zones in accordance with the Threatened Biodiversity Data Collection (TBDC) and threatened flora survey guide, including the area identified as a gap in the BCS submission.

The survey effort employed in the BDAR is sufficient to determine that the other candidate flora species "...are unlikely to be present, on the subject land" pursuant to section 5.2.4.4 of the Biodiversity Assessment Method (BAM). Apparent gaps in survey coverage for other species are very limited in extent and so it would not be practical or necessary to map species polygons over small areas with wider traverse spacing.

The occasional variation from the recommended maximum distance has been documented and justified in section 2.4.2 of the amended BDAR. Additional discussion of the approach to field data collection and GIS analysis is provided in section 2.4.4. of the amended BDAR.

4.4.6 Issue description: Biodiversity – Threatened species

The candidate lists of threatened species, survey effort, suitable habitat and species polygons require review as some have not been prepared in accordance with the BAM and contain omissions that may affect the credit obligation.

Additional information should be provided to confirm threatened species surveys were conducted in accordance with relevant guidelines and Threatened Biodiversity Database Collection. If additional information cannot be provided, additional surveys may be required.

Response

Responses are presented below for each of the sub-issues raised. These are detailed in the amended BDAR provided in Appendix D of this report.

Biodiversity – Threatened fauna survey effort – Australian Bustard

Diurnal bird surveys were conducted through potential Australian Bustard (*Ardeotis australis*) habitat in shrubland and grassland in February 2025, building on survey effort from 2022-24 to ensure at least 40 minutes of dedicated survey effort over a 500 m transect through potential habitat, over at least four days per regulator site. More than 80 minutes of dedicated survey effort was conducted over a >1000 m transect through potential habitat on seven out of eight survey days. Dedicated Australian Bustard survey effort is summarised in Table 5.8 of the amended BDAR. Additional non-target survey effort (i.e. habitat assessments or during threatened flora traverses in open grassland areas) would have also contributed to the overall effort employed for the species. Given the conspicuous nature of the species and its ability to be detected throughout the year, the species is likely to have been detected if present, as part of targeted surveys or incidentally. No species credits have been calculated for the Australian Bustard.

See sections 2.4.3 and 5.2 and tables 5.6 and 5.9 of the amended BDAR for a more detailed description of the survey effort employed.

Biodiversity – Threatened fauna survey effort – Raptor breeding

The TBDC profiles for threatened raptor species note that species credits are required for breeding habitat as confirmed through the presence of the species *and* potential breeding habitat *and* evidence of breeding activity (NSW DCCEE 2024a).

Diurnal bird surveys, habitat assessments and candidate nest tree census were conducted within a 500 m buffer area surrounding each regulator site, building on survey effort from 2022-24 to ensure detection of any large stick nests that could indicate breeding of threatened raptors in previous seasons. Section 5.2.1 of the amended BDAR presents information from the Handbook of Australian, New Zealand and Antarctic Birds (BirdLife Australia 2023), and other literature. This information is to demonstrate that the location of nest sites for the White-bellied Sea-eagle (*Haliaeetus leucogaster*) and other threatened raptors are large and conspicuous, would be stable over time, and that known sites would continue to be used on a seasonal basis, and with nest abandonment unlikely. This confirms that nest tree census for threatened raptors outside of the breeding season in addition to those within the nominal survey period provided in the TBDC can help confirm the absence of these species credit matters. Any candidate nest trees identified during non-breeding season, would also likely be used during the breeding season within the study area, and if the nest cannot be checked within breeding season, then presence of breeding would need to be assumed. Conversely the White-bellied Sea-eagle observations at Hartwood, in the absence of any actual or candidate nest sites, do not require calculation of species credits for breeding habitat as nests used by these individuals would have been detected if present in the study area. It should be noted that the record of the Little Eagle associated with Hartwood in the BDAR was an individual that was observed soaring around 14 km southwest the Hartwood proposal footprint in August 2022. Given the distance of this opportunistic record from the Hartwood study area it does not indicate presence of the species requiring checking of all candidate nest trees to discount presence. No species credits have been calculated for threatened raptor breeding habitat at Hartwood.

It should also be noted that threatened flora traverses and nest tree surveys were standalone surveys. Alignment of tracklog files with multiple survey techniques is because of the practical difficulty of stopping and starting GPS tracklog recording and renaming tracklog files on multiple occasions throughout a survey day, when switching between survey techniques. It should be noted that most threatened flora traverse survey effort was concentrated in the proposal footprint and in PCT44 and PCT46 and other treeless vegetation; whereas nest tree census was conducted in treed vegetation and in buffer areas outside the proposal footprint where threatened flora species were not being targeted. The survey effort as displayed on figures in the BDAR and associated GIS shapefiles have been edited to make it clearer which portions of GPS tracklogs related to the specific survey technique employed for instance closely spaced threatened flora traverses within the proposal footprint as distinct from broadly spaced nest tree searches across a broader study area. Also several tracklogs were accidentally omitted from the data package submitted with the EIS in October 2024. The 2025 data package accompanying the amended BDAR includes additional tracklogs which should help confirm the total survey effort employed.

See sections 2.4.3 and 5.2, Table 5.9 and Figures 5.6 and 5.7 of the amended BDAR for a more detailed description of the survey effort employed, the approach to assessing presence-absence of species credit matters and mapping of species polygons, and how this approach aligns with the TBDC.

Biodiversity – Threatened fauna survey effort – Pink Cockatoo breeding

The Pink Cockatoo (*Lophochroa leadbeateri*) was recorded at the subject land in September 2023. Not every candidate hollow-bearing nest tree in the proposal footprint or 200 m buffer area was able to be inspected in appropriate seasons or times of day to conclusively rule out occupation and so the proposal footprint is assumed to contain nesting habitat for the purposes of species credit calculations. No actual nest trees have been recorded; however, it is conservatively assumed that there is breeding habitat within the proposal footprint. Therefore, in accordance with the requirements of ‘assumed present’ species in section 5.2.5.4 b. of the BAM and species polygons have been mapped over all associated PCTs in the proposal footprint supporting the habitat constraints relevant to the species: vegetation zones 7_Moderate, 10_Moderate and 13_Good which contain the habitat constraint ‘Living or dead tree with hollows greater than 10cm diameter’.

See sections 2.4.3, 5.2.1, 5.2.2, Figure 5.16 and Tables 5.7 and 5.9 and section 9.1.1 of the amended BDAR.

Biodiversity – Threatened fauna survey effort – Superb Parrot breeding

Diurnal bird surveys were conducted through potential Superb Parrot (*Polytelis swainsonii*) breeding habitat in woodland and forest containing hollow-bearing trees in September 2022 and September 2023 including at least 60 minutes of dedicated survey effort over a 500 m transect through potential habitat, repeated on at least two days per regulator site. Dedicated Superb Parrot survey effort is summarised in Table 5.6 of the amended BDAR. Additional non-breeding season survey effort including diurnal bird surveys and nest tree census in August 2022, March 2023 and February 2025 and incidental survey effort across several person weeks of field survey are also likely to have detected populations of non-breeding Superb Parrots if present. No Superb Parrots have been recorded at the study area during the breeding season or foraging at other times of year. No species credits have been calculated for the Superb Parrot.

See sections 2.4.3, 5.1, 5.2 and 5.3 and tables 5.6 and 5.9 of the amended BDAR for a more detailed description of the survey effort employed.

Biodiversity – Threatened fauna survey effort – Koala

Koala Spot Assessment Techniques surveys and spotlighting transects were conducted in February 2025 using the techniques and survey intensity specified in the *Koala Biodiversity Assessment Method survey guide* (DPIE 2022), building on survey effort from 2022-24 to ensure consistency with the survey guide. No species credits have been calculated for the Koala.

See sections 2.4.3 and 5.2 and table 5.9 of the amended BDAR for a more detailed description of the survey effort employed.

4.4.7 Issue description: Biodiversity – Species polygons

Species polygons require review and additional information is needed to demonstrate BAM requirements. Amend the Table 5.5 of the BDAR to describe any microhabitats associated with Slender Darling Pea and any information used to create the species polygon.

Response

A total of 172 Slender Darling Pea individuals were recorded in the study area, with all of these individuals outside of the direct impact area. Species polygons were mapped over adjoining parts of the proposal footprint “to encompass contiguous vegetation zones in which the species has been detected” consistent with the species polygon guidance for Slender Darling Pea presented in the TBDC (DCCEE 2024b). Table 5.5 of the amended BDAR has been reworded to make this approach and the consistency with the requirements of the TBDC clearer.

4.4.8 Issue description: Biodiversity – Southern Myotis and Southern Bell Frog

The species polygons for Southern Myotis and Southern Bell Frog should be reviewed and amended to be consistent with relevant guidelines and the Threatened Biodiversity Database Collection.

Response

According to the DPIE (2020b) *NSW Survey Guide for Threatened Frogs*, a guide for the survey of threatened frogs and their habitats for the BAM, Southern Bell Frog species polygon boundaries should align with aquatic habitats linked directly to the record and a buffer, incorporating the PCTs with which the species is associated and a 200 metres radius from the top of bank. Where relevant this should include minimum 50-metre-wide corridors of native and non-native vegetated areas linking the available waterbodies. This is the approach that was adopted in the BDAR as described in section 5.2.2 and so no updates to the BAM C are required. Polygons indicating 'Aquatic habitats/ potential Southern Bell Frog breeding habitat' and 'Aquatic habitats/ potential Southern Bell Frog breeding habitat 200 m buffer including movement corridors' have been added to Figure 5.12 and Figure 5.17 of the amended BDAR to make it clearer how species polygons were mapped in accordance with the guidelines. No additional 50-metre-wide corridors linking the available waterbodies have been included because all associated PCTs in the proposal footprint fall within the 200 m buffer areas.

4.4.9 Issue description: Biodiversity – White-bellied Sea Eagle.

Justification should be provided for whether breeding habitat was absent for White-bellied Sea Eagle.

Response

The TBDC profiles for threatened raptor species note that species credits are required for breeding habitat as confirmed through the presence of the species and potential breeding habitat and evidence of breeding activity. White-bellied Sea-eagle breeding habitat is defined as live large old trees within one kilometre of rivers, lakes, large dams or creeks, wetlands and coastlines and the presence of a large stick nest within tree canopy; or an adult with nest material; or adults observed duetting within breeding period (NSW DCCEEW 2024a).

Diurnal bird surveys, habitat assessments and candidate nest tree census were conducted in February 2025 within a 500 m buffer area surrounding each regulator site, building on survey effort from 2022-24 to ensure detection of any large stick nests that could indicate breeding of threatened raptors in previous seasons. Section 5.2.1 of the amended BDAR presents information from the Handbook of Australian, New Zealand and Antarctic Birds (BirdLife Australia 2023), and other literature. This information demonstrates that White-bellied Sea-eagle nests are large and conspicuous, would be stable over time, and that known sites would continue to be used on a seasonal basis, and with nest abandonment unlikely. This confirms that the nest tree census for threatened raptors outside of the breeding season in addition to those within the nominal survey period provided in the TBDC, can help confirm the absence of breeding habitat. No suitably sized (>120cm, BirdLife Australia 2023) nests were recorded at the study area. The White-bellied Sea-eagle observations at Hartwood, in the absence of any actual or candidate nest sites, do not require calculation of species credits for breeding habitat as nests used by these individuals would have been detected if present in the study area.

See sections 5.2.1, table 5.9 and figures 5.6 and 5.7 of the amended BDAR for a more detailed description of the survey effort employed and the approach to assessing presence-absence of White-bellied Sea-eagle breeding habitat.

4.4.10 Issue description: Biodiversity – Zone identification and mapping

PCT, TEC and vegetation zone identification and mapping need to be revised as they have inaccuracies that can affect the biodiversity credit calculation. Areas of non-native vegetation must be consistent with the BAM.

Revise the areas mapped as non-native vegetation associated with plot JR14.

Response

BCS have mistaken the reference for Cth. DCCEEW (2024c) Register of Critical Habitat for NSW DCCEEW (2024c) as is referenced in the BDAR section 4.1. The justification for the approach presented in the BDAR should be referenced with NSW DCCEEW (2024d in the BDAR) which relates to the Reviewing area clearing threshold results from the Biodiversity Values Map and Threshold Tool Guidance for proponents and local government (NSW DCCEEW 2024b). The Guidance describes standards for developing a property-scale native vegetation extent map and calculation of proposed native vegetation clearing. The Ruleset for adjusting native vegetation extent for partially exotic groundcover (NSW DCCEEW 2024d page 6) states that areas of partially exotic groundcover in highly disturbed/ derived plant communities and that are comprised of less than 15% native vegetation, are to be mapped as 100% exotic and excluded from the calculation of native vegetation extent.

Agricultural land at Hartwood was sampled with VI plots to help confirm that these areas do not meet the definition of native vegetation requiring further assessment under the BAM. The vicinity of plot 14 had a total native plant cover of 5.3% which is significantly less than the threshold value of 15% in the Guidance (NSW DCCEEW 2024d). Plot 14 also featured total exotic plant cover of >100 and a VI score of 5, which is also significantly lower than the threshold for calculating ecosystem credits for non-TEC vegetation defined under the BAM (VI >17).

We also note that JR14 is not in the proposal footprint and that all parts of the proposal footprint within around 300 metres of here have been mapped as native vegetation.

See updated reference (NSW DCCEEW 2024d) and revised text in section 4.1 of the amended BDAR.

4.4.11 Issue description: Biodiversity – Mapped as non-native vegetation

Provide evidence for all areas mapped as non-native vegetation associated with plots JR10 and JR11. Revise the assessment to include any areas that do not have evidence-based justification.

Response

As discussed in section 4.4.10, the justification for the approach presented in the BDAR is in accordance with the NSW DCCEEW (2024d) Ruleset for adjusting native vegetation extent for partially exotic groundcover. This states that areas of partially exotic groundcover in highly disturbed/ derived plant communities and that are comprised of less than 15% native vegetation are to be mapped as 100% exotic and excluded from the calculation of native vegetation extent.

Agricultural land at Hartwood was sampled with VI plots JR_10, JR_11 and JR_14 to help confirm that these areas do not meet the definition of native vegetation requiring further assessment under the BAM. VI plots JR_10 and JR_11 contained total cover of native vegetation of 0% and 0.2% respectively (Table 4.1, Appendix D) which is significantly lower than the threshold value of 15% in the Guidance (NSW DCCEEW 2024d). Plot data were entered in the BAM-C which revealed a VI score of 0.1, which is significantly lower than the threshold for calculating ecosystem credits for non-threatened ecological community (TEC) vegetation defined under the BAM (VI >17).

As described above, plot 14 with the highest native vegetation cover of the plots sampled with 5.3% cover featured total exotic plant cover of >100% and a VI score of 5, which is also significantly lower than the threshold for calculating ecosystem credits for non-TEC vegetation defined under the BAM (VI >17).

See updated reference (NSW DCCEEW 2024d) and revised text in section 4.1 of the amended BDAR.

4.4.12 Issue description: Biodiversity – Vegetation zones

Condition classes for vegetation zones should more accurately reflect vegetation Integrity. Revise vegetation zones to accurately reflect the results of the vegetation integrity scores.

