

---

# Appendix O

## Land use assessment report





# Billabong Creek Regulators

## Land Use Assessment

NSW Department of Climate Change, Energy, the  
Environment and Water

September 2024



<b>Project name</b>		Billabong Creek Regulators					
<b>Document title</b>		Billabong Creek Regulators   Land Use					
<b>Project number</b>		12537654					
<b>File name</b>		DE19-823-YCM2-DE-LA-RPT-0001BillabongEIS-TechRept_Land Use_Final.docx					
<b>Status Code</b>	<b>Revision</b>	<b>Author</b>	<b>Reviewer</b>		<b>Approved for issue</b>		
			<b>Name</b>	<b>Signature</b>	<b>Name</b>	<b>Signature</b>	<b>Date</b>
S4	0	P Dellow B James	P Dellow		D Chubb		06/09/2024

**GHD Pty Ltd | ABN 39 008 488 373**

133 Castlereagh Street, Level 15

Sydney, New South Wales 2000, Australia

**T** +61 2 9239 7100 | **F** +61 2 9239 7199 | **E** [sydmail@ghd.com](mailto:sydmail@ghd.com) | **ghd.com**

© GHD 2024

This document is and shall remain the property of GHD. The document may only be used for the purpose for which it was commissioned and in accordance with the Terms of Engagement for the commission. Unauthorised use of this document in any form whatsoever is prohibited.

*The 3Rivers Joint Venture (3Rivers), a joint venture between Jacobs Group (Australia) Pty Limited and GHD Pty Ltd has been engaged to provide certain Engineering and Approvals Services for the NSW Sustainable Diversion Limit Adjustment Mechanism (SDLAM) program in accordance with the Agreement between 3Rivers and the NSW Department of Climate Change, Energy, the Environment and Water (DCCEEW) (the client).*

*This report has been prepared by GHD for the client, and may only be used and relied on by the client for the purpose agreed between 3Rivers and the client as set out in section 1.2 of this report.*

*GHD otherwise disclaims responsibility to any person other than the client arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.*

*The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.*

*The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.*

*The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report (refer section 1 of this report). GHD disclaims liability arising from any of the assumptions being incorrect.*

# Executive Summary

NSW 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 two existing weirs, Hartwood Weir and Wanganella Weir are situated on Billabong Creek within the Yanco Creek system and both would be demolished. These weirs were built in the early 20th century and have been used to regulate flows through Billabong Creek, create weir pools for irrigation and, in the case of Wanganella Weir, provide town water supply.

The new regulators would be fully automated and remotely operated to deliver water more efficiently. The proposal is needed to improve the operator's ability to deliver the right amount of water to the right place at the right time. The new regulators would also feature fishways to support fish movement past the new structures. WaterNSW would own and operate the new regulators once constructed.

This Land Use Assessment has been completed to assess potential land use issues from the construction and operation of the proposal, and where required, identify feasible and reasonable mitigation and management measures. Given the rural and regional location of the proposal, this report also considered the impacts on other land uses including agriculture. In addition to agriculture, potential impacts were assessed for urban land uses, Crown land, travelling stock reserves, irrigation channels and Aboriginal Land Claims and Native Title.

GHD completed a desktop assessment of the impacts of the proposal during both construction and operations stages on the current land use with the aim of addressing the Secretary's environmental assessment requirements (SEARs). Consultation with agencies and adjacent landholders to inform this assessment was undertaken by other specialists.

The proposal would have both short-term impacts resulting from the temporary removal of land required for construction activities and longer-term impacts as a result of the removal of land for ongoing operations and maintenance activities. During the construction phase, approximately 21.46 hectares of land would be affected (15.08 hectares associated with Hartwood regulator and 6.38 hectares associated with Wanganella regulator). Construction activities include the construction of access tracks and preliminary work areas, establishment of a power supply corridor and a borrow pit. The land that would be affected is predominantly used for extensive livestock grazing and smaller areas of cropping land. The proposal avoids irrigated agricultural land. The new regulators will be located within the Billabong Creek.

The largest impact of the proposal on agricultural production is the temporary removal of the construction footprint from agricultural production during construction and subsequent impacts such as access and roads, dust, noise and vibration and biosecurity. Following rehabilitation of the construction footprint, normal agricultural production and other existing land uses will be able to resume.

Operationally, the proposal footprint is considered to be small and access to the regulators will require permanent tracks for maintenance. The proposal would result in small areas of land mapped as agricultural land to be removed from production, however as the land is currently classified as Crown Land, it has limited agricultural use and removal of these areas of land for operational access would have limited effect on the overall agricultural resources base of the regional study area.

Crown land would be used for access and electricity transmission as well as the establishment of the Wanganella flood bypass channel. Acquisition of Crown land would be undertaken in consultation with the Department of Planning, Housing and Infrastructure, and in accordance with the requirements of the *Crown Land Management Act 2016* (NSW) and the *Land Acquisition (Just Terms Compensation) Act 1991* (NSW). Any land only required temporarily would be undertaken under Lease from Crown Lands. A licence to occupy would also potentially be required for any construction works on private land.

The proposal would be operated in accordance with the operating requirements established with the new asset owner and developed in consultation with key stakeholders. These operating requirements are known as the Yanco Creek System Operating Plan.

The land use impacts and opportunities identified and assessed in this report are not considered significant. Any residual impacts will be managed and mitigated through a range of measures and strategies recommended in the body of the report.

As the weirs are currently in states of declining condition and functionality, and are barriers to the movement of fish through the creek, their condition limits their ability to regulate flows through the Yanco Creek system and leads to inefficiencies in how water is delivered to the environment and irrigators. The proposal would assist delivery of improved environmental outcomes compared to current conditions with negligible impact on agricultural land use.

This report is subject to, and must be read in conjunction with, the limitations set out in section 1 and the assumptions and qualifications contained throughout the Report.

# Glossary

Term	Description
Anabranch	A section of a river or stream that diverts from the main channel of the watercourse and rejoins downstream.
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. However this is a conservative assumption and contractors would be encouraged to avoid removal where they can (through proposed mitigation measures).
Commonwealth Environmental Water Holder	The Commonwealth Environmental Water Holder is a statutory position established under the <i>Water Act 2007</i> (Cwth) responsible for managing the Commonwealth's environmental water holdings. These water holdings are used to protect or restore environmental assets of the Murray-Darling Basin.
Constraints	Anything that affects the delivery of environmental water. It can include physical aspects such as low lying bridges, or river channel capacity, but can also include operational aspects such as river rules or operating practices that impact on when and how much water can be delivered.
Cumulative impacts	The combined impacts of the proposal on a matter with other relevant future projects.
Efficiency measure	Provide more water for the environment by making water delivery systems for irrigation more efficient. This can include replacing or upgrading on-farm irrigation, or lining channels to reduce water losses within an irrigation network.
Entitlement	The volume of water authorised to be taken and used by an irrigator or water authority; includes bulk entitlements, environmental entitlements, water rights, sales water and surface-water and groundwater licenses.
Environmental flow	Any river flow pattern provided with the intention of maintaining or improving river health.
Fish passage	The ability of fish or other aquatic species to move through an aquatic system.
Fishway	Structures placed on or around constructed barriers (such as dams or weirs) to give fish the opportunity to move past the barrier.
The proposal	The construction and operation of the two regulators.
The proposal site	The proposal site is the footprint of the works and 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.
Regulator	A gated structure used to actively manage or control the amount of water that flows from one location to another.
Regulated	A water system in which water is stored or flow levels are controlled through the use of structures such as dams and weirs.
Sustainable diversion limit adjustment mechanism	A mechanism under the Murray-Darling Basin Plan that allows the sustainable diversion limit to be adjusted under certain circumstances.
Study area	The area investigated for this assessment which includes the proposal site and surrounding area, with the potential to be directly or indirectly affected by the proposal.
Weir	A low barrier or dam that is built across a watercourse and is designed to store water, control or alter the flow of water in a creek.

# Abbreviations

Abbreviations	Definitions
AHD	Australian height datum
CEWO	Commonwealth Environmental Water Office
DPE	NSW Department of Planning and Environment, now renamed as Department of Planning, Housing and Infrastructure
DPI	NSW Department of Primary Industries
EIS	Environmental impact statement
EP&A Act	<i>Environmental Planning and Assessment Act 1979 (NSW)</i>
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999 (Cwth)</i>
FM Act	<i>Fisheries Management Act 1994 (NSW)</i>
GL	Gigalitre
ha	Hectare
km <sup>2</sup>	Square kilometres
LEP	Local environmental plan
LGA	Local government area
LUCRA	Land Use Conflict Risk Assessment
NSW	New South Wales
NSW DCCEEW	NSW Department of Climate Change, Energy, the Environment and Water, formerly Water Infrastructure NSW
the Regulation	Environmental Planning and Assessment Regulation 2021 (NSW)
SDLAM	Sustainable diversion limit adjustment mechanism
SEARs	Secretary's environmental assessment requirements
SEPP	State environmental planning policy
SIA	Social Impact Assessment
SSAL	State Significant Agricultural Land

# Contents

<b>1. Introduction</b>	<b>1</b>
1.1 Overview	1
1.2 Purpose and scope of this report	1
1.3 Structure of this report	1
1.4 Summary of the proposal	3
1.4.1 Location	3
1.4.2 Key features of the proposal	3
1.4.3 Timing	7
1.4.4 Operation	7
1.5 Secretary's environmental assessment requirements	7
1.6 Assumptions	8
<b>2. Assessment approach and methodology</b>	<b>9</b>
2.1 Legislative and policy context to the assessment	9
2.2 Methodology	9
2.2.1 Study area	9
2.2.2 Scope of work	9
<b>3. Existing environment</b>	<b>10</b>
3.1 Climate	10
3.2 Land use	10
3.2.1 Land use in the area	10
3.2.2 Land use zoning	14
3.2.3 Land and soil capability classes	17
3.2.4 Strategic agricultural land	20
3.2.5 Current agricultural enterprises within the regional study area	21
3.3 Non-agricultural land uses	22
3.3.1 Urban and non-agricultural land uses	22
3.3.2 Crown land	23
3.3.3 Travelling stock reserves	23
3.3.4 Aboriginal Land Claims and Native Title	25
<b>4. Impact assessment</b>	<b>26</b>
4.1 Construction impacts	26
4.1.1 General land use impacts	26
4.1.2 Agricultural land use impacts	26
4.1.3 Non-agricultural land use impacts	31
4.2 Operational impacts	32
4.2.1 General land use impacts	32
4.2.2 Agricultural land use impacts	32
4.2.3 Non-agricultural land use impacts	34
4.3 Cumulative impacts	34
<b>5. Mitigation and management of impacts</b>	<b>35</b>
<b>6. Conclusions</b>	<b>37</b>
<b>7. References</b>	<b>38</b>