Response

Vegetation zone condition classes have been redefined to match VI score ranges. VI score ranges and other justification has been added to section 4.3. All figures and calculations have been updated accordingly.

See revised text in sections 4.3, 8 and 9 and Appendix D of the amended BDAR. All related figures and BAM C outputs have been updated accordingly.

4.4.13 Issue description: Biodiversity – Mitigation measures

Mitigation measures need more detail to meet requirements of the BAM. Mitigation measures lack specific detail and to be effective in managing impacts and need to include explicit terms. The following updates are requested:

- Update Table 8.9 of the BDAR to include mitigation measures that follow the SMART principles and address the identified impacts.
- Use explicit terms in Table 8.9.
- Revise Table 8.9 to detail auditable mitigation and management measures to be implemented through post-approval plans.

Response

The original Table 8.9, (now Table 8.10 in the amended BDAR) has been revised to include:

- additional detail about specific management measures that would be implemented in plans, as against deferring definition of these measures until preparation of post-approval plans
- explicit terms and time-bound, auditable conditions
- assessment of residual risk and consequences
- additional consideration of potentially affected entities including the known Little Eagle nest tree.

4.4.14 Issue description: Biodiversity – Indirect impacts

More detail is required to determine the indirect impacts associated with the proposal:

- Amend Table 8.4 to be consistent with the format recommended in Table 2 of the BAM Ops – Stage 2.
- Update Table 8.4 to address the indirect impacts listed in Section 8.2(2) of the BAM.

Response

A new table has been added as Table 8.4 in the amended BDAR that is consistent with the format recommended in the BAM Ops Manual – Stage 2 (DPE 2023b). This includes a breakdown of the assessment into 'Indirect impact' and threatened species potentially affected, and the characteristics of each indirect impact with separate columns for 'Extent', 'Frequency', 'Duration', 'Project phase / timing of impact' and a summary of the 'Likelihood and consequences' of each impact.

The new Table 8.4 includes consideration of each of the potential indirect impacts listed in section 8.2.2 of the BAM, including indirect impacts with nil chance of occurring. Potential impacts listed in section 8.2.2 of the BAM have been grouped where they would affect similar impacted entities or have a similar likelihood and consequence. Additional consideration of the potential for disturbance to specialist breeding and foraging habitat for species such as the Little Eagle, Plains-wanderer, Southern Bell Frog and Southern Myotis has been included.

The majority of the proposal footprint adjoins land that has been partially cleared and is subject to ongoing use for agriculture, water management and public recreational activities. In this context native vegetation and associated potentially impacted entities are significantly less susceptible to indirect impacts than for a novel activity in a less disturbed environment. Avoidance and minimisation measures for indirect impacts are presented in Table 7.2 and management actions to further reduce residual indirect impacts are presented in Table 8.10.

The original Table 8.4, (now Table 8.5 in the amended BDAR) has been revised to present additional detail about potential indirect impacts with a higher risk of occurring, the mitigation measures that would be employed to help avoid tangible effects and the residual consequences and likelihood of these indirect impacts.

4.4.15 Issue description: Biodiversity – Prescribed impacts

Prescribed impacts have not been adequately assessed. Amend Table 8.5 to clearly describe the characteristics for each prescribed impact in accordance with Section 4.3 of the BAM Ops – Stage 2.

Response

The prescribed impact assessment table (now Table 8.6 in the amended BDAR) has been revised to more closely match the format and information requirements of Section 4.3 of the BAM Ops Manual – Stage 2 (DPE 2023b). This includes a breakdown of the assessment into Prescribed impact and threatened species potentially affected, and the characteristics of each prescribed impact in separate columns for Nature, Extent, Duration and Consequence.

4.4.16 Issue description: Biodiversity – Roost surveys

Targeted roost surveys should be undertaken to determine presence or absence of roosting habitat for Southern Myotis within the man-made structures on the subject land.

Response

Human-made structures with the potential to comprise threatened microbat habitat were assessed in more detail in the February 2025 survey round. This comprised a diurnal potential roost inspection including checking for resident bats, evidence of previous use such as guano and assessment of the extent and quality of shelter offered by these structures. This was followed by a dusk potential roost watch using a thermal camera checking for emerging bats at the pumphouse and weir at Hartwood. This was combined with dusk Anabat (acoustic analysis software) recording.

The diurnal roost inspection of the pump house (located outside the proposal footprint) and cavities within the Hartwood Weir using a thermal camera did not detect roosting microbats, or signs of use by roosting microbats i.e. guano, staining etc. The largest crack in the weir wall at Hartwood was exposed at the entrance, narrow and covered with cobwebs, and was unlikely to be used by microbats. The likelihood of inundation during high flow periods may also limit the suitability of the weir wall as a roost site. Anabat and thermal camera surveys targeting the pump house and weir at Hartwood during the dusk emergence period also did not reveal any evidence of microbats using these structures. Overall, the potential roost survey and assessment confirms that these structures have minimal value for microbats. Table 8.6 of the amended BDAR has been updated to include the results of these surveys to inform the assessment of potential prescribed impacts.

See sections 2.4.3, 5.1, 5.2 and 5.3 of the amended BDAR for a more detailed description of the survey effort employed.

4.4.17 Issue description: Biodiversity – Limitations and assumptions

Amend Table 8.5 of the BDAR to provide evidence-based justification for impact prediction and discuss any limitations to the data and assumptions made.

Response

The prescribed impact assessment table (now Table 8.6 in the amended BDAR) has been revised to include more evidence for the assessment conclusions in accordance with the information requirements of Section 4.3 of the BAM Ops Manual – Stage 2 (DPE 2023b). The BAM Ops Manual – Stage 2 states “For each prescribed impact, predict the likely consequences of the impact on all relevant species, ecological communities or their habitat...Factors used to predict consequences will depend on the prescribed impact and the target entity” (DPE 2023b, section 4.3 our emphasis). The BAM and associated operations manuals and guidelines provide examples of the types of evidence and detailed modelling or studies that may be used to assess prescribed impacts in a BDAR, but it is clear from the use of case studies that the level of detail should be appropriate to the type of project and potential for impact. The proposal includes minor and short-term residual prescribed impacts in a previously disturbed environment with generally limited value for the threatened species that may be affected. In the context of the BAM and Stage 2 Ops Manual the level of detail and weight of evidence presented in Table 8.6 of the amended BDAR is appropriate to the likelihood and potential consequences of the prescribed impacts in question.

Responses are presented below for each of the sub-issues raised.

Human-made structures

The proposal would result in negligible changes in this prescribed impact including the removal of the existing weir at Hartwood, which was identified as having some potential value as a microbat roost. Human-made structures with the potential to comprise threatened microbat habitat were assessed in the February 2025 survey round including diurnal assessment of habitat quality, diurnal inspection with thermal camera and dusk emergence period monitoring with thermal camera and Anabat. This survey did not reveal any evidence of microbats using these structures. Overall, the potential roost survey and assessment confirms that these structures have minimal value for microbats. Table 8.6 of the amended BDAR has been updated to include the results of these surveys to inform the assessment of potential prescribed impacts.

Connectivity

The BAM Ops Manual – Stage 2 states “Factors used to predict consequences will depend on the prescribed impact and the target entity. A development that fragments a wildlife corridor, for example, requires consideration of the target species’ mobility, home range and life history characteristics, and any barriers to movement” (DPE 2023b, section 4.3).

Additional detail has been added to Table 8.6 of the amended BDAR including general consideration of potentially affected entities’ mobility and life history characteristics. Existing corridors for species of floodplain grasslands, woodland and forest, and wetlands are shown on Figure 8.1 and Figure 8.3. Removal of vegetation and construction of the regulators would only result in a minor and temporary increase in the degree of fragmentation between retained areas of habitat for these species and would not result in the isolation of any habitat as shown on Figure 8.2 and Figure 8.4 within the amended BDAR.

The assessment does not include detailed assessment of resident fauna population sizes, home ranges or local movement patterns noting the very minor change in habitat connectivity compared to the baseline condition. The level of detail and weight of evidence presented in Table 8.6 of the amended BDAR is appropriate to the minor extent, intensity, duration and potential consequences of impacts on connectivity.

Water quality, waterbodies and hydrological processes

The assessment of water quality, waterbodies and hydrological processes is supported by Jacobs (2024a) Billabong Creek Regulators Hydrology and Surface Water Resources Assessment, Appendix G to the EIS and Jacobs (2024b) Billabong Creek Regulators Surface Water Quality and Aquatic Ecology Assessment, Appendix K to the EIS as referenced throughout Table 8.6.

Potential impacts on waterbodies, water quality and hydrological processes are illustrated conceptually on Figure 8.2 and Figure 8.4. The extent of these impacts is described in Table 8.6, based on hydrological modelling and other assessment data presented in Jacobs (2024a) and (2024b) as referenced throughout. It is not appropriate to “include a figure displaying the extent of areas that are considered likely to experience localised effects on hydrology” (BCS submission) as impacts would be restricted to in stream environments. The maximum weir pool extent above the Wanganella Regulator is the Hartwood Regulator and the maximum extent above the Hartwood Regulator is Jerilderie Weir, which is equivalent to the baseline situation. No changes to overbank flows are anticipated as a direct result of the operation of the proposal (Jacobs 2024a) and so the extent of impacts would not include mid and outer floodplain ecological communities. As such these operational impacts would not affect the terrestrial vegetation and habitats that are the subject of the BDAR.

Additional detail has been added to Table 8.6 including a list of the affected entities within the impact area (including PCTs which rely on water requirements to maintain their communities of plants, ecological processes and ecosystems services). However, the prediction of consequences to the affected entities identified does not extend to detailed consideration of their water requirements or other aspects of their ecology; noting that the modelling confirms that there would be no operational impacts above the top of bank and minimal change to instream, effluent stream or floodplain billabongs with low commence to flow levels (Jacobs 2024a).

The level of detail and weight of evidence presented in Table 8.6 of the amended BDAR as supported by Jacobs (2024a) and Jacobs (2024b) is appropriate to the minor extent, intensity, duration and potential consequences of impacts on water quality, waterbodies and hydrological processes. In particular it should be noted that operational impacts of the proposal would be restricted to in stream, aquatic environments (Jacobs 2024a) and would not tangibly affect the floodplain vegetation and habitats that are the subject of the BDAR.

Vehicle strike

The BAM Ops Manual – Stage 2 states “Factors used to predict consequences will depend on the prescribed impact and the target entity... for a development with ancillary roads, an estimated rate of vehicle strike would involve an analysis of the target species’ abundance, movement patterns, home range and ability to cross barriers” (DPE 2023b, section 4.3 our emphasis). BAM section 8.3.6. b. states “estimate vehicle strike rates with supporting data or literature, where available”.

Table 8.6 (now Table 8.7 of the amended BDAR) includes a qualitative assessment of potential rates of vehicle strike and predictions of impacts as data about baseline rates of vehicle strike are not available. Similarly detailed information about local populations of potentially affected species’ abundance, movement patterns and home ranges is not available. These data would generally only be collected for projects that are more likely to result in consequential impacts such as construction or upgrade of a major road or activities resulting in a significant increase in vehicle movements. The Traffic Impact Assessment concluded that the construction and operation of the proposal would have a negligible impact on the adjoining road and transport network (GHD 2024). The traffic assessment focussed mainly on the capacity of the road network to accommodate additional traffic volumes and did not include any estimation of rates of vehicle strike on native fauna. The assessment indicates that the proposal is expected to have minimal impact on peak hour traffic volumes along the roads within the vicinity of the camps and so it is likely that the proposal would result in a similarly minor increase in the rate of vehicle strike.

Table 8.7 has been amended to include additional detail about the potentially affected species movement patterns, home range and ability to cross barriers in general and how the Traffic Impact Assessment (GHD 2024) and other information sources have been used to derive a qualitative assessment of the potential consequences of vehicle strike rates.

The level of detail and weight of evidence presented in Tables 8.6 and 8.7 of the amended BDAR is appropriate to the minor extent, intensity, duration and potential consequences of impacts through vehicle strike.

4.4.18 Issue description: Biodiversity – Fauna movement corridors

Revise the BDAR to include figures displaying corridors for different guilds (arboreal, terrestrial, aquatic, etc) to demonstrate that movement will not be impacted.

Response

Additional figures have been included in the amended BDAR to support the assessment of prescribed impacts. These figures include fauna movement corridors for different groups of fauna. Separate figures have been prepared for the baseline condition and illustrating potential impacts with construction and operation of the proposal.

See Figure 8.1 Hartwood prescribed impacts – baseline condition, Figure 8.2 Hartwood prescribed impacts – potential impacts, Figure 8.3 Wanganella prescribed impacts - baseline condition, and Figure 8.4 Wanganella prescribed impacts – potential impacts.

4.5 Department of Primary Industries and Regional Development – Fisheries

4.5.1 Issue description: Final weir and fishway design

Department of Primary Industries and Regional Development Fisheries (DPIRD Fisheries) are members of the Design Focus Group that are working through detailed design for Hartwood and Wanganella. The following will be required:

- If there are major designs alterations to the weir/weir gate/fishway configuration, related recalibration of any fishway assessment inputs (e.g. hydraulic modelling) will be required.
- DCCEEW to request acceptance from DPIRD Fisheries for final fishway designs to meet s218 FMA Act fishway suitability.

Response

DPIRD Fisheries will continue to be consulted throughout the detailed design stage of the regulator and fishway development. If there are major designs alterations to the regulator/ gate/fishway configuration, related recalibration of any fishway assessment inputs will be reviewed and recalibrated where necessary.

The fishways have been designed in accordance with Section 218 of the Fisheries Management Amendment Act 2009. DCCEEW will continue to work with DPIRD Fisheries in the development of the detailed design.

4.5.2 Issue description: Fish Passage offsets

Fish passage trade-offs are required to be agreed upon in writing by the Minister for Primary Industries or their delegate.

DPIRD Fisheries request a detailed offset strategy that considers a fish passage trade off ensuring equal or more cost beneficial fish passage outcomes. In this instance and in conjunction with the broader Yanco Creek Modernisation Project, transferring fish passage works triggered under s218 FM Act is recommended to be directed to alternative priority sites. This should be linked with fish passage offsets associated with other projects within the Yanco Creek Modernisation Project.

Response

In principle agreement has been reached with DPIRD Fisheries regarding fish passage for the Forest Creek Block Bank and other projects connected with the Yanco Creek Modernisation program of works. NSW DCCEEW has committed to implementing of the Wakool/Yalakool Fish Offset Study – which includes weir removals and pump intake works.

NSW DCCEEW will continue to consult with DPIRD Fisheries on the offset strategy for this proposal and other projects connected with the Yanco Creek Modernisation program of works.

4.5.3 Issue description: Modelled scenarios

It would be beneficial to understand modelling scenarios to determine the weighting of the impacts and differentiate between impacts of operation plan and new environmental water provisions. This should include:

1. Change case – proposed infrastructure with potential impacts of the changes in the operations plan and no environmental water provisions.
2. Change case – proposed infrastructure with potential impacts of the environmental water provisions and no changes in the operations plan.

It is recommended that if the Operation Plan should not be approved or is significantly modified, that additional assessment of the changed case scenario to inform Key Fish Habitat impacts be undertaken for the scenarios to differentiate between impact.

Response

If the operations plan is significantly modified before it is approved, the scenarios currently assessed would be revisited. Further consultation would be carried out with DPIRD Fisheries, if this was to occur.

4.5.4 Issue description: Upstream and downstream impacts

Any storage of unregulated flows will have a cumulative impact on flows being diverted into the upper reaches and subsequently flow variability in the lower reaches.

The aquatic ecology assessment needs to consider the hydrology and asset function relationships and be clearer on what the proposal impacts are outside of the area of investigation. At a minimum this should include the changes in the upper and lower sections of the Yanco/Billabong Creek system based on the reduction in water in moving through the system. Detailed analysis of gauges throughout the system showing hydrograph changes for each of the scenarios listed in the EIS.

Response

Appendix I Surface water quality and aquatic ecology assessment of the EIS concluded that there will be little alteration of the hydrology of the Yanco/Billabong creek system in the area of investigation. This is due to the changes expected from the proposal to be equal or lesser upstream and downstream of the investigation area. The main lines of evidence from the area of investigation are as follows:

- The Hydrology impact assessment results for the Change and Cumulative Change Case scenario indicate minor alterations in mean annual flows throughout the Yanco Creek System (Appendix G of the EIS Section 4.2.1 and 4.3.1).
- The typical temperate seasonal pattern of flows is maintained, with minimal impact on mean monthly flow volumes throughout the Yanco Creek System (Appendix G of the EIS Section 4.2.2 and 4.3.2).
- The Change and Cumulative Change Case scenario results indicate the proposal does not substantially impact annual or daily flow volume variability and there are minimal impacts on daily flow sizes (Appendix G of the EIS Section 4.2.3 and 4.3.3).
- Overall, the hydrological analysis suggests that the operation of the proposal will only have minor localised effects on hydrology (i.e. water balance, seasonality, flow variability, and flow sizes) which are consistent with the aims of the proposal and the broader system changes outlined in the Yanco Systems Operations Plan.
- Operation of the proposal will result in an overall improvement in the frequency of achieving Environmental Watering Requirement (EWRs) for a number of EWR categories to support key ecological values of the system (Appendix G of the EIS Section 4.2.5 and 4.3.5).
- The proposal is also not anticipated to negatively impact key hydrological aspects of the Yanco Creek System that are important to the aquatic community, including the proposal study area, when taking into consideration potential cumulative effects associated with the Forest Creek Return Flows Project.
- Within the area of investigation (inclusive of the proposal area), the Aquatic Ecology impact assessment concluded the design of the replacement new regulators for the proposal would allow for improved control of environmental flows and fish passage that would result in improved connectivity for native aquatic species, relative to current conditions, thus having positive effects of upstream and downstream environments.
- During operation, the proposal is expected to improve native fish populations and the delivery of environmental water by reestablishing river connectivity and fish passage so that fish can complete their life cycles and avoid predation – a common occurrence below weirs and barriers to fish passage.
- Hydraulic and hydrological modelling indicates that operation of the new regulators will result in relatively minor changes to flow and velocity regardless of the operating flow setting (maximum or minimum) that are unlikely to negatively impact the native aquatic community.

- With the implementation of management measures and additional safeguards, the risk rating derived for the risk pathways were 'low' and 'very low' in all instances.
- It was also concluded that operation of the new regulators had the potential to result in minor changes to flow and velocity dependent on the operating flow (maximum or minimum) which has the potential to result in changes to aquatic habitat, such as quality and size of lentic and lotic habitat. Any potential flow and velocity changes are expected to be short term and managed via regulator settings. As such with the implementation of safeguards and management measures, the likelihood of these impacts occurring are expected to be unlikely during operation.
- The Aquatic Ecology impact assessment concluded the proposal is likely to have no more than an "acceptable" negative impact on surface water quality or the aquatic communities.

In summary, some minor hydrological and hydraulic changes predicted with operation of the regulators, but they will not substantially alter the overall hydrological characteristics of the broader Yanco Creek System (upstream and downstream of the proposal area). The change isn't likely to have more than an "acceptable" negative impact on surface water quality or the aquatic communities within the area of investigation.

Regarding potential impacts downstream of the investigation area, changes in hydrology, hydraulics, surface water quality, physical habitat, and associated communities derived from the proposal are unlikely to be magnified downstream of the area of investigation (being Billabong Creek @ Darlot). The potential downstream impacts of the proposal on surface water quality or the aquatic communities will be consistent with (i.e. no greater than) those identified for the investigation area.

Regarding potential impacts upstream of the investigation area, there is no direct hydrological or hydraulic impacts predicted beyond the respective weir pool extents of the proposed Hartwood and Wanganella regulators. Rather, the hydrology of Yanco, Colombo and upper Billabong creeks will be influenced by the operation of existing weirs, changed no order flow limits for the irrigation escapes, and adjusted or new environmental baseflow provisions. Therefore, operation of the regulators for the proposal are not expected to have an adverse impact on surface water quality or the aquatic communities upstream of the area of investigation.

4.5.5 Issue description: EWR / hydraulics / velocity modelling outputs

Data relating to velocity changes is needed for multiple scenarios:

1. Weir pool extents to FSL (bottom and top of yellow zone) - including newly inundated habitats – modelled for at least maximum and minimum operating flow rates.
2. Mapped velocity changes in different operating zones (bottom and top of yellow zone) – modelled for at least maximum and minimum operating flow rates.
3. Data to show relationship of water level/velocity change to hydrology.

Response

There are ongoing discussion with DPIRD Fisheries on the provision of suitable worst-case data to assess the changes in velocity in the upstream weir pools. This information would be used to determine offsets.

4.5.6 Issue description: Unregulated flow analysis

DPIRD Fisheries seeks further information to understand how the project changes the behaviour and passage of unregulated flows through the Yanco system. It is noted that the regulated flow and unregulated flows are not well modelled. Further analysis of behaviour around unregulated flows is requested.

Response

In large unregulated flow events (ie flood events), the new regulators would have the same performance as the existing weirs as they would either be drowned out or have the gates fully open (i.e. at bed level which is below the sill level of the existing weirs). The flood modelling which models large unregulated events demonstrates the negligible impact of the new regulators on downstream inundation.

Typically unregulated flows would be in the low percentile range (0-25 per cent of the time) in a flow frequency distribution. Table 4.8 and Table 4.16 of the Hydrology Assessment shows negligible changes in flow distribution in 0 to 25 percentile at LWTP planning units both upstream and downstream of the regulators. The EWR analysis (Table 4.9 and Table 4.18 of the Hydrology Assessment) which includes unregulated flows shows no change or a minor improvement in unregulated flows.

4.5.7 Issue description: Frequency / timing / duration of unregulated flows

DPIRD Fisheries recommends additional analysis of historical unregulated flows and irrigation orders in association with the operation of the new structure to understand the frequency, timing, and duration of the impacts.

Response

For both the base case and change case models, current patterns of water allocations and use have been used to undertake modelling. Historical flow and rainfall data has been used to model unregulated flows. Impacts of the regulators and the operations plan are detailed in Appendix G of the EIS.

4.5.8 Issue description: Construction activities

DPIRD Fisheries request a review the sub plans of the Construction Environmental Management Plan (CEMP) for comment post approval including fish management/relocation plans as part of the coffer dam installation/dewatering process.

Response

NSW DCCEEW will continue to consult with DPIRD Fisheries throughout the development of the proposal. Environmental management plans and controls which relate to fish management will be provided post approval.

4.5.9 Issue description: Legislation/Operations plan and an Environmental bond

The proposed mitigations are not permanent and are subject to controls outside of the planning legislation and frameworks including:

1. Additional environmental rules - these would need to be incorporated into Water Sharing Plan legislation.
2. Operations of the structures - will be managed through the approved operations plan and would be subject to periodic review and changes.

Due to these uncertainties and quantifying the level of projected Key Fish Habitat impact associated with the project, it is recommended that:

- An environmental bond be held until the full or partial effectiveness of mitigations can be confirmed. It is also recommended that this is linked with a fully resourced monitoring, evaluation, reporting program to inform the ecological implications of the project.
- A bank guarantee be required to be provided to DPIRD Fisheries to offset key fish habitat impacts in accordance with the DPIRD Fisheries Policy and Guidelines for Fish Conservation and Management (Updated 2013), and the NSW Biodiversity Offsets Policy for Major Projects, Fact sheet: Aquatic Biodiversity.

- Conditioning any approval of the project to ensure that the implementation of the final operations plan is overseen by appropriate governance that must be engaged throughout decision making and implementation. This governance structure should include DPIRD Fisheries.

Response

DCCEEW does not agree with the provision of an environmental bond or bank guarantee for future changes to the operations plan or as a future performance guarantee. It is not a common arrangement for such an action to occur between different NSW Government departments.

4.5.10 Issue description: Aquatic Biodiversity Strategy

DPIRD Fisheries requests the inclusion of a Biodiversity Strategy. This should include adequate post implementation management of the operations and the efficacy of the mitigation measures in eliminating the impacts. It is recommended that:

1. Adequate monitoring, evaluation, reporting program of the structures and operations, as well as the identification of remedial actions that need to be taken if the operations plan is less effective than projected.
2. Conditioning any approval of the project to ensure that the final operations plan objectives are clearly oriented to preventing impacts on hydrology, hydraulics and aquatic ecology.

Response

NSW DCCEEW will develop a biodiversity strategy and continue to consult with DPIRD Fisheries on this. This will include the offset strategy for this proposal and other projects connected with the Yanco Creek Modernisation program of works and monitoring, evaluation, and reporting activities.

4.6 NSW DCCEEW – Water Group

4.6.1 Issue description: Water supply, take and licensing

The proponent should:

- quantify maximum potential water take per year for all impacted sources during construction and operation of the project
- identify site water demands and their proposed sources
- demonstrate the ability to obtain sufficient entitlement to account for maximum potential take unless an exemption applies.

Response

During operation of the regulators, no additional water is required.

Only small volumes of potable water will be required to support workers for drinking and ablutions. and this would be obtained from nearby potable water systems and tankered into the construction sites.

During construction the majority of water will be sourced for each site from Billabong Creek via a dedicated fill point with metered pump. Daily records of volumes will be kept by the contractor and submitted with the monthly construction report. The 'fill point' is yet to be determined but will be close to the works but out of the way of general construction works to ensure free truck movements while filling. Each site may require two fill points, either side of the proposed structure. The fill points will be within the construction activity zones.

It is anticipated the construction contractor will use a combination of Tandem Water cart with a capacity of 13,000 litres and a semitrailer water cart with a capacity of 20-23,000 litres.

Water taken from the creek system will be used for the following tasks:

- Construction of haul roads and hard stands used to condition road base to achieve optimum moisture content and conforming compaction compliance. On completion of access tracks the water cart will be used to maintain the integrity of the roads, throughout the construction program.
- Dust suppression will be a daily exercise and will require more water during specific parts of the construction for example, concrete pours, site deliveries and mobilisation where there will be increased volumes of heavy vehicles moving on and around the site.
- Conditioning of stockpiled materials prior to placement and backfill requirements around the structure.
- Contractor may also condition material in the borrow pit to avoid carting dry material.
- Plant and equipment wash down bays.
- Firefighting duties.

Based on a construction program which assumes around 22 days a month and increased water extraction during peak construction activities over a 15-month construction period, the following are the expected volumes for the construction phase:

- up to six water carts per day with a volume of 13,000 litres per load averaged over 13 months, totalling around 22,300,000 litres
- high volume activities may increase the daily total up to ten water carts per day for up to three months, totalling around 8,580,000 litres.

Volumes are highly dependant on weather and wind determining the water requirements on site. The volumes provided here are conservative and therefore actual volumes could be less.

Some of the activities would be exempt from obtaining a water allocation such as:

- Dust control.
- Construction of environmental works (Schedule 4, Part 1(21) - up to 0.5 ML/year may be used without a water licence.
- Groundwater from quarrying, excavation, dredging or exploration for stone, aggregate, sand or gravel and excavation required for the construction of a building, road or infrastructure – up to 3 ML/year.

For construction water there are number of options including:

- Purchasing water directly from nearby property owners. This could be from their farm dams, bores or part of their water allocation.
- Obtaining a zero allocation Water Access License and purchasing temporary water from the Murrumbidgee water market – which is a very active market. Given the current and predicted climatic conditions of higher than average rainfall, there should be plenty of water available on the market.
- Purchasing water from Edward River Council.

4.6.2 Issue description: Hartwood borrow pit

The proponent should provide an impact statement of the proposed borrow pit expansion during construction and ongoing.

Response

The Hartwood borrow pit is situated around 200 metres to the west of the works area for the regulator, as shown on Figure 3.1. This is a privately owned borrow pit located on private land within Lot 25 DP756322. Previously the borrow pit covered a surface area of around 0.5 hectares. The pit will be extended to around a further 0.3 hectares.

The borrow pit has been included within the impact assessment provided in the EIS report. This included the assessments for impacts to terrestrial biodiversity, Aboriginal cultural heritage, land use and traffic particularly.

4.6.3 Issue description: Water access licence

The proponent should ensure a water access licence is obtained to account for the maximum predicted water take for construction and operation activities unless an exemption applies under the *Water Management (General) Regulation 2018*.

Response

For construction water there are number of options including:

- Purchasing water directly from nearby property owners. This could be from their farm dams, bores or part of their water allocation.
- Obtaining a zero allocation Water Access License and purchasing temporary water from the Murrumbidgee water market – which is a very active market. Given the current and predicted climatic conditions of higher than average rainfall, there should be plenty of water available on the market.
- Purchasing water from Edward River Council.

A water access license will not be required for the regulators as no additional water is required for the operation of the proposal.

4.6.4 Issue description: Erosion and vegetation management in relation to surface water

In addition to the proposed energy dissipation measures, the proponent should utilise rock armouring of the banks together with vegetation along bank toes and bank faces where possible. Vegetation should be established in disturbed river sections and in any river section where local flow velocity and/or bed shear stress increases due to the operation of the flow regulators.

Large in-channel wood features should be used where historic river regulation has resulted in their removal. Rehabilitation of disturbed areas should occur as soon as practicable, using large wood features and revegetation with native species.

Response

Energy dissipation has been provided within the concrete regulating structure in the form of a primary and secondary stilling basin and a concrete apron downstream of the secondary stilling basin. Rock beaching has been provided upstream, downstream and on the sides of the structure. The rock beaching is to provide additional protection in both the operational and flood flows through the Billabong Creek. In addition, a sheet pile cutoff has been included at the downstream toe of the concrete apron of the structure to prevent erosion under the downstream apron slab. The hardstand areas adjacent to the regulators, has been designed to enable overtopping during flood flows.

Mitigation measure SWQ09 (see Appendix A) provides instructions for management of aquatic vegetation comprising:

- Limit disturbance to riparian vegetation and snags to the assessed clearing areas and avoid complete removal wherever possible.
- Any large woody debris and snags (>3m long or 30cm wide) that have to be removed from the construction footprint should be moved to a suitable location upstream or downstream of the site in consultation with a qualified ecologist and WaterNSW.

In addition, mitigation measure SWQ10 requires the following:

- Disturbed areas will be revegetated with endemic riparian and floodplain species (replacing like for like) to be undertaken as soon as practical, progressive reinstatement.
- Rehabilitation at construction sites to include replacing topsoil from the site stockpile.