## Table index

Table 1.1	Standard construction hours	7
Table 1.2	Relevant SEARs	7
Table 3.1	Land use for regional study area and proposal site	11
Table 3.2	Land use zoning for regional study area and proposal site	14
Table 3.3	Land and soil capability	17
Table 3.4	Land and soil capability for regional study area and proposal site	18
Table 3.5	Major crops within the regional study area – approximate area (ha)	21
Table 3.6	Livestock numbers for the regional study area	21
Table 3.7	Gross value of agricultural production in the regional study area	22
Table 3.8	Crown land within the proposal site	23
Table 3.9	Travelling stock reserves within proposal site	23
Table 4.1	Impacts on agriculture – Hartwood regulator	27
Table 4.2	Impacts on agriculture – Wanganella regulator	28
Table 4.3	Construction impacts	29
Table 4.4	Impacts on Crown Land not reserved as a travelling stock reserve	31
Table 4.5	Operation impacts	33
Table 5.1	Land use mitigation and management measures	35

## Figure index

Figure 1.1	Location of the proposal	2
Figure 1.2	Indicative layout of a regulator	3
Figure 1.3	Location of Hartwood Regulator and proposed works	5
Figure 1.4	Location of Wanganella Regulator and proposed works	6
Figure 3.1	Climate Statistics for Deniliquin	10
Figure 3.2	Land use Hartwood	12
Figure 3.3	Land use Wanganella	13
Figure 3.4	Land zoning Hartwood	15
Figure 3.5	Land zoning - Wanganella	16
Figure 3.6	Land and Soil Capability for the regional study area	19
Figure 3.7	Draft SSAL mapping adjacent to the Hartwood Regulator (left) and the Wanganella Regulator (right)	20
Figure 3.8	Travelling stock reserves and Crown Land	24

# 1. Introduction

## 1.1 Overview

NSW 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 demolished are Hartwood Weir and Wanganella Weir. These structures are situated on Billabong Creek within the Yanco Creek system in south-west NSW (refer Figure 1.1).

These weirs were built in the early 20th century and have been used to regulate flows through Billabong Creek, create weirs pools for irrigation and, in the case of Wanganella Weir, provide town water supply. The weirs are currently in states of declining condition and functionality, and are barriers to the movement of fish through the creek. Their condition limits their ability to regulate flows through the Yanco Creek system and leads to inefficiencies in how water is delivered to the environment and irrigators.

The new regulators would be fully automated and remotely operated meaning that operators could control the delivery of water more efficiently. The proposal is needed to improve the operator's ability to deliver the right amount of water to the right place at the right time. The new regulators would also feature fishways to support fish movement past the new structures. WaterNSW would own and operate the new regulators once constructed

The proposal is subject to environmental and planning approvals in accordance with the *NSW Environmental Planning and Assessment Act 1979* (EP&A Act) and the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The proposal is State significant infrastructure (SSI), and the Minister for Planning is the approval authority. An environmental impact statement (EIS) is required to accompany the application for approval of the proposal.

## 1.2 Purpose and scope of this report

This report has been prepared by GHD Pty Ltd (GHD) as part of the EIS for the proposal. The EIS has been prepared to accompany the application for approval of the proposal and addresses the Secretary's Environmental Assessment Requirements (the SEARs), issued on 17 October 2024.

The purpose of this report is to assess potential Land Use issues from the construction and operation of the proposal, and where required, identify feasible and reasonable mitigation and management measures. Given the rural and regional location of the proposal, this report also considers the impacts on other land uses including agriculture. The agricultural component of this report has been prepared in accordance with the guidelines and notes listed in section 2 below.

GHD completed a desktop assessment of the land use impacts of the proposal at both construction and operations stages in accordance with the requirements of the SEARs. Consultation with agencies and adjacent landholders to inform this assessment was undertaken by other specialists.

## 1.3 Structure of this report

The report is structured as follows:

- section 1 – provides an introduction to the proposal and the assessment
- section 2 – describes the methodology for the assessment
- section 3 – describes the existing conditions
- section 4 – assesses the predicted impacts of the construction and operation of the proposal
- section 5 – provides mitigation measures for the impacts identified
- section 6 – conclusion.



## 1.4 Summary of the proposal

### 1.4.1 Location

The proposal is located on Billabong Creek, which is part of the Yanco Creek system in south-west New South Wales (NSW). The Yanco Creek system forms a part of the Murray-Darling Basin. An overview of the location of the proposal is shown in Figure 1.1. The proposal is located within the local government area (LGA) of Edward River.

### 1.4.2 Key features of the proposal

As discussed in section 1.1, the proposal involves replacing two existing weirs along Billabong Creek with new regulators including fishways.

The core structure of the two proposed regulators is similar to the existing weirs and would include:

- concrete piers with maintenance bulkhead slots
- automated layflat gates across the crest of the structure to assist with flow management and downstream fish passage
- a low turbulence ‘keyhole’ type vertical slot fishway with allowances for variable headwater to provide upstream fish passage
- automated sidewinder gates within the vertical slot fishway to allow for variable headwater conditions
- fixed concrete crests on the opposite side of the gates to the vertical slot fishway
- concrete apron downstream of the structure
- concrete wingwalls upstream and downstream of the structure
- access from a trafficable deck for maintenance (Hartwood Regulator only)
- pedestrian walkway access part way across Wanganella Regulator structure to facilitate housing of gate actuators and for maintenance
- walkway grating over gates to facilitate operations and maintenance
- crushed rock maintenance pads, access and turnaround areas adjacent to the structure
- rip rap and rock beaching upstream and downstream of structure for erosion protection
- control house
- sheet pile cut-off walls beneath the structure
- fencing of the structures to prevent public access
- SCADA control system.

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

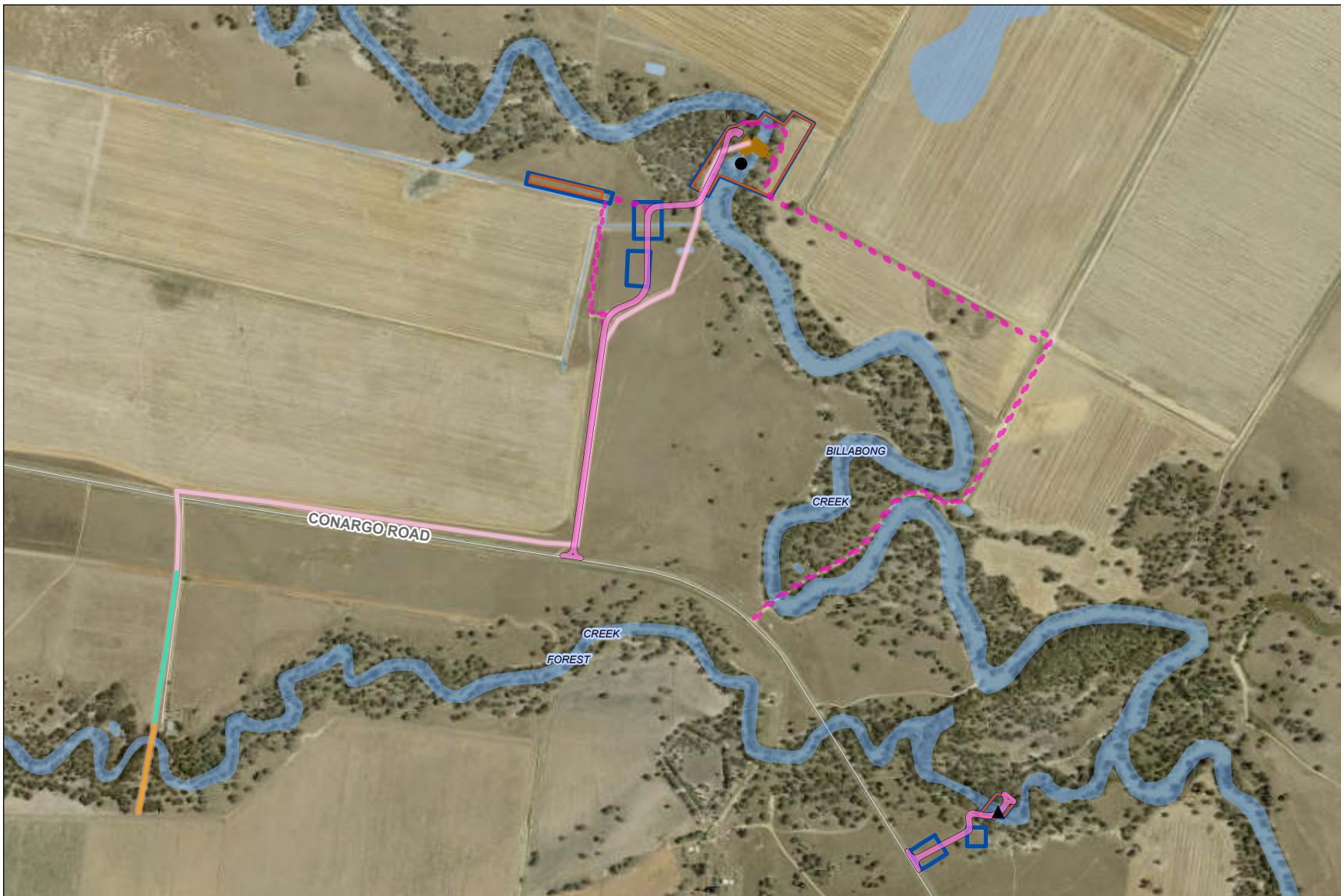


Figure 1.2 Indicative layout of a regulator

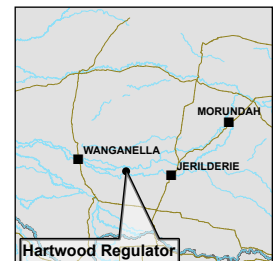
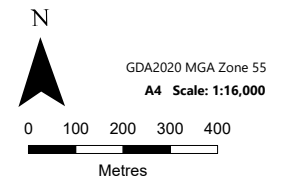
The proposal would also involve the following elements:

- 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, would be replaced with a similar earthen structure to the existing. This would include two concrete sills to define the upstream and downstream top of bank and armoured with rock beaching and crushed rock for erosion protection.
- A flood bypass channel would be constructed to reduce potential upstream flooding impacts from the Wanganella Regulator. The channel would enable flood waters to drain between the billabongs in the Wanganella Reserve during flood events. It would be 85 metres long, around 40 metres wide and 1.7 metres deep and located north of the Wanganella landfill. Once completed, the channel sides and base would be natural soil and vegetated with appropriate local native species.
- An existing borrow pit on private land at lot 56 / DP756322 on private land near Hartwood Weir would be extended to provide material for the construction of Hartwood Regulator and Forest Creek block bank.

The location of the existing weirs, proposed infrastructure, and the indicative proposal footprints are shown on Figure 1.3 and Figure 1.4.