4.6.5 Issue description: Sediment buildup, monitoring and management

Ongoing monitoring of site conditions and any sediment build up behind the structures or associated with fishways should occur following half bank height to bankfull flow events.

The proponent should prepare a Construction Environmental Management Plan that includes:

- geomorphic monitoring and suitable response measures
- ongoing monitoring of channel form
- ongoing monitoring of erosion that could occur due to the structures and inlets or outlets of the regulators.

Response

A CEMP will be prepared for the construction works. This will include the mitigation measures listed in Appendix A of this report. These include measures GE01 to GE05 which include requirements to manage and monitor erosion. GE05 requires two post-construction visual assessments of the regulators over two years to identify and assess any erosion, so it can be addressed if required.

4.6.6 Issue description: Operations management plan

The proponent should prepare an Operations Management Plan and detail how the operation of the project meets the requirements of the relevant Water Sharing Plan(s).

Response

Operations of the regulators would be managed through the Yanco Creek Operations Plan (EIS Appendix U). The Operations Plan is aligned with water management regulations and plans, including the following:

- Murrumbidgee Water Resource Plan (Surface Water) (DPIE 2020a)
- Water Sharing Plan for the Murrumbidgee Regulated River Water Source 2016
- Murrumbidgee Long Term Water Plan (DPIE 2020b).

4.6.7 Issue description: Forest Creek block bank design

The proponent should provide further information on the design of the Forest Creek Block Bank

Response

The existing Forest Creek Block Bank associated with the Hartwood Regulator is to be replaced with a similar structure to the existing structure in the same location. The structure comprises an earthen clayfill structure overlaid with rock beaching. Two concrete sills have been located on either side of the crest to maintain the level required for the block bank to be kept at to prevent flow down Forest Creek during normal operating flows along Billabong Creek. The fill between the sills is a rock fill, designed to withstand overtopping during flood flows. The block bank is designed to be trafficable during operational flows, with depth indicators and signage at the site warning not to enter during flood flows.

Additional design drawings for this structure are provided within Appendix B.

4.6.8 Issue description: Works within waterfront land

The proponent should ensure works within waterfront land are in accordance with the 2018 Guidelines for Controlled Activities on Waterfront Land.

Response

Works on waterfront land will be carried out in accordance with the Guidelines for Controlled Activities on Waterfront Land. This will include the mitigation measures listed in Appendix A of this report. These include measure SWQ02 which states that measures to ensure all waterway crossings will be constructed in accordance with the Guidelines for Controlled Activities on Waterfront Land – riparian corridors (NRAR, 2018), Guidelines for watercourse crossings on waterfront land (DPI, 2012),

4.7 NSW Environmental Protection Authority

4.7.1 Issue description: Further contamination assessment

The contaminated land Preliminary Site Investigation (Appendix T of the EIS) has identified the Wanganella Regulator is to be built near Wanganella rural landfill. The EPA recommends that

- A detailed site investigation to determine the nature and extent of the contamination at the site, including an assessment of possible contamination impacts from the Wanganella Landfill is carried out. The NSW EPA should be notified if trigger levels of contamination is identified.
- If the results of the investigation indicate that contamination at the site has the potential to pose an unacceptable risk to human health or the environment either under the current land use or during the construction or the operational phases of the proposed land use, a remedial action plan must be provided.
- A CEMP should be prepared to: consider
 - all known and suspected contamination present in soils at the site and consider the potential for groundwater to also be contaminated
 - outline clear measures to mitigate impacts to human health
 - include information on what actions must be undertaken if unexpected contamination is found as part of the development works.

Response

Consultation was carried out with the NSW EPA in December 2024. During this consultation, aspects of the design were clarified with the NSW EPA. The footprint of the proposed excavation of the Wanganella flood bypass channel would be around 80 metres north of the landfill. Also there are no impacts proposed to the landfill which is owned and managed by Edward River Council. The purpose of the channel is to release floodwater during high flood events, which back up behind high points in the ground surface, therefore the channel will not be to a depth that would intersect with groundwater. The channel would flow from the weir pool into an anabranch downstream of the weir and would not impact the quality of non-potable water used by Wanganella village.

As agreed with the NSW EPA on 13th December 2024, a targeted site investigation was conducted at the site of the Wanganella flood bypass channel in late March and early April 2025. A report of this investigation and its findings is provided in Appendix E of this report, and comprised:

- Six boreholes drilled to a depth of up to four metres below ground level depending on subsurface geology, using a solid flight auger. Contamination samples were collected from the cuttings at regular depth intervals.
- Upon completion of the drilling each of the six boreholes were converted into ground gas monitoring wells. Gas monitoring was carried out the following week.

No exceedances of the investigation levels were identified. In summary, the results indicate:

- No asbestos was identified in the analysed samples.
- Results of BTEXN, PAH and TRH analytes were not detected above the limit of reporting (LOR), which is consistent with the field PID measurements which suggested low levels of volatile gases at the site.
- Assessment against investigation levels indicates a low risk to potential receptors.
- The gas monitoring readings indicated that there is no sub-surface methane or carbon monoxide present within the bores and very low levels of CO₂ and H₂S are present.

The results of soil sampling and ground gas monitoring did not identify a risk to construction workers or other potential receptors at the site to a depth of 4 metres.

4.8 Department of Planning, Housing and Infrastructure – Crown Lands

4.8.1 Issue description: land acquisition

The proposal will impact multiple lots owned by Crown Land. These include lots:

- managed by Edward River Council as Crown Land Manager and lots managed by the NSW Local Land Services Department
- reserved for Preservation of Fauna and Public Recreation; Travelling Stock; and Future Public Requirements
- subject to Native Title and two undetermined Aboriginal Land Claims.

Land will need to be acquired under the *Land Acquisition (Just Terms Compensation) Act 1991*. This is particularly the case where the new structures are to be developed.

It is recommended that the proponent should liaise with Council in the first instance with regards to the works proposed on land managed by Council.

Response

Small areas of five lots would be partially acquired as a result of the proposal, with three at Hartwood and two at Wanganella. No buildings or residential properties are impacted by the proposal.

The areas needed would be for the regulator structures where they adjoin the creek bank, to accommodate bankside infrastructure and for the Wanganella flood bypass channel and Forest Creek block bank. The impacted lots are:

- Hartwood – 1/DP707463, 7301/DP1162488 and 28/DP756330
- Wanganella – 7005/DP1024202 and 7004/DP1024203.

The extent of property impacts would be refined and confirmed during detailed design in consultation with the property owners. Property adjustment plans would be developed in consultation with property owners.

All acquisitions would be conducted in accordance with NSW DCCEEW policy and compensation would be based on the requirements of the *Land Acquisition (Just Terms) Compensation Act 1991*. WaterNSW would be consulted throughout the acquisition process. Mitigation measure LU4 cover this requirement.

NSW DCCEEW has and will continue to liaise with Edward River Council with regards to the works proposed on land managed by Council.

4.8.2 Issue description: easements

An easement over Crown land, roads and/or waterways, for linear infrastructure such as electricity transmission lines, will be required for protection of the infrastructure.

It is recommended that the proponent apply for a licence to allow occupation of the Crown Land. A licence will temporarily authorise use and access for the infrastructure to traverse Crown roads and Crown land whilst the easement applications are being processed.

Response

Easement agreements would be sought for the following activities:

- permanent access track easements
- provision of power and power corridor easements.

These would be carried in consultation with the land owners, Crown Lands and Essential Energy. All appropriate applications, permits and licences will be obtained at the relevant time.

4.8.3 Issue description Aboriginal Land Claims

As many of the Crown Land parcels are currently under Aboriginal Land Claim the proponent will need discuss the proposal with the respective claimant Aboriginal Land Council(s) prior to any development occurring.

Response

Both sites include land subject to a number of Aboriginal Land Claims under the Aboriginal Land Rights Act 1983 (NSW). All claims are currently under investigation by DPHI - Crown Lands and are yet to be determined.

NSW DCCEEW is actively consulting with the claimant at each location with the view of negotiating an agreement under which the claimant would provide its consent for the proposed works to proceed

4.8.4 Issue description: Native Title

The proposal will impact Crown Land subject to Native Title implications. Native Title will need to be a consideration with all development impacting any Crown Land.

Response

There is a Native Title Claim at Wanganella, but it is not registered and therefore is not currently active. If this status changes, consultation would be carried out with the Native Title claimant in accordance with Native Title Act 1993.

4.8.5 Issue description: Local Land Services

Agreement should be sought from Local Land Services with regards to works over Travelling Stock Routes prior to any works commencing.

Response

NSW DCCEEW will continue to consult closely with Local Land Services regarding all land management issues on parcels of Crown Land that are classified as a Travelling Stock Reserve under the management control of Local Land Services.

4.9 Dams Safety NSW

4.9.1 Issue description: Consequence Category Assessment

A Consequence Category Assessment has been undertaken in accordance with the Dams Safety NSW Consequence Category Assessment and Determination Methodology 2019 on the proposed new water regulators.

To ensure that the new regulators are not declarable, please submit the consequence category assessments for the new regulators to info@damsafety.nsw.gov.au. If the structures are not declarable Dams Safety NSW will have no further input.

Response

WaterNSW has submitted the Consequence Category Assessments for both Hartwood and Wanganella Regulators to Dams Safety NSW. If Dams Safety NSW determines that the regulators are to be Declared under the Dam Safety Act 2015, then conditions identified will be met prior to construction commencement.

4.10 Transport for NSW

4.10.1 Issue description: Construction Traffic Management Plan

A Construction Traffic Management Plan (CTMP) shall be prepared by an appropriately qualified person and implemented for the duration of the construction period for the Wanganella Regulator. This shall include measures to prevent loose material and dust being tracked from the site access track or Zara Road onto the Cobb Highway.

Response

A CTMP will be prepared by an appropriately qualified person and implemented for the duration of the construction period for the Wanganella Regulator. This will include measures to prevent loose material and dust being tracked from the site access track or Zara Road onto the Cobb Highway.

Existing mitigation measures provided in Appendix A of this report include:

- TA1: Develop a construction traffic management sub-plan, prior to construction.
- AQ1: Dust during construction will be considered and addressed within the CEMP and will include methods to manage work during strong winds or other adverse weather conditions as required. As a minimum, the following measures will be included; covering all loaded trucks and vessels.

4.10.2 Issue description: Road dilapidation report

A dilapidation report, supported by photos, of the intersections of the Cobb Highway with the unsealed access track to the Wanganella Weir, and Zara Road, shall be submitted to TfNSW for review prior to the commissioning of the proposed development. The report shall include a comparison of the status of the intersections prior to any vehicles accessing the site for the purpose of construction, and at completion of the development. Any damage to the travel lane or edge line of the Cobb Highway identified by the dilapidation report shall be repaired to the satisfaction of TfNSW at the cost of the development.

Response

A dilapidation report will be prepared and will include the intersections of the Cobb Highway with the unsealed access track to the Wanganella Weir, and Zara Road. This report will be submitted to TfNSW for review prior to the commissioning of the proposed development.

Existing mitigation measures provided in Appendix A of this report include: The conditions of the access roads to the proposal's footprint, and of the roads linking the proposal sites to the existing freight network used for freight transport shall be assessed by a Road Dilapidation Report prior to construction commencing and following completion of construction. Any defects attributable to construction activities shall be rectified or compensated in consultation with the relevant road authorities.

4.10.3 Issue description: Cobb Highway

An application under Section 138 of the Roads Act, 1993 shall be submitted to the roads authority (Council) for any works proposed within the road reserve of the Cobb Highway.

Response

Approval would be sought under Section 138 of the Roads Act 1993 for any works proposed within the road reserve of the Cobb Highway.

4.11 Murray Darling Basin Authority

4.11.1 Issue description: Hume Dam to Lake Victoria flows

The Murray Darling Basin Authority notes that as that Billabong Creek can be used for bypassing the Barmah Choke via the Finley Escape channel, construction under this proposal may impact the ability to convey water from Hume Dam to Lake Victoria due to reduced channel capacity. We suggest this be further assessed by NSW agencies in collaboration with Basin Authority's River Operations.

Response

As the source modelling shows a reduction to average Finley Escape deliveries there is no impact to MDBA's long term ability to deliver Murray Valley bypass flows around the Barmah – Millewa choke (located in the Murray River) via Finley Escape. In addition, the draft operations plan does not prevent Yanco Creek System regulated delivery requirements being transferred from Finley Escape to another delivery point (e.g. DC 800, Coleambally Catchment Drain or Yanco Offtake) if needed to maximise Barmah – Millewa Choke bypass flows at the full channel capacity of Finley Escape (250ML/day).

4.11.2 Issue description: consultation

The EIS states the Basin Authority has been consulted on the proposal via participation in a Technical Advisory Group. Whilst correct for earlier iterations of the NSW Yanco Creek and related package of SDLAM projects (of which this proposal remains part of) prior to the Basing Authority's 2018 SDLAM Determination, no such consultation has been undertaken for this current iteration of the proposal. We contest this assertion as a point of inaccuracy in the EIS.

Response

It is acknowledged this statement in the EIS was incorrect.

The Murray Darling Basin Authority was invited to all Technical Advisory Group meetings up to 13 December 2022. However, it is noted that from 2023 technical advice moved from Yanco Technical Advisory Group to Yanco Design Focus Group, of which the Murray Darling Basin Authority is not a member of.

4.12 NSW National Parks and Wildlife Service

4.12.1 Issue description: Cumulative impact assessment on regional water supply and delivery

Consider in more detail, the Cumulative Impact Assessment Guidelines for State Significant Projects October 2022, in the context of regional environmental water supply and delivery at a multiple system level under the Sustainable Diversion Limits and the Adjustment Mechanism (SDLAM) Program considering the issues-specific cumulative impacts in more detail at a connected water catchment level, inclusive of interconnecting wetlands.

Response

The SDLAM program has been developed to assist in achieving the environmental outcomes of the Basin Plan and involves projects in South Australia, Victoria, Queensland and NSW. The SDLAM program is funded by the Commonwealth Government, and the Murray Darling Basin Authority is responsible for the implementation and evaluation of the program in line with defined the environmental performance outcomes.

The NPWS submission requests a more detailed cumulative impact assessment in the context of the regional environmental water supply and delivery at a multiple system level under the SDLAM Program, including the effects on various other matter such as heritage and ecology. The Cumulative Impact Assessment Guidelines for State Significant Projects (DPIE 2022) were developed to set clear expectations and requirements for assessing project level cumulative impacts related to State significant projects. It is not practical or possible for the Billabong Creek regulator EIS to undertake a detailed cumulative impact assessment of all SDLAM projects given the differing jurisdictional impact assessment requirements and the various stages of development and implementation. It is the role of the Murray Darling Basin Authority to monitor the integrity of the SDLAM program and the associated package of projects. The Murray Darling Basin Authority has established transparent regular reporting processes to communicate with Basin governments and communities on the progress of individual projects, and on the package of projects as a whole, including the environmental outcomes. Annual assurance reports are available on the Murray Darling Basin Authority website.