- Proposal**
- Proposed Hartwood Regulator
  - Construction Activity Zone
  - Clearing Area
- Power Supply**
- Power Supply
  - Power Supply (Existing aboveground)
  - Power Supply (to run underground)
  - Power Supply Buffer
- Access tracks**
- Construction Only
  - Construction plus O&M
- Existing features**
- Existing Weir
  - ▲ Existing Block Bank
  - Main Road
  - Water Bodies

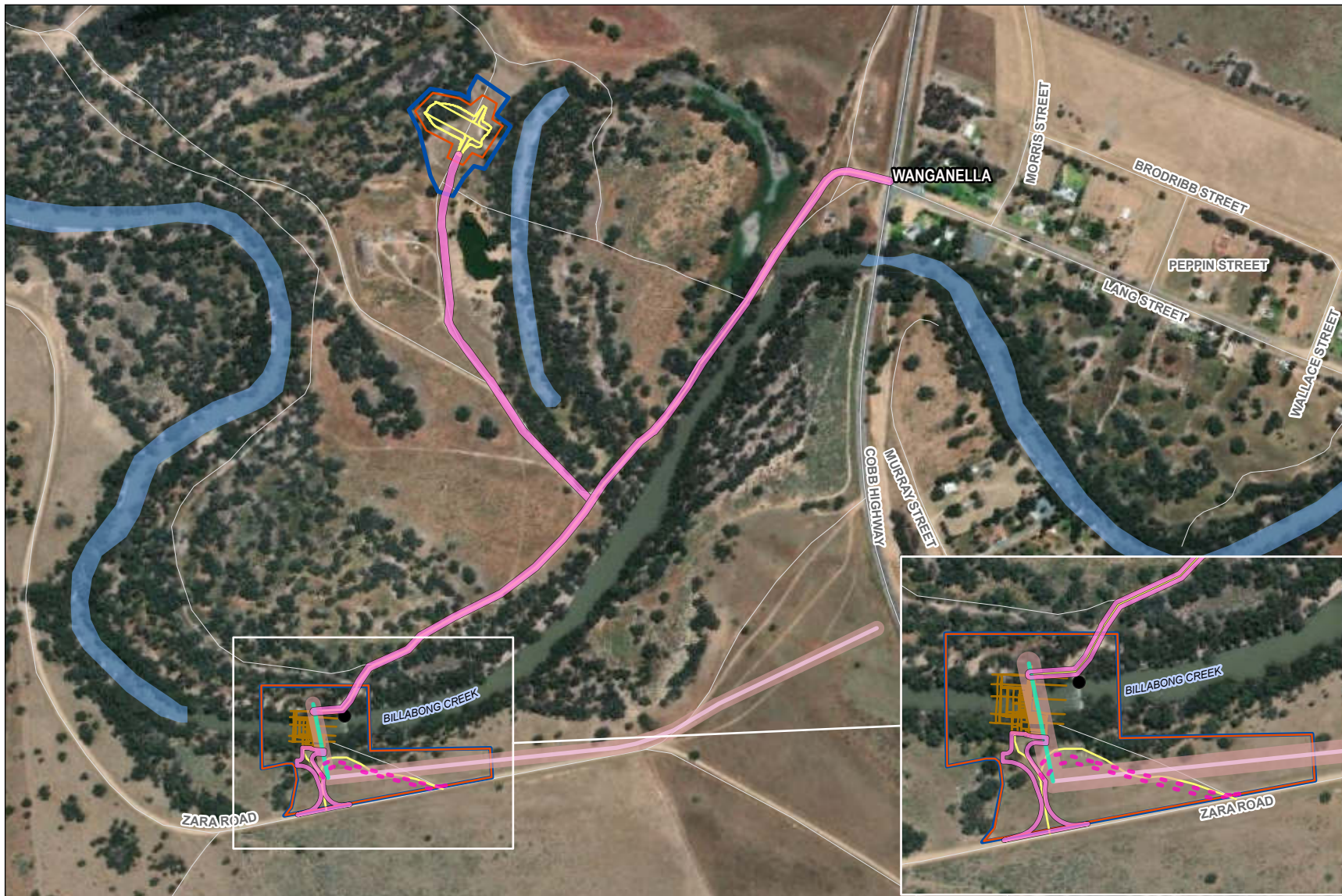


**Figure 1.3 Location of Hartwood Regulator and Proposed Works**

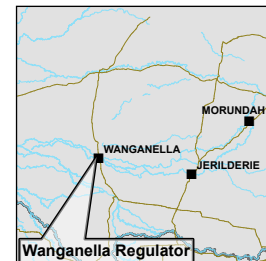
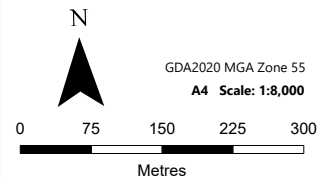


Produced by 3Rivers for the SDLAM Program.  
3Rivers does not warrant that this document is definitive  
nor free of errors and does not accept liability for any loss  
caused or arising from reliance upon  
information provided herein

© Department of Customer Service 2020.31/07/2024 11:16 AM schend  
\\G:\weflight\AU\Sydney\Projects\2112537654\GIS\Map\Deliverables\SDLAM\_Visor\12537654\_RFS\002\_@3rivers\_CIS.aprx



- Proposal**
- Proposed Wanganella Regulator
  - Wanganella Bypass Channel
  - Construction Activity Zone
  - Clearing Area
- Power Supply**
- Power Supply
  - Power Supply (Existing aboveground)
  - Power Supply (to run underground)
  - Power Supply Buffer
- Access tracks**
- Construction Only
  - Construction plus O&M
- Existing features**
- Existing Weir
  - Roads
  - Water Bodies



**Figure 1.4 Location of Wanganella Regulator and Proposed Works**



Produced by 3Rivers for the SDLAM Program.  
3Rivers does not warrant that this document is definitive  
nor free of errors and does not accept liability for any loss  
caused or arising from reliance upon  
information provided herein

Maxarc:31/07/2024 11:18 AM schend  
G:\Work\light\AU\Sydney\Projects\211253764\GIS\Map\Deliverables\SDLAM\_Visor\1253764\_4P5000\_01\wanganella\_CIS.aprx

### 1.4.3 Timing

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

Standard construction hours would be adopted in accordance with the *Interim Construction Noise Guideline* (ICNG) (DECC, 2009) as shown in Table 1.1. Most construction activities would be undertaken during this time.