A more detailed assessment of relevant sections of Cumulative Impact Assessment Guidelines for State Significant Projects in relation to the Billabong Creek regulator project is presented in Table 4.1 below. This evaluation highlights that the cumulative assessment of other SDLAM as part of the Billabong Creek regulator EIS is not a requirement of the Cumulative Impact Assessment Guidelines for State Significant Projects.

Table 4.1: Extracts from cumulative impact assessment guidelines

Relevant sections of the cumulative impact assessment guidelines	Response
Section 2.3 – the assessment is proportionate to the impacts of the project and any material cumulative impacts that may result in the wider area from the project operating in conjunction with other relevant future projects	The hydrological impacts of new regulators are minor and consequently their proportional impact is low. Cumulative hydrological impacts of the regulators, other infrastructure and Operations Plan on the Yanco Creek system have been assessed in the EIS (See below)
Section 3.2 - While the study area chosen for each matter must be broad enough to capture all relevant cumulative impacts, it should not be unnecessarily large or include areas where the cumulative impacts are likely to be negligible relative to the baseline condition of the relevant matter.	Including an assessment of SDLAM projects in other catchments and those outside the Yanco Creek system such as Millewa and Murray Valley National Park would create a study area that is unnecessarily large or include areas where the cumulative impacts are likely to be negligible relative to the baseline condition. The changes in inflows to the Murray River due to the updated Yanco Creek Operations Plan and the SDLAMs projects in the Yanco system are estimated to be less than 0.25% (Murray Darling Basin Authority 2023). A comparative example would be requiring a cumulative impact assessment of the NSW Regional and Local Roads Repair Program which is a \$500 million program funded by the NSW Government to support councils to undertake urgent repairs to their road network, which have been significantly impacted by severe flooding, storm damage and persistent wet weather events during 2022.
Section 3.4 - To ensure the assessment focusses on the key matters that could be materially affected by the cumulative impacts of the project and other relevant future projects, only the following types of development need to be identified for inclusion as ‘relevant future projects’: • other State significant development (SSD) and State significant infrastructure (SSI) projects • projects that are classified as designated development and require an EIS • projects that require assessment under division 5.1 of the EP&A Act that are likely to significantly affect the environment and require an EIS • projects that have been declared to be controlled actions under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)	The Billabong Creek Regulators proposal is the only NSW SDLAM project which is SSI – and only because its capital value exceeds \$30 million and not because of potential significant environmental impacts. All other NSW SDLAM projects have been assessed via REFs as they do not meet the triggers for a SSI project or preparation of an EIS – either due to their capital value being below \$30 million and/or they do not have significant impacts on the environment. Therefore, they are not considered relevant future projects under the cumulative impact guidelines. No projects (including the Billabong Creek Regulators) have been determined to be a controlled action under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) The guidelines do not require the assessment of the cumulative impacts of projects that are not considered relevant projects.

Relevant sections of the cumulative impact assessment guidelines	Response
any major greenfield and urban renewal developments that are scheduled for the area (e.g. new areas zoned for urban development).	

Notwithstanding that the other SDLAMs projects are not considered relevant projects under the Cumulative Impact Assessment Guidelines for State Significant Projects, the hydrological assessment did consider cumulative impacts in the Yanco Creek system through:

- inclusion of all Yanco Creek SDLAMs projects in the Cumulative Change Scenario (Section 4.3 of the Hydrology Assessment)
- inclusion of the Operations Plan changes in the Change and Cumulative Change scenarios (Section 4.2 and 4.3 of the Hydrology Assessment)
- assessment of relevant EWRs in the whole of the Yanco Creek system including upstream of the Billabong Creek Regulators for both the Change and Cumulative change scenarios (sections 4.2.5 and 4.35 of the Hydrology Assessment).

4.12.2 Issue description: Effects on biodiversity

Effects on ecological communities, plant community type resilience with the variation of environmental water delivery considering both intended positive outcomes but addressing unintentional negative implications of that change. In the understanding that environmental water delivery will be modified at a multiple system level, with variation to water delivery, timing, intensity and duration, affect ecological systems, will likely occur what will this look like for the greater SDLAM program.

Response

As noted previously it is the role of the Murray Darling Basin Authority to monitor the integrity of the SDLAM program and the associated package of projects. The Murray Darling Basin Authority has established transparent regular reporting processes to communicate with Basin governments and communities on the progress of individual projects, and on the package of projects as a whole, including the environmental outcomes. Annual assurance reports are available on the Murray Darling Basin Authority website.

In relation to potential cumulative ecological and biodiversity impacts of the SDLAM projects in the Yanco Creek system, Table 4-18 of the Hydrological Assessment contain an assessment of the Cumulative Change Scenario against existing conditions for EWRs in relevant Planning Units. The difference between the two scenarios is EWRs is generally negligible – however where there are changes, the change is generally in the positive direction, indicating a potential improvement in ecology and biodiversity due to improved achievement of EWRs. Generally EWRs relating to wetland and overbank flows continue to demonstrate a high level of achievement and are not affected by Billabong Creek Regulators and changes to the Operations Plan. This is not unexpected as the regulators are relatively small structures, are designed and operated to manage regulated flows and are fully opened in large unregulated flow events such as wetland and overbank flows.

4.12.3 Issue description: Loss of water regulation infrastructure of local heritage significance

Cumulative impacts of loss of water regulation infrastructure of local heritage significance, as recognised by NSW DCCEE, WaterNSW and NPWS (in the context of loss on NPWS managed lands) across the SDLAM Program area.

Response

As noted previously, apart from the Billabong Creek Regulators the other SDLAM projects are not considered relevant projects under the Cumulative Impact Assessment Guidelines for State Significant Projects and do not require consideration of cumulative impacts.

- Notwithstanding this it is recognised that some locally listed heritage water infrastructure would be impacted however it should be recognised:
 - The water infrastructure is generally in very poor condition, has reached the end of its design life and would require replacement whether the SDLAM projects proceed or not.
 - Detailed heritage investigations have been conducted and mitigation measures developed which include, where possible, to preserve a portion of the infrastructure or, where this is not possible, to prepare a historical archive of the infrastructure before removal.
 - The community historical value of some water infrastructure is related to their functional aspect (e.g. creation of a weir pool) rather than the structure itself.

4.12.4 Issue description: Monitoring program

Establishing a monitoring framework across the SDLAM program which collects suitable baseline data on ecological systems to consider effects of the program, and variations to environmental water delivery as both a positive, and potential negative context. Consider:

- Loss of, or changes to plant community types in areas where the SDLAM program will result in variations to water delivery in floodplain or wetland dependant plant communities to inform the consideration, monitoring and reporting on cumulative impacts.
- loss of, or displacement of, cultural heritage values as Aboriginal cultural heritage, shared and historic heritage values over the greater SDLAM program in considering cumulative impact of the program, monitoring and reporting on impacts and enable the management of loss overall under the program.

Response

In the development of the SDLAM program the MDBA established ecological benchmarks and an ecological scoring method based on hydrology to ensure that the SDLAM program would not result in unacceptable local or cumulative impacts. The MDBA commissioned CSIRO to develop a science-based and fit-for-purpose method for calculating ecological element scores (Overton, et. al., 2015) which was independently reviewed. The ecological element scoring method is focussed on key river reaches and associated floodplains that have significant environmental assets and have detailed assessments of environmental water requirements (MDBA 2012a and 2012b). An indicator site is used to represent the overall ecological outcome for a reach and here are nine reaches identified within the Southern Basin. The method reports on any change in ecological outcomes due to SDLAMs projects compared to that achieved under the benchmark conditions.

Before any SDLAM project is approved for funding (or is modified post-funding such as the regulator project), the project is assessed by the MDBA against the benchmarks and ecological scoring method using the MDBA hydrological models. If the project has unacceptable ecological outcomes or does not meet value for money in terms of water savings, the project is not funded.

Further information on the assessment of ecological outcomes and other aspects of the SDLAMs projects can be found at: mdba.gov.au/publications-and-data/publications/sustainable-diversion-limit-adjustment-mechanism-reports-and

The Commonwealth Government or the MDBA do not provide operational funding for SDLAM projects to NSW and this includes funding for monitoring programs as detailed above. Any monitoring programs would need to be funded through water users and this would be subject to the IPART process so there is no guarantee that this would be supported by water users or IPART.

However as part of the new Operations Plan WaterNSW would be required to update its hydrological monitoring network and undertake regular compliance reporting on the operations of water infrastructure in the Yanco Creek system. This does not include ecological or biodiversity monitoring, however would assess the accuracy of the predictions made in the hydrological modelling.

It is beyond the scope of the Billabong Regulators Project to implement a monitoring program for all SDLAM projects as requested. In relation to potential cumulative ecological and biodiversity impacts of the SDLAM projects in the Yanco Creek system, Table 4-18 of the Hydrological Assessment contain an assessment of the Cumulative Change Scenario against existing conditions for EWRs in relevant Planning Units. The difference between the two scenarios is EWRs is generally negligible – however where there are changes, the change is generally in the positive direction, indicating a potential improvement in ecology and biodiversity due to improved achievement of EWRs. Generally EWRs relating to wetland and overbank flows continue to demonstrate a high level of achievement and are not affected by Billabong Creek Regulators and changes to the Operations Plan. This is not unexpected as the regulators are relatively small structures, are designed and operated to manage regulated flows and are fully opened in large unregulated flow events such as wetland and overbank flows.

Given minor impacts and benefits of the Billabong Creek Regulators project and the hydrological monitoring and compliance reporting of the systems operations as part Operations Plan, additional ecological and biodiversity monitoring as part of Billabong Creek Regulators project is not planned.

Historic heritage is discussed in section 4.15.

For Aboriginal heritage, individual ACHARs including field surveys with RAPs have been prepared for all SDLAMs projects including the Billabong Creek Regulators. Where possible, impacts on Aboriginal heritage sites have been avoided primarily through the re-location of infrastructure. At some locations including Billabong Creek Regulators, impacts were unable to be avoided and the loss of Aboriginal cultural heritage sites would occur. These sites were generally either scarred trees or artefact sites, however given the number and extensive distribution of these sites in the region, the overall impact on Aboriginal cultural is low. Appropriate mitigation measures have been developed in consultation with the RAPs including for Billabong Creek Regulators, preserving the scar from one the trees to be removed and displaying at a local history exhibit in Conargo.

Where the SDLAM projects are predicted to result in an improvement in biodiversity values particularly in wetland and floodplain communities, this would result in an improvement in Aboriginal cultural heritage values as many of these ecosystems and individual locations are of high cultural value to Aboriginal people.

As noted above given the minor impacts and benefits of the Billabong Creek Regulators project and the hydrological monitoring and compliance reporting of the systems operations as part Operations Plan, additional Aboriginal cultural heritage monitoring as part of Billabong Creek Regulators project is not planned.

In relation to potential cumulative ecological and biodiversity impacts of the SDLAM projects in the Yanco Creek system, Table 4-18 of the Hydrological Assessment contain an assessment of the Cumulative Change Scenario against existing conditions for EWRs in relevant Planning Units. The difference between the two scenarios is EWRs is generally negligible – however where there are changes, the change is generally in the positive direction, indicating a potential improvement in ecology and biodiversity due to improved achievement of EWRs. Generally EWRs relating to wetland and overbank flows continue to demonstrate a high level of achievement and are not affected by Billabong Creek Regulators and changes to the Operations Plan. This is not unexpected as the regulators are relatively small structures, are designed and operated to manage regulated flows and are fully opened in large unregulated flow events such as wetland and overbank flows.

4.13 NSW State Emergency Service

4.13.1 Issue description: Safety during flood events

NSW SES requested that

- workers and people on site are aware of the flood risk in these areas and a flood emergency plan is in place during construction and operation/maintenance of the weirs. If there is an expectation of flooding at the site, we recommend workers are prepared to secure all materials and equipment and close the site early to minimise risk to life and property in a flood event.
- if the construction phase causes disruption to the operation of local roads, this may impact the ability for emergency vehicles to use these routes. The NSW SES requests that notification be provided where there are likely to be significant delays in the operation of the roads affected by the proposed works.

Response

A CEMP will be prepared for the project which will include these requirements. Existing mitigation measure HR1 states that the CEMP will detail processes, responsibilities, and measures to manage hazards, and incident and emergency situations during construction (see Appendix A of this report). In addition Section 24.2.2 of the EIS outlines the requirements of the CEMP which includes the needs for staff inductions. The need for staff and public safety is outlined as:

- Staff and public safety, for example:
 - Consideration of the impacts of both riverine flooding and flash flooding in the emergency management planning on the workers and the ability to quickly and safely evacuate them from the site.
 - Ensure workers and people on site are aware of the flood risk, for example through site inductions and by using signage.
 - Emergency planning which outlines when and how the worksite would be closed and all materials and equipment secured prior to the start of the working day if there is a risk of flooding, on receipt of advice from the BoM, or when other evidence leads to an expectation of flooding. During site works, the BoM website would be checked prior to start of the workday for any Flood Warnings.

4.14 Heritage NSW

4.14.1 Issue description: Consultation

1. Heritage NSW notes a gap in consultation with the Registered Aboriginal Parties (RAPs) between September 2022 and May 2023. Under our policy and guidelines, breaks in consultation of over six months may not constitute continuous consultation. In future, please ensure that consultation is kept continuous as such gaps may require new and/or additional consultation.
2. Please update Section 2 of the ACHAR to accurately reflect the consultation with the RAPs, including issues, comments, and concerns throughout the project and ensure that they have adequate responses. Heritage NSW notes several comments in Appendix A of the ACHAR that outlined issues with the consultation process.
 - Further, please reorganise Appendix A of the ACHAR as there are a number of documents that have been provided more than once.

- Heritage NSW recommends additional targeted consultation on the impacts to several scarred trees within the project area. While adequate time for review was provided to the RAPs, Heritage NSW believes that additional consultation would be beneficial on these objects. The consultation, and the revised ACHAR, should include examples of scarred tree removal procedures, recording, and preservation. Providing this information to the RAPs and Heritage NSW prior to project approval would ensure greater certainty on the management of these Aboriginal cultural heritage sites.

Response

A revised Aboriginal Cultural Heritage Assessment Report ACHAR (Austral, 2025) is provided in Appendix F of this report. The report has been revised to respond to the comments raised during the display of the EIS by Heritage NSW and other government agencies. Aboriginal stakeholders were given 28 days to review the revised ACHAR and any comments received are considered within the revised report.

The revised assessment has not identified any change to the harm to Aboriginal sites, above what was identified at the EIS stage. Small amendments have been made to mitigation measures (measures AH1-AH3 and one new measure AH7) provided in Appendix A of this report.

An unredacted copy of the revised ACHAR (Austral, 2025) has been provided to DPHI for provision to Heritage NSW.

4.14.2 Issue description: unredacted copy of the ACHAR

Please provide Heritage NSW with an unredacted copy of the ACHAR.

Please provide detailed and thorough mapping which includes all survey track logs, as per Requirement 5 of the Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW (2010), to enable Heritage NSW to assess the efficacy of the survey coverage. Once track logs have been included, additional mapping may be required to clearly outline the extent of the survey within each survey unit. Where survey has not been conducted (i.e. access tracks, electricity supply), additional surveys may be required prior to any project approvals.

Additionally, please include mapping that outlines the existing disturbance within each of the project areas.