Table 1.1 Standard construction hours

Day	Start time	Finish time
Monday to Friday	7.00 am	6.00 pm
Saturday	8.00 am	1.00 pm
Sundays and public holidays	No regular work	

Notwithstanding this, the *Interim Construction Noise Guideline* (DECC, 2009) acknowledges that the following activities may need to be undertaken outside the recommended construction hours:

- emergency work
- delivery of oversized plant or structures
- works for which it can be demonstrated that there is a need to operate outside the recommended standard hours.

### 1.4.4 Operation

The proposal would be operated in accordance with the operating requirements established with the new asset owner and developed in consultation with key stakeholders. These operating requirements are known as the Yanco Creek System Operations Plan. The plan would take into account the regulation requirements at each regulator, as well as constraints such as limits to rates of rise and fall to accommodate fish breeding requirements.

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

## 1.5 Secretary’s environmental assessment requirements

This Land Use assessment has been prepared to address the Secretary’s Environmental Assessment Requirements (SEARs). Table 1.2 outlines the requirements relevant to this assessment. The assessment also considers requirements raised by the Department of Primary Industries (Agriculture), WaterNSW and Crown Lands.

Table 1.2 Relevant SEARs

Requirements	Where addressed in this report
<b>Land Use (items 36-40)</b>	
36. Provide a comprehensive land use impact assessment, including clear identification of the lots affected during both construction and operation, all ongoing access arrangements, and any acquisitions and/or easements that may be required.	Section 4
37. Assess potential impacts to crown lands and waterways and provide evidence of consultation with DPE Crown Lands, inclusive of but not limited to any potential licences, acquisitions and easements.	Sections 3.3 and 4
38. Assess potential impacts to any Aboriginal Land Claims and Native Title interests relevant to the proposal.	Section 3.3.4

Requirements	Where addressed in this report
39. Identify areas of draft State Significant Agricultural Land on irrigated land identified adjacent to the area of the proposal and options for avoiding or mitigating any impacts on agricultural operations.	Sections 3.2.4 and 4
40. Assess potential biosecurity and emergency animal disease impacts on agricultural operations and protocols to be adopted for management and mitigation of impacts.	Sections 4 and 5

## 1.6 Assumptions

The following list outlines assumptions and limitations applying to the preparation of this Land Use assessment and should be kept in mind when interpreting the analysis in this assessment:

- Details of the proposal are current as of January 2024.
- The assessment was undertaken based on publicly available information and as a desktop assessment, consultation was undertaken as part of the Social Impact Assessment (SIA) and broader EIS process, and information and feedback provided by NSW DCCEEW. Direct inputs from landholders and local government were not available during preparation of the SIA due to stakeholder unavailability and complications arising from flooding events in October and November 2022. The assessment has drawn on the outcomes of previous consultation undertaken by NSW DCCEEW with these stakeholders to address this limitation.
- Census data is collected every five years, with the 2021 Census being released in phases. 2021 Census data including the Agricultural Census has been used to inform the existing environment chapter including the value and volume of agricultural production for the Edward River LGA.

## 2. Assessment approach and methodology

### 2.1 Legislative and policy context to the assessment

This section summarises the legislation, guidelines and/or policies driving the approach to the assessment. The SEARs issued in December 2022 and the three documents listed below appended by government agencies provide relevant legislation and guidance material references to assist in the preparation of this specialist assessment. With respect to the Land Use Assessment, the key policy documents guiding the assessment are:

**1. Infrastructure proposals on rural land (June 2013) NSW Department of Primary Industries**

This guideline is to help consent authorities to maintain sustainable primary production and development opportunities and minimise land use conflict when assessing infrastructure proposals affecting rural resource lands.

**2. Land Use Conflict Risk Assessment Guide (October 2011) NSW Department of Primary Industries**

Land Use Conflict Risk Assessment (LUCRA) is a system to identify and assess the potential for land use conflict to occur between neighbouring land uses. It helps land managers and consent authorities assess the possibility for and potential level of future land use conflict. This factsheet provides guidance on the practical measures to use when conducting a LUCRA to assist landholders, developers and regulators with improved knowledge to avoid and manage land use conflicts.

**3. Managing biosecurity risks in land use planning and development guide (October 2020), NSW Department of Primary Industries**

The guide outlines steps to be considered to ensure biosecurity is appropriately addressed during the planning and assessment of development proposals, including for proposals that may impact on agricultural enterprises or industries. In certain circumstances, this could also include ensuring biosecurity risks are appropriately considered and addressed during the construction and operational phase of a development.

The SEARs requirements relevant to land use and where these have been addressed in this report, are discussed in section 1.5.

## 2.2 Methodology

### 2.2.1 Study area

For the purposes of the assessment the construction footprint, operation footprint, and regional study area have been defined as follows:

- Proposal site – The proposal site is the footprint of the works and 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.
- Regional study area – the area investigated which includes the footprint of the proposal and surrounding area, with the potential to be directly or indirectly affected by the proposal. The area of investigation covered by this land use assessment comprises of the Edward River LGA which intersect the proposal.