Response

Both redacted and unredacted copies of the ACHAR are provided to DPHI, with the unredacted copy provided to be issued to Heritage NSW. The unredacted copy includes the track logs and figures showing the existing and proposed disturbance within each of the proposal areas.

An unredacted copy of the revised ACHAR (Austral, 2025) has been provide to DPHI for provision to Heritage NSW.

4.14.3 Issue description: Potential archaeological deposits and hearth sites

Further explanation is required on the assessment that Hartwood Weir, Forest Creek Block Bank, and Wanganella Weir are considered to have moderate archaeological potential. It is unclear if this relates to the potential for subsurface deposits to be present in the vicinity of these areas and the potential depth of any deposit. If this is the case, further discussion is required on PADs in these areas and how these will be managed by the project. Testing upfront informs the potential of the project area to contain Aboriginal objects, define the extent of Potential Archaeological Deposits (PADs) whether future salvage excavation is required, and allow the proponent to redesign the project to avoid any significant objects or sites if necessary. Without the completion of test excavations, the scientific and cultural significance is yet to be established, meaning the RAPs could not have provided informed consent to their impact.

Further description is required on how PAD boundaries were defined (i.e., landform, soil landscape) and the likelihood of additional PADs across the project area, notably in association with hearth sites (e.g. Hartwood Weir Hearth).

Please provide additional information on the determination of previously recorded hearth sites as being of non-Aboriginal origin.

Response

A revised ACHAR (Austral, 2025) is provided in Appendix F of this report. An unredacted copy of the revised ACHAR has been provide to DPHI for provision to Heritage NSW.

The revised ACHAR has considered the comments raised by Heritage NSW and elaborated on these throughout the revised report.

4.15 Heritage NSW – Heritage Council

4.15.1 Issue description: no comment

The subject sites are not listed on the State Heritage Register, nor are they in the immediate vicinity of any State Heritage Register items. Further, the sites do not contain any known historical archaeological relics. Therefore, no heritage comments are required.

Response

Noted.

4.16 Department of Primary Industries and Regional Development – Agriculture

4.16.1 Issue description: Soils, land use, property and agricultural management

The Department notes the proposed management measures of consultation and land use agreements. The commitments made are considered appropriate for this project.

Response

Noted.

4.17 DPHI hydrology review

4.17.1 Issue description: Operational impacts

Advise on the current status of the draft operations plan and provide information to confirm the hydrological and related impacts presented in the EIS accurately reflect the operational protocols for the proposal.

Response

The document used for assessment in the EIS was the draft Yanco Creek Systems Operations Plan (Department of Planning and Environment, November 2023). The hydrological and related impacts presented in the EIS accurately reflect the operational protocols outlined within the operations plan. It is noted that a 2024 revision of the operations plan was provided as an appendix to EIS, however the only differences between the two versions of the plan was that there had been some progression in discussions with WaterNSW on some governance measures. The operational criteria of the two versions of the plan which the modelling is based upon, were identical in both versions of the plan. The operations plan remains in draft form as consultation is ongoing with key stakeholders, including WaterNSW.

4.17.2 Issue description: hydrology and flooding – water savings

To address SEARs 4L and 4M, provide additional reporting, supported by quantified model analysis, that clearly demonstrates the potential for the Proposal to realise water savings as part of the SDLAM as reported in the MDBA Annual Progress Report 2020: Sustainable Diversion Limit Adjustment Mechanism. Note that this may also include reporting of outputs from the Computer Aided River Management project and further background on the modelling and additional studies supporting the 16GL water savings figure noted in the EIS and the 2020 MDBA report.

Response

The Source modelling undertaken by NSW DCCEEW for the EIS does not aim to assess water savings associated with the regulators and operations plan. This assessment is undertaken by the Murray-Darling Basin Authority (MDBA) as funder and manager of the SDLAM program – and uses models developed by the MDBA to assess potential water savings. Given that Billabong/Yanco creeks connect the Murrumbidgee and Murray rivers, water savings would be calculated using three separate models, which is beyond the scope of the EIS modelling. The process for developing and assessing SDLAM projects includes:

- Water users / NSW DCCEEW / WaterNSW identify and develop projects or changes in operations that may generate potential water saving or efficiencies and submit them to MDBA/Commonwealth for assessment.
- Using their own models updated to reflect proposed infrastructure and/or operational changes, the MDBA calculate potential water savings.
- The MDBA/Commonwealth review the water potential water savings, environmental metrics and the cost of the project or change in operations to determine whether the changes will have a significant environmental impact and provide value for money. If the change would not have a significant environmental impact and provides value for money, the MDBA/Commonwealth funds the project.
- Any modification to the project and/or operational changes, would require re-assessment by the MDBA.

More information on the SDLAMs project can be found at mdba.gov.au/water-management/basin-plan/sustainable-diversion-limit-adjustment-mechanism.

The Billabong Creek Regulators proposal was reassessed for water savings when the scope was modified in 2023 from four regulators to two regulators. A copy of the revised water savings assessment modelling is attached in Appendix G.

4.17.3 Issue description: hydrology and flooding – General Security Allocations

Where there are quantified increases to Effective General Security Allocations provide information on how the increase in Effective General Security Allocations would directly benefit the environment.

Response

Table 4.19 of the Hydrology Report presents the General Security Allocations for existing conditions and the change and cumulative change cases. There is no change in General Security Allocations at the end of the water year between existing conditions and the cumulative change case. There is 0.2 to 0.3 Gigalitre (GL) of additional water available to General Security licence holders earlier in the water year under the cumulative change case. This is negligible given the total annual flow in the creek and is within the error bounds of the model. Also as most of the environmental water is general security any marginal benefits of more water earlier in the water year would also apply to environmental water.

4.17.4 Issue description: hydrology and flooding – model analyses metrics

Section 6.3 of the EIS reports on the impact assessment of the regulator upgrade during operations. This section of the report provides a commentary on the impact assessment but does not provide information quantifying the impacts on hydrology or the environmental impacts that might manifest through changes to the hydrology, either written or graphical, nor does it provide direct references to specific locations in the appendices where specific metrics can be found to support the conclusions..

Response

The relevant information on impacts on hydrology are contained in Appendix G of the EIS – Hydrology Assessment. Specifically;

Section 4.2.1 and 4.3.1 – changes in Annual water balance

Section 4.2.2 and 4.3.2 – changes in Seasonality of flows

Section 4.2.3 and 4.3.3 – changes in Flow variability

Section 4.2.4 and 4.3.4 – changes in Flow sizes

Section 4.2.5 and 4.3.5 – changes in Environmental Watering requirements

Section 4.2.6 and 4.3.6 – changes in Effective General Security Allocations.

All of these sections contain a detailed analysis of changes in hydrology due to the project and operations plans. The results of the analyses indicate that there would either be no or low changes in the hydrology.

4.17.5 Issue description: hydrology and flooding – flow characteristics and headlosses

Given the sensitivity of the flood model results to the representation of the regulator structures in the model, the EIS should demonstrate how the headloss characteristics of the proposed regulator structures as modelled have been validated, e.g. benchmarked against headlosses across a range of flow rates for similar regulators that have been constructed, or alternatively a CFD model of the regulator(s) simulated across a range of flow rates.

Response

The hydraulic model was used to undertake two distinct flow analyses:

- operational flows
- flood flows.

In the existing case the operational flows the TUFLOW results were verified against standard broad crested weir equations and different model setups. Further, the model was calibrated to a range of flows as detailed in:

- Section 5.3 of Appendix H-Sub App D-Hartwood Hydraulic Modelling
 - Smallest flow rate August 2017 - 501ML/d
 - Largest flow rate August 2022 - 13,263 ML/d
- Section 5.3 of Appendix H-Sub App E-Wanganella Hydraulic Modelling Report
 - Smallest flow rate August 2017 881ML/d
 - Largest flow rate August 2017 11,649 ML/d.

For proposed case operational flows, the maximum and minimum operational flows were applied to the model with the proposed gates set to the required levels to achieve the target upstream water levels (minimum operating level, maximum operating level and full supply level). The gate height was initially set to a level calculated using weir questions. These initial results were found to achieve the required upstream water levels within the margin of error and minor adjustments to the gate

levels in the hydraulic model were required. This process validated TUFLOW was replicating expected water levels.

Through the hydraulic model development stage, the setup of weirs was verified against standard sharp crested and broad crested weir equations. With the sharp crested weir equation being applied to the gates and the broad crested weir being applied to the existing structures and fixed crest weir of the proposed regulators as appropriate. Further different model setups were also tested.

At Hartwood the comparison to the weir equation calculations and TUFLOW results are provided in Table 4.2.

Table 4.2: Hartwood Regulator comparison of weir calculations to TUFLOW weir pool levels

Scenario	Weir calculation	TUFLOW water level
25 ML/d Minimum Operating Level	95.284	95.28
25 ML/d Maximum Operating Level	95.444	95.44
25 ML/d Full Supply Level	95.744	95.74
500 ML/d Minimum Operating level 1	95.297	95.28
500 ML/d Maximum Operating Level 1	95.457	95.44
500 ML/d Minimum Operating Level 1	95.757	95.74

Note 1: Combination of sharp crested and broad crested weir equations.

At Wanganella the comparison to the weir equation calculations and TUFLOW results are provided in Table 4.3 and a comparison between different model setups is presented in Table 4.4. The different TUFLOW setups were:

- 1D Rectangle weir (WR)
- 1D Broad crested weir (WB)
- 2D fixed topography (2d_zsh)
- 1D Operational rectangular weir (WRO)
- Decreased downstream boundary condition by 50%
- Increased downstream boundary condition by 50%.

Table 4.3: Wanganella Regulator comparison of weir calculations to TUFLOW weir pool levels

Scenario	Weir calculation	TUFLOW water level
30 ML/d Minimum Operating Level	80.75	80.80
30 ML/d Maximum Operating Level	80.99	80.99
30 ML/d Full Supply Level	82.10	82.08
400 ML/d Minimum Operating level 1	80.75	81.02
400 ML/d Maximum Operating Level 1	80.99	81.02
400 ML/d Minimum Operating Level 1	82.10	82.09

Note 1: The regulator is drowned out at this flow rate and the target water levels is not achieved.

Table 4.4: Wanganella Regulator comparison of different TUFLOW setups

Scenario	Upstream Water Level Change (mm)	Downstream Water Level Change (mm)
Adopted setup WR	-	-
1D Broad crested weir	34.0	-2.0
1D Operational rectangular weir	-5.0	-1.0
2D fixed topography	-6.0	-2.0
Decreased downstream boundary condition by 50%	1.0	1.0
Increased downstream boundary condition by 50%	1.0	1.0

The nature of flood flows in and around the weirs and regulators with floodplain engagement as well as in channel structures is complex. Therefore, a 1D-2D linked hydraulic model was considered the most appropriate tool to calculate flood impacts including headloss across the existing and proposed structures. Further, in flood flow situations, different weir flow regimes are required to be calculated including upstream controlled and downstream controlled which were dynamically calculated in the TUFLOW model. Given this and that the models were calculated across a range of flood flows, the TUFLOW results are appropriate.

4.17.6 Issue description: hydrology and flooding – Wanganella flood bypass channel

The height of the sill for the Wanganella flood bypass channel has not been provided in the EIS (page 3.40, Main EIS Report). Given the importance of this element to mitigating flood impacts, provide a statement clearly identifying the design issues and constraints associated with the Wanganella flood bypass channel to provide further evidence that the required functionality of the Wanganella flood bypass can be achieved.

Response

The height of the sill for the Wanganella flood bypass channel was set to slightly below the 2 per cent AEP flood level at 84.64 mAHD. Subsequent to the completion of the modelling to inform the EIS, the base case modelling has been updated and the revised 2 per cent AEP level in Billabong Creek at Wanganella gauge is 85.00 mAHD.

The eventual sill level of the flood bypass channel is subject to further design refinement and consultation, however the reduction in flood levels presented in the EIS would be the minimum standard of performance – and given the base case 2 per cent AEP flood level has increased, it is likely that the flood bypass channel will be operational during more frequent events.

There is a limit to lowering the sill level of the flood bypass channel as the deeper the bypass channel the higher the likelihood that formal structural elements would need to be included such as concrete retaining walls. Formal structural elements increase construction and maintenance costs significantly, and were not included in budget for the original proposed works.

4.17.7 Issue description: hydrology and flooding – Source model calibration

Provide the independent review report of the Source model calibration.

Response

The independent review report of the source model calibration is provided in Appendix H of this report.

4.17.8 Issue description: hydrology and flooding – difference of the target level to FSL

In regards to the operation of new regulators for the time period 1 November to 30 April the incorrect difference of the target level to FSL is provided. EIS Section 3.4.3 Table 3.14 should be reviewed for errors.

Response

An error was made in Table 3.14. The correction is shown below in Table 4.5, with strikethrough showing the incorrect data and the correct data underlined.

Table 4.5: Correction to EIS Section 3.4.3 Table 3.14.

Time period	Regulator Pool Target Level	Difference from Full Supply Level
1 November to 30 April	95.44 m AHD	-0.03 m <u>-0.30 m</u>
1 May to 31 October	95.32 m AHD	-0.42 m

4.17.9 Issue description: hydrology and flooding – weir pool values

The weir pool values in EIS section 3.4.5 Table 3.20 appear in error when compared with EIS tables 3.16 and 3.18 which has a higher maximum water control level for the new regulator and EIS Table 3.18 which has higher volumes for the new regulator at various operational levels. Table 3.20 should be reviewed for errors.

Response

The values for Hartwood in Table 3.20 are correct. The existing weir and Normal operating weir are at the same height (95.28 mAHD) and have different volumes. The different volumes are due to the different location of the weir and regulator.

The values for Wanganella should be as listed in Table 4.6.

Table 4.6: Estimated weir pool inundation areas for the proposed regulators

Estimated weir pool inundation area (hectares)	Hartwood	Wanganella
Existing weir	107	57
Full supply level (regulator)	112	77
Normal operating level (regulator)	103	60
Minimum operating level (regulator)	96	58

4.17.10 Issue description: hydrology and flooding – modelled EWR results

It is stated on page 6.9 of the main EIS report that “the modelled EWR results for Lower Billabong and Intersecting creeks, downstream to Moulamein (PU13) indicate the frequency the specified EWR categories are achieved. These results show these represent a low degree of hydrological alteration compared to “natural” pre- development conditions. The main exceptions are the Nesting Support EWRs for Murray Cod and Trout Cod /Murray Cod, for each of which there is a moderate degree of hydrological alteration to the specific flow or inundation regime needed to support these species in this reach”

Provide support for this statement with references and quantify with suitable metrics.

Response

The reference to pre-development conditions is incorrect as it assumes that the EWRs contained in the LWTP are representative of pre-development conditions – which they are not necessarily. EWRs are defined as:

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.

In some locations EWRs may be based on pre-development conditions, while in other locations the pre-development conditions (including flows and associated ecosystems) have been irrevocably modified and returning flows to pre-development conditions are not practical or may cause impacts on the modified ecosystems. As per the EWR definition, the EWRs are based on supporting the current existing ecosystems and organisms. As noted in section 3.1.5 of the Hydrology Report, parts of the Yanco Creek system are heavily modified as they used as conduits to supply water to the Yanco Creek water users and the environment - and in some cases the Murray River. In pre-development conditions, the Yanco Creek system would have been more ephemeral in nature and would have experienced extended periods of no or low flow unlike today.