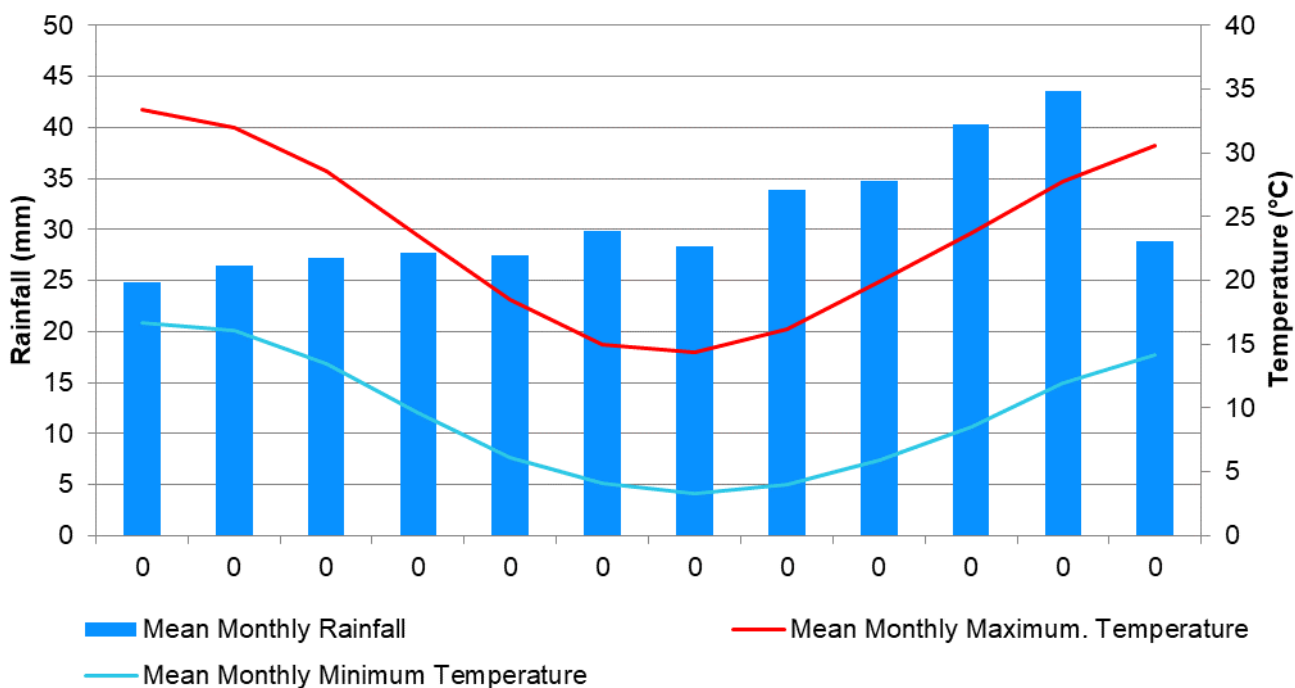
### 2.2.2 Scope of work

GHD completed a desktop assessment of the impacts of the proposal during both construction and operations stages on the current land use with the aim of addressing the desired SEARs. Consultation with agencies and adjacent landholders to inform this assessment was undertaken by other specialists.

### 3. Existing environment

#### 3.1 Climate

Climatic conditions have been analysed using information from Deniliquin airport data for the two weirs. This location was chosen based on the availability of current and historic climate data and because it represents the range of climatic extents across the proposal that have an influence on agricultural production. Long-term records are preferred as they provide information on rainfall and temperature patterns throughout the year that assist in understanding agricultural enterprise selection and production area. The south-west NSW region has a temperate climate. The temperatures are generally moderate and rainfall levels peak during late winter and throughout spring. The average monthly seasonal temperatures and rainfall are summarised below in Figure 3.1.



Source: BOM Deniliquin Airport AWS Station Number 074258

Figure 3.1 Climate Statistics for Deniliquin

#### 3.2 Land use

Land use mapping (2017) is available from NSW Department of Planning and Environment and captures how the landscape in NSW is being used for food production, forestry, nature conservation and urban development. The mapping shows land use occurring at the time the satellite imagery was acquired in September 2017 and the land use generally reflects the land and soil capability mapping as described in section 3.2.3.