However what is correct to say is that currently many of the EWRs (or flow management objectives for supporting ecosystems and organisms) are being already achieved and overall the project and changes in the operations plan would result in no deterioration or a minor improvement in meeting EWRs.

4.17.11 Issue description: hydrology and flooding – wetland connection flow

On page 6.9 of the Main EIS report it is stated that “Although the modelled attainment for Wetland connection flow ‘preferred seasonal timing’ and ‘any time that is considered satisfactory’ and Floodplain connection flow also indicate a medium degree of hydrological change, it should be noted that, large fresh that connect wetlands in this zone are currently difficult, and small (and large) over bank flows that connect the floodplain cannot be delivered, due to potential impacts on third parties or the flows occur due to tributary rainfall events or dam spills respectively. Deliveries large freshes may only be possible with pumping or where other infrastructure exists to divert water to the floodplain.”

This statement should be supported by references and where possible, quantified by suitable metrics.

Response

The analysis is provided in the EIS in Section 4.2.4 and 4.2.5 of Appendix G- Hydrology Assessment.

Table 4-7 shows that flows that correspond to Large Freshes and larger flows increase at all PU's with the exception of Jerilderie where the 25th percentile and 20th percentile flows decreased by 2% and 0.1% respectively. As flows at Jerilderie are essentially unregulated (natural) flows these changes are not considered to be significant and within the modelling tolerance.

The wetland connection and floodplain connection flows EWR in Table 4-9 all show no change or increases over the existing case with the exception of OL-L1_P at PU11 (Billabong Creek at Jerilderie to downstream of Hartwood Weir) and OS-S1 and OB-S2 at PU 13 (Lower Billabong and Intersecting Streams). These changes are less than 4% and are considered to be insignificant.

Artificially generating overbank flows and large freshes is beyond the scope of the project and the storage capacity of the regulators. To artificially generate an overbank flow in the Yanco Creek system a significant release of water from the Murrumbidgee dams would be required which would likely have flooding impacts on properties adjacent to the river. The Reconnecting River Country Program is investigating increasing overbank flows in the Murrumbidgee River system.

4.17.12 Issue description: hydrology and flooding – mean monthly flows

It is stated on page 6.13 of the main EIS report that “The low degree of changes in mean monthly flows within the Yanco Creek System could be due to the differences between the Change Case and Base Case scenario.” Provide a definitive statement on these impacts supported by detailed quantitative analysis of model results.

Response

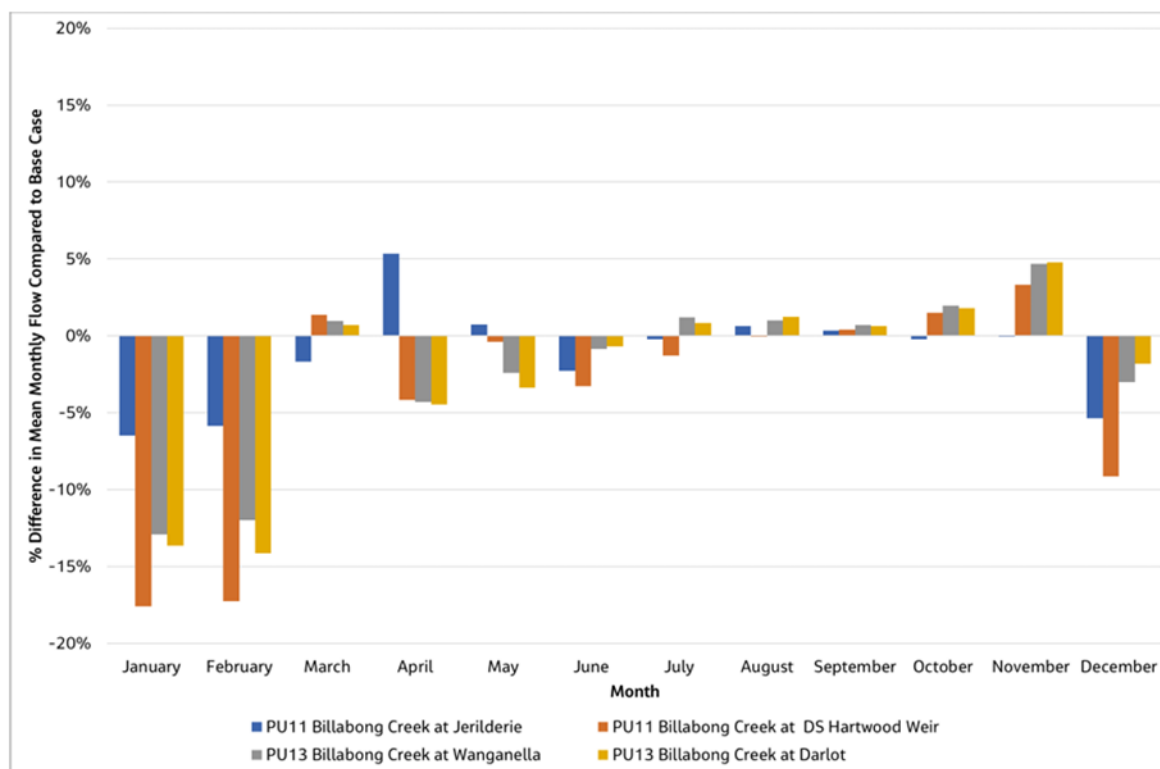
The analysis is provided in the EIS in section 4.2.2 of Appendix G – Hydrology Assessment.

For Yanco and Colombo Creeks the difference in mean monthly flows between Base Case and Change Case scenarios is characterised as low, given the mean monthly flow differences range from -6.8% to +7.1%. The low degree of changes in mean monthly flows in Yanco and Colombo Creeks and upper Billabong Creek upstream of Jerilderie are considered the product of the suite of differences between the Change Case and Base Case scenario, including the new regulators and broader system changes specified in the Yanco Creek System Operations Plan. The comparison is shown in Figure 4.3.



Figure 4.3: Yanco and Colombo Creeks monthly flow to base case comparison

For Mid and lower Billabong Creek, all the differences in modelled mean monthly flows between Change and Base Case scenarios are characterised as low given the mean monthly flow differences range from -17.6% to +5.3%. The low degree of changes in mean monthly flows in mid and lower Billabong Creek are considered the product of the suite of differences between the Change Case and Base Case scenario, including the new regulators and broader system changes specified in the Yanco Creek System Operations Plan. The comparison is shown in Figure 4.4.



Note: Hydrological alteration categories (as per Table 2-2) – Low: <20% difference (+/-) in key flow regime characteristics when compared to Base Case scenario conditions; Medium: 20-50% difference (+/-) in key flow regime characteristics when compared to Base Case scenario conditions; High: >50% difference (+/-) from Base Case scenario conditions.

Figure 4-7 Percentage difference in mean monthly flows at key locations for PU reaches in mid and lower Billabong Creek under the Change Case scenario compared to the Base Case scenario.

Figure 4.4: Mid and lower Billabong Creek monthly flow to base case comparison

4.17.13 Issue description: hydrology and flooding – Environmental water requirement's for low flows

Section 6.3.2 of the Main EIS report makes a number of unsubstantiated claims regarding the lack of impact (either negative or positive) on EWR's for low flows. Provide further substantiation including references to quantitative analysis.

Response

Details of the analysis are provided in Section 4.2.5 of Appendix G - Hydrology Assessment.

The Environmental water requirement (EWR) results shown in Table 4-9 of Appendix G- Hydrology Assessment (see Table 4.7) for Lower Billabong and Intersecting Streams downstream to Moulamein indicate the following can be achieved compared to Base Case scenario results:

- increases in the frequency with which the specific flow or inundation regime for Floodplain Connection Flow EWR for:
 - Large Overbank OB-L1 (+4%), EWRs W-LF4_P ('preferred seasonal timing') and
 - W-LF4_S ('any time that is considered satisfactory') (+1%),
 - Small Freshes EWR SF1 (+4 to +5%) and
 - Native Fish Nesting Support EWRs NestS1_mc and NestS1_tcmc (+5 to +7%).

Table 4.7: Copy of Table 4-9 Appendix G – Hydrology Assessment – EWR results

Table 4-9 EWR adjusted frequency score results at key locations for PU reaches in the Yanco Creek System under the Change Case scenario, with comparison to Base Case.

Note that the green, yellow and red shading represents high, medium and low degree of EWR attainment as per Table 2-2. In addition, +/- indicates an increase/decrease in EWR adjusted frequency score compared to the Base Case scenario.

Category	EWR	PU10 (Upper Yanco Creek)	PU12 (Lower Yanco to Lower Billabong Creek)	PU11 (Colombo Creek at Morundah to Billabong Creek upstream of Jerilderie)	PU11 (Billabong Creek at Jerilderie to downstream of Hartwood Weir)	PU13 (Lower Billabong and Intersecting Streams)
Cease-to-flow (CtF)	CF1	100 (0)	100 (0)	100 (0)	99 (-1)	99 (-1)
Very low flow (VLF)	VF1_a	100 (0)	100 (0)	100 (0)	100 (0)	100 (0)
	VF1_b	100 (0)	100 (0)	99 (-1)	99 (-1)	100 (0)
Baseflow (BF)	BF1_a	100 (+32)	46 (+14)	100 (0)	100 (0)	100 (0)
	BF1_b	100 (0)	97 (+1)	99 (-1)	99 (0)	100 (0)
Native Fish Nesting Support	NestS1_mc	56 (+9)	35 (+3)	61 (0)		76 (+7)
	NestS1_tcmc	44 (+8)	28 (+1)	57 (+4)		63 (+5)
Small fresh (pulse) (SF)	SF1_P	78 (+6)	81 (+5)	86 (+9)		95 (+5)
	SF1_S	86 (+2)	88 (+3)	92 (+2)		96 (+4)
	SF2	100 (0)	60 (+5)	93 (+4)		100 (0)
Large fresh (pulse) (LF)	LF1_P	81 (+5)	83 (+5)	87 (+7)		85 (0)
	LF1_S	99 (+1)	100 (0)	100 (0)		100 (0)
	LF2	100 (+2)	100 (0)	100 (0)		100 (0)
Wetland connection flow (Wetland- LF)	W-LF4_P					68 (+1)
	W-LF4_S					71 (+1)
	W-LF5					96 (0)
	W-LF6_P	100 (0)	100 (0)	100 (0)		100 (0)
	W-LF6_S	100 (0)	100 (0)	100 (0)		100 (0)
	W-LF7	90 (0)	71 (0)	73 (0)		87 (+1)
	W-LF8	100 (0)	100 (0)	100 (0)		100 (0)
Floodplain connection flow (OB)	OB-L1					92 (+4)
	OB-L1_P	88 (0)	92 (0)	88 (-4)		
	OB-L1_S	100 (0)	100 (0)	100 (0)		

4.17.14 Issue description: hydrology and flooding – climate change weather

On page 7.10 of the main EIS report it is stated that "Climate change will lead to increased rainfall intensity and larger flood events. Provide a referenced source to back up this statement.

Response

The source to support this statement is Climate Change Considerations, Book 1 in Australian Rainfall and Runoff - A Guide to Flood Estimation, Commonwealth of Australia 4.2 (Wasko et al. 2024).

4.17.15 Issue description: hydrology and flooding – climate change assessment

An assessment of the operational performance of the Billabong Creek regulators on the hydrology of the Yanco Creek system in a climate affected future is an important consideration that is currently missing from the EIS.

Provide additional information supported by modelled analysis on the operational performance of the Billabong Creek regulators in the context of the effects of climate change on the hydrology of the Yanco Creek system.

Response

There was no requirement under the SEARs or the SDLAM program to model climate risk projections. However, under a drier climate, with less water availability, the ability to re-regulate any surplus water in the Yanco Creek System would be expected to improve the operational resilience of the system compared to the current structures.

4.17.16 Issue description: Appendix O Land use assessment report

It is noted in Table 4.5 of the Land Use Assessment Report (p. 33 Appendix O) that inundation areas “will be assessed as part of the broader Reconnecting River Country package of works”. Provide further detail on this statement and detail any inundation and overbank flow related impacts of the proposal.

Response

The broader Reconnecting River Country program is a key Murray-Darling Basin initiative essential to creating healthier functioning river systems in the Murray and Murrumbidgee valleys. This program would include hydraulic modelling, environment benefits and risk assessments, climate change and salinity impact assessments for the regional area. This program includes improved online inundation modelling for the regional area available from this website <https://water.dpie.nsw.gov.au/our-work/water-infrastructure-nsw/sdlam/reconnecting-river-country-program/inundation-mapping>.

The hydrology and flood modelling for this proposal assess potential issues from the construction and operation of the new Hartwood and Wanganella Regulators, and where required, identifies feasible and reasonable mitigation and management measures, specific to this proposal. Potential inundation and overbank flow related impacts of the proposal are discussed in the following technical reports to the EIS: Appendix G-Hydrology assessment and Appendix H-Flood impact assessment.

4.17.17 Issue description: Appendix J Geomorphology assessment report

The Geomorphology Assessment Report notes that the distance between the new regulators and the existing regulators at Hartwood and Wanganella is 73m and 150m, respectively (p.28 Appendix J). Confirm if these distances are accurate and if necessary amend relevant sections of the Geomorphology Assessment Report.

Provide further detail on how increased risks of erosion downstream of both regulators is mitigated and any residual risks following mitigation measures.

Response

The distance between the new regulators and existing weirs in the concept design assessed in the EIS, varies depending on which points of the infrastructure the measurement is being made. At Hartwood the shortest distance is around 40 metres between the edge of the fishway closest to the weir and up to around 110 metres between the most distant part of the structure to the weir. There is a similar variation in distances at Wanganella. The Geomorphology Assessment selected distances between the structures that were relevant to this assessment and were current for the concept design. Small changes to these distances during detailed design would not require amendment to the Geomorphology Assessment Report.

The regulators have been modelled and designed to minimise increased risk of erosion from the new structure. Energy dissipation has been provided within the concrete regulating structure in the form of a primary and secondary stilling basin and a concrete apron downstream of the secondary stilling basin and fixed crest weir. Rock beaching has been provided upstream, downstream and on the sides of the structure. The rock beaching is to provide additional protection in both the operational and flood flows through the Billabong Creek. In addition, a sheet pile cutoff has been included at the downstream toe of the concrete apron of the structure to prevent erosion under the downstream

apron slab. The hardstand areas adjacent to the regulators, has been designed to enable overtopping during flood flows.

Ongoing monitoring of erosion that could occur due to the structures and inlets or outlets of the regulators will be carried out to identify if there are residual impacts following construction. A CEMP will be prepared for the construction works. This will include the mitigation measures listed in Appendix A of this report. These include measures GE01 to GE05 which comprise requirements to manage and monitor erosion. GE05 requires two post-construction visual assessments of the regulators over two years to identify and assess erosion, so it can be addressed, if required.

4.17.18 Issue description: Stability of new land forms

Provide further information on the geotechnical stability of any new landforms, such as Forest Creek Block bank and the Wanganella Flood Bypass channel.

Response

Design criteria have been developed for the SDLAM program as a whole. Bank and channel geometry is in accordance with industry criteria to ensure batters will be stable over the long term.

Geotechnical investigations have been carried out at both the Forest Creek block bank and the Wanganella flood bypass channel sites. Therefore the properties of materials that will be used to construct the landforms are understood and the designs are tailored accordingly.

The landforms will be maintained in accordance with standard industry practice throughout the design life of the structures to monitor stability.

4.17.19 Issue description: Appendix L Biodiversity Development Assessment Report

It is noted in the BDAR that “use of the Wanganella Swamp borrow pit is being assessed as part of a different proposal and will be subject to a separate approval.” Provide further details on this approval and the proposed use of the borrow pit.

Response

This statement was included in error and has been removed from the revised BDAR provided in Appendix D of this report.

5 Response to community submissions

5.1 Overview of community submissions

This chapter provides a summary of issues raised by:

- members of the public (individuals).

The submissions register (Appendix A) includes a table identifying submissions using the submission identification numbers provided to submitters by DPHI. The register presents, for each submission, a cross reference to where the issues raised in the community submissions have been addressed in the report.

The issues raised in each submission have been summarised and categorised into key issues and sub-issues. A response has been provided to each grouped issue summary, which may be relevant across a number of submissions.

5.2 The proposal

5.2.1 Issue description: Support for the proposal

Submission no: 2.

Support for the project.

Response

Support for the project is acknowledged.

5.2.2 Issue description: Alternatives

Submission no: 1.

Was the use of Solar and battery storage given consideration in providing the necessary power for the operation of the two in creek projects.

Response

Provision of electricity to the new infrastructure to power the gates is included within the design. Feasibility and constraints of both solar power and new utility lines were considered during the design development phase. Mains power was determined to be the preferred option due to its lower operational and maintenance costs. WaterNSW as the intended asset owner had a preference for mains power.

5.3 Procedural matters

5.3.1 Issue description: management of flow regime

Submission no: 1.

Concern in WaterNSW ability to manage the flow regime of the Creek System to accommodate a more flexible timing of irrigation scheduling and environmental flows

Response

The bulk water delivery of irrigation and environmental water is core business for WaterNSW.

New environmental flow provisions detailed in the draft operations plan are planned to be established as WaterNSW work approval conditions that WaterNSW must comply with. Any non-compliances with these conditions will be managed by Natural Resource Access Regulator.

WaterNSW will resolve how it manages the benefits of increased water delivery flexibility within the Yanco Creek System (e.g. water order lead times and/or requested changes to water order delivery dates and extraction rates).

5.3.2 Issue description: flexible operating rules

Submission no: 2

It is requested that the operating rules for the regulators are flexible and reviewed once the regulators are completed and that Yanco Creek and Tributaries Advisory Council members continue to be consulted.

Response

The operating rules within the Operations Plan will be routinely monitored and reviewed to ensure the benefits expected are fulfilled. Stakeholders currently involved in developing the Operations Plan would continue to be consulted in the future.

5.3.3 Issue description: Consultation period

Submission no: 2

It was considered that the exhibition period for this EIS has been too short considering the substantial size of the document. This period also coincided with other government papers requiring submissions.

Response

NSW DCCEEW acknowledges that there were other government papers requiring submission at a similar time. However, due to government schedules to complete the proposal, it was not possible to delay or extend the consultation period.

DPHI set the requirements for the exhibition period. It is noted the submitter is a local land holder and would therefore continue to be consulted throughout the construction period.

5.4 Impacts of the proposal

5.4.1 Issue description: Biodiversity offsets

Submission no: 1.

Biodiversity offsets needs further clarification:

- Rather than a financial offset, a more “like for like “ off set would be more applicable in this situation ie an off set within a similar environment and geographic location.
- I am very sceptical of these type of projects making a financial contribution to a government Biodiversity Fund as a means of offsetting the biodiversity impacts of construction.

Response

The biodiversity offset requirements would be secured according to the offset rules established by the Biodiversity Conservation Regulation 2017 through either:

- purchase of biodiversity credits from existing biodiversity stewardship sites after identifying the required 'like for like' credits in the market through the Biodiversity Offsets Scheme public registers
- payment to the Biodiversity Conservation Fund equivalent to the number and type of credits required
- purchase of biodiversity credits generated by a future Biodiversity Stewardship Agreement over a parcel of land identified as a suitable offset for the proposal
- funding an approved biodiversity action.

At this stage of planning for the proposal it is likely that available credits would be sourced from the open market in accordance with the trading rules associated with the Biodiversity Offsets Scheme with any shortfall met by a payment into the Biodiversity Conservation Fund. To support the Biodiversity Conservation Fund payment option, NSW DCCEE would obtain a charge quote from the NSW Biodiversity Conservation Trust, based on the credit obligation. Payment could be made to retire all or part of the offset obligation through the Biodiversity Conservation Fund once NSW DCCEE receive development approval under Part 5.1 of the EP&A Act along with conditions which include a requirement to retire biodiversity credits.

5.4.2 Issue description: Social impacts and mitigation measures

Submission no: 1.

Concerns raised that government contracts for construction will not be prioritised for local businesses and workers.

Response

The extent to which the principal contractor engages local contractors, suppliers, service providers and employees will be a tender assessment criteria for the construction of the works.

5.4.3 Issue description: Land use impacts during construction

Submission no: 2

Concerns raised in regard to the construction phase of the Wanganella Regulator. As the landholder that leases both the North and South Wanganella Common, the landholder will be directly impacted during the construction period.

Response

NSW DCCEE will contact this landholder directly regarding his stock management on the land he leases during the construction period.

All Local landholders impacted by the proposal will continue to be consulted during the construction phase of the project. NSW DCCEE will endeavour to work with the local community to minimise disruption and provide alternatives where possible ie to access if impacted.

5.4.4 Issue description: Traffic and access during construction

Submission no: 2

Several concerns were raised regarding impacts from construction traffic at Wanganella:

- Impact to the stock grids from the Travelling Stock Route to the Common from use of Zara Road and Wanganella Weir Road:
 - Recommends using the double gates, adjacent to the Zara Road stock grid, for trucks and other heavy equipment. This will prevent damage and cleaning out of the grid on completion of works. land holders, may be able to destock the Common to allow the use of these gates during the day.
 - The north side the stock grid is not fit to carry the construction traffic and will need replacing before the project begins. There are double gates adjacent to the grid, but these may be impassable during wet periods, due to them being in the bottom of a gully.
- Right turn (south-bound) from Wanganella Weir Road onto the Cobb Highway a dangerous corner with north bound traffic having limited vision. The sight distance is very short.
- Consider a school bus route, that runs twice a day from Deniliquin to Wanganella and back to Deniliquin. This bus picks up children from adjacent to the Wanganella Hall, in Lang Street. There is also a school bus run to and from Deniliquin to Conargo.
- Cumulative impacts to the Cobb Hwy may occur, from increased heavy vehicle traffic due to two very large transmission line projects, Energy Connect and VNI West, plus a number of renewable energy projects.

Response

Construction impacts would be managed through development of the construction traffic management sub-plan, prior to construction. This would be carried out as the construction methodology and agreements with land owners are finalised.

In addition, the construction contractor will be required to undertake a dilapidation survey (i.e. condition assessment of all access prior to the works commencing including any stock grids and make good any damage that may occur during the construction works.

Roads and accesses including stock grids would be upgraded where required to handle the anticipated construction traffic.

5.4.5 Issue description: Land use – traveling stock routes

Submission no: 2

Livestock is regularly moved on the Cobb Hwy travelling stock route, disrupting traffic movements over the road bridge at Wanganella. Liaison between the stock managers and traffic controllers will be needed.

Response

Construction impacts would be managed through development of the construction traffic management sub-plan, prior to construction. This would be carried out as the construction methodology and agreements with landholders are finalised.

All relevant agreements and permits will be sought for works which may impact Travelling Stock Routes prior to any works commencing. Consultation will be carried out with Local Land Services and known stock managers who may plan on using the route during the construction period.

5.4.6 Issue description: Biodiversity noxious weeds

Submission no: 2

Concerns regarding the spread of noxious weeds by construction vehicles around Wanganella, specifically:

- Spiny Burrgrass (*Cenchrus Spinifex*) has infestations on the verges of the Cobb Highway, from south of the Zara Rd intersection to north of the Lang St intersection. Also there is an infestation opposite the Wanganella Store on the West side of the Cobb Highway.
- Khaki weed (*Alternanthera pungens*), which is also present.

Response

NSW DCCEEW commits to biosecurity controls during the construction period. Mitigation measures included in Appendix A include several requirements to manage this issue, including:

- LU1: As part of the CEMP document weed and pathogen management should be documented. Measures must be auditable and linked to management outcomes such as:
 - Identify listed weeds (identified in NSW WeedWise) in the construction area and assess the risk of additional spread prior to relocating topsoil. Implement measures to manage this risk during clear and grade, and reinstatement.
 - To a reasonable extent practicable during the clear and grade phase, check that vehicles and plant equipment are free of soil (dust/clods) and vegetation prior to entry and exit from the construction area.
 - Evaluate disturbed areas post-construction and implement rehabilitation in accordance with the appropriate safeguards.
 - To avoid and minimise spread of weeds and pathogens, all vehicles and plant undertaking construction works must be cleaned and free of debris prior to entrance to the site. Plant used within waterways must be cleaned before exiting the site if working between multiple waterways.

NSW DCCEEW will contact the landholder directly on this matter, with the view of mapping the known areas of concern, in order for these to be communicated to the construction contractor.

5.5 Issues that are beyond the scope

5.5.1 Issue description: Irrigation escapes

Submission no: 1.

Location of the new operating rules for irrigation escapes.

Response

This issue is out of scope of the EIS. The proposal is limited to the new Hartwood and Wanganella Regulators within Billabong Creek and associated works.

The proposed new operating rules for the escapes are shown in red text in Appendix U – Draft Yanco Creek System Operations Plan of the EIS. This can be found in the sections titled Coleambally Irrigation Co-operative Limited (CICL) escapes and Murray Irrigation Limited (MIL) escapes.

6 Conclusion and next steps

6.1 Statutory context summary

6.1.1 Statutory context

NSW DCCEEW is proposing to replace two existing weirs along Billabong Creek with new regulators. The two existing weirs to be replaced are Hartwood Weir and Wanganella Weir, both built in the early 20th century and currently in states of declining condition and functionality.

The proposal is declared State significant infrastructure by operation of Part 5, Division 5.2 of the EP&A Act, State Environmental Planning Policy (Planning Systems) 2021 (the Planning Systems SEPP), and State Environment Planning Policy (Transport and Infrastructure) 2021 (the Transport and Infrastructure SEPP).

Section 5.12(2) of the EP&A Act provides that a State environmental planning policy may declare any development, or any class or description of development, to be State significant infrastructure. The Planning Systems SEPP (section 2.13(1)) provides that development is State significant infrastructure if it is permissible without development consent under Part 4 of the EP&A Act and it is specified in the categories of development in Schedule 3 of the Planning Systems SEPP.

The EIS and this Submissions Report have been prepared to support the application for approval and address the Secretary's Environmental Assessment Requirements (SEARs) issued by the NSW Department of Planning, Housing and Infrastructure on 17 October 2024.

6.1.2 Operation of the regulators

It is intended that the regulators would be operated by WaterNSW, in accordance with the operating requirements established by NSW DCCEEW in consultation with WaterNSW. These operating requirements are contained in the Yanco Creek System operations plan (the operations plan). The operations plan is in draft format and being developed in consultation with WaterNSW as the intended new asset owner, key government agencies and community stakeholders. The operations plan forms part of the larger NSW sustainable diversion limit adjustment mechanism program funded by the Australian Government.

The Yanco Creek operations plan includes the following content:

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

A copy of the plan is provided in the EIS Appendix U - Operations Plan. This plan is draft and requires ongoing refinement and inclusion of any necessary conditions of approval specific to operations. NSW DCCEEW are not seeking approval of the plan as part of this application.

At the time of the lodgement of this Submissions Report, there are ongoing discussions between NSW DCCEEW and WaterNSW to resolve outstanding issues in relation to the operations plan. These issues are around governance, monitoring and reporting and the mechanisms under the Water Management Act 2000 to achieve the hydrological outcomes envisaged by the operations plan and the modelling for the EIS. Whatever the outcomes from the ongoing negotiations the regulators and the Yanco Creek system would be operated to ensure that it does not result in a deterioration from the existing conditions.

6.2 Consideration of impacts

The design of the proposal and its construction methodology have been developed to avoid and minimise impacts on the local and regional environment, and impacts on the local community and businesses, as far as possible.

The EIS was prepared to assess the potential impacts and develop measures to mitigate the impacts and enhance the benefits of the proposal. Measures to minimise the identified potential impacts would be implemented during the design development, construction planning, construction and operation phases.

The mitigation measures identified in the EIS (EIS Appendix F) have been updated to respond to the issues raised in submissions and during ongoing engagement with the community and key stakeholders, and to take in account design refinement and additional assessment carried out since the EIS was exhibited. The updated mitigation measures, provided in Appendix A of this report, would be implemented to manage the potential impacts identified.

The majority of the potential construction related impacts would be effectively mitigated by the implementation of best practice construction management, including the implementation of the environmental management approaches described in EIS Chapter 24 (Approach to environmental management and mitigation).

The environmental performance of the proposal would be managed by implementing the CEMP and for operations in accordance with broader WaterNSW operation and maintenance environmental management procedures (see Chapter 24 of the EIS). This would also manage compliance with relevant legislation and any conditions of approval. With the implementation of the proposed mitigation and management measures the potential environmental impacts of the proposal would be adequately managed.

6.3 Strategic context and justification summary

The proposed amendments, refinements and clarifications described in Chapter 3 (Actions taken since exhibition) of this report, issues raised in agency and community submissions and advice, and responses to the issues raised, do not change the justification of the proposal, as outlined in the EIS.

The proposal is needed to improve the efficiency of water management in Billabong Creek by improving the ability to deliver the right amount of environmental and consumptive (town and irrigation) water to the right place at the right time, and to improve the passage of native fish through the system. The proposal would assist delivery of improved environmental outcomes compared to current conditions. This would support the aim of the Murray-Darling Basin Plan adopted in November 2012 and NSW DCCEEW's Yanco Creek modernisation program which aims to upgrade of infrastructure to enable smarter use of water in the Yanco Creek system. It would also meet the NSW Government's commitment to the Commonwealth Government under the SDLAM Program.

In summary the proposal would contribute to the modernisation program through a focus on delivering improved environment outcomes through upgraded infrastructure and smarter use of water. The objectives of the Billabong Creek Regulators proposal are to:

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

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

6.4 Next steps

This Submissions Report is available on the Department of Planning, Housing and Infrastructure website planningportal.nsw.gov.au/major-projects/projects/billabong-creek-environmental-water-regulators. Department of Planning, Housing and Infrastructure will consider this Response to Submissions during its assessment of the project.

The Department of Planning, Housing and Infrastructure will prepare an assessment report for consideration by the Minister for Planning and Public Spaces, who will then decide whether or not to approve the proposal (with the amendments and refinements outlined in this report) subject to conditions.

If approved, NSW DCCEEW would continue to engage with the community, government agencies and other stakeholders during the design and construction phases of the proposal.

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