##### 3.2.1 Land use in the area

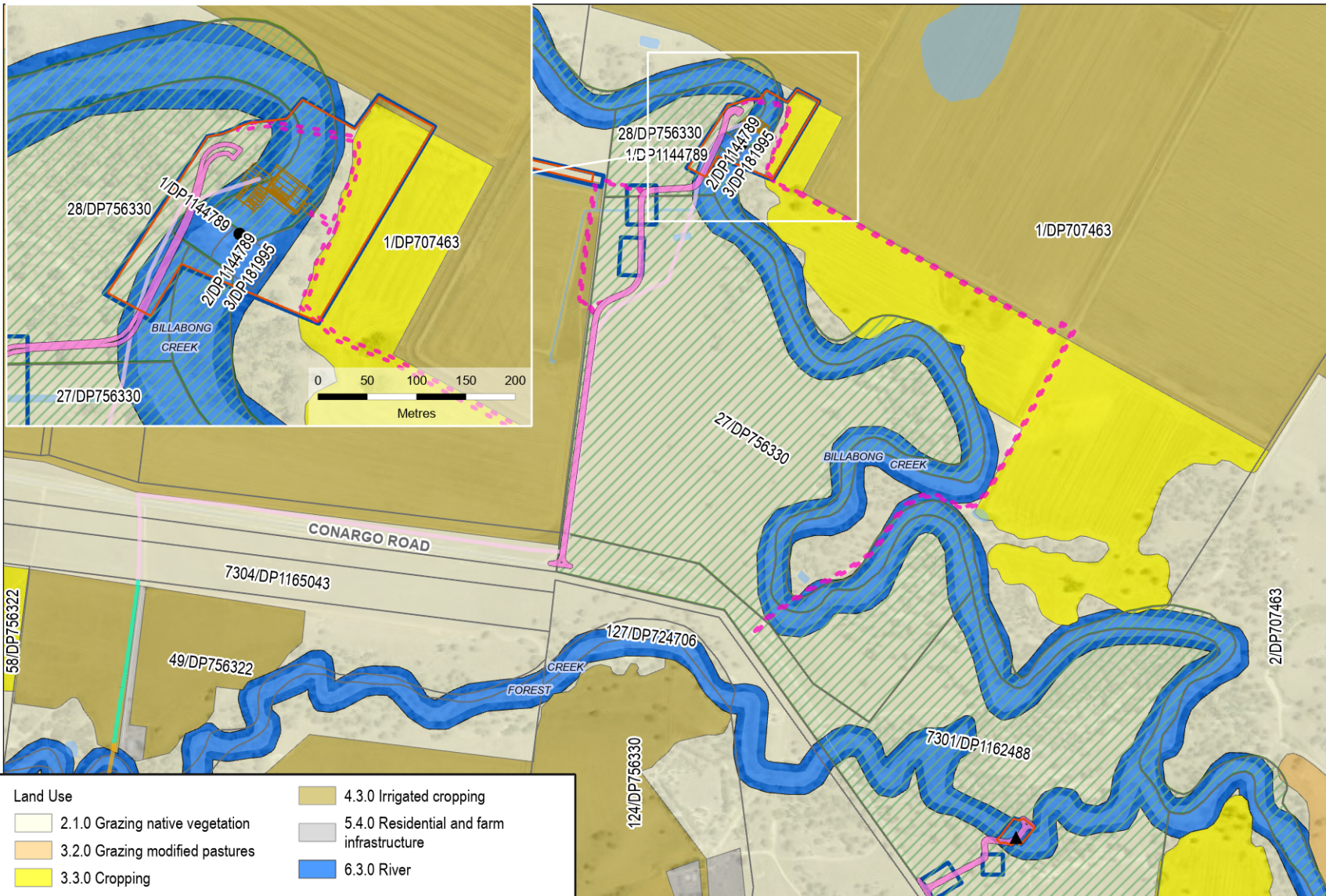
Table 3.1 summarises land use for the regional study area and the proposal footprints. Agricultural land covers approximately 94.6 per cent in the Edward River LGA with grazing native vegetation the largest land use accounting for almost 68 per cent followed by irrigated cropping (22 per cent), with smaller areas of grazing modified pastures (2.9 per cent) and rainfed cropping (2 per cent). Intensive animal production covers 486 hectares (0.1 per cent) and primarily relates to intensive pork production, both indoor and outdoor farming. The gross value of these enterprises are outlined in section 3.2.5.

Table 3.1 and Figure 3.2 and Figure 3.3 summarise land use in the regional study area and proposal sites based on the range of land use categories represented. The regional study area traverses predominantly grazing and irrigated cropping land use areas. Grazing land use occupies 625,381 hectares (70.4 per cent) and irrigated cropping occupies 194,441 hectares (21.9 per cent). The proposal study area during the construction phase impacts upon 15.08 hectares associated with the Hartwood regulator and 6.38 hectares associated with the Wanganella regulator. The Wanganella flood bypass channel is on land use classified as grazing native vegetation and the preliminary work areas for the Hartwood regulator temporarily impacts on cropping land, however avoids irrigated cropping land through using existing access tracks adjacent to the irrigated fields.

**Table 3.1** Land use for regional study area and proposal site

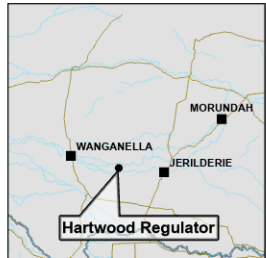
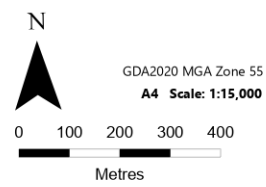
Main land use	Regional study area (ha) Edward River LGA	Percent of total Agricultural land Edward River LGA	Proposal site land use (ha)				% of proposal site's land type in Edward River LGA
			Hartwood	%	Wanganella	%	
1.0 Conservation and natural environments	7,248	0.8%					
2.1.0 Grazing native vegetation	599,770	67.5%	9.58	64%	5.11	80%	<0.01%
3.1.0 Plantation forests	40	<0.1%					
3.2.0 Grazing modified pastures	25,611	2.9%					
3.3.0 Cropping	18,211	2%	1.00	7%			<0.01%
3.4.0 Perennial horticulture	4	<0.1%					
4.2.0 Grazing irrigated modified pastures	1,842	<0.1%					
4.3.0 Irrigated cropping	194,441	21.9%	1.29	9%			<0.01%
4.4.0 Irrigated perennial horticulture	25	<0.1%					
4.5.0 Irrigated seasonal horticulture	19	<0.1%					
5.2.0 Intensive animal production	486	0.1%					
5.3-5.9 Residential, industrial, manufacturing, mining	6,479	0.7%	0.10	1%	0.02	0.31%	<0.01%
6.0 Reservoirs, rivers and wetlands	34,266	3.9%	3.11	21%	1.25	20%	<0.01%
<b>Total</b>	<b>888,442</b>	<b>100%</b>	<b>15.08</b>	<b>100%</b>	<b>6.38</b>	<b>100%</b>	<b>&lt;0.01%</b>

\* Numbers have been rounded to the nearest whole number



Land Use	
	2.1.0 Grazing native vegetation
	3.2.0 Grazing modified pastures
	3.3.0 Cropping
	4.3.0 Irrigated cropping
	5.4.0 Residential and farm infrastructure
	6.3.0 River

- Proposal**
- Proposed Hartwood Regulator
  - Construction Activity Zone
  - Clearing Area
- Power Supply**
- Power Supply
  - Power Supply (Existing aboveground)
  - Power Supply (to run underground)
- Access tracks**
- Construction Only
  - Construction plus O&M
- Existing Features**
- Existing Weir
  - Existing Block Bank
  - Main Road
  - Waterbodies
  - Crown Land
  - Lot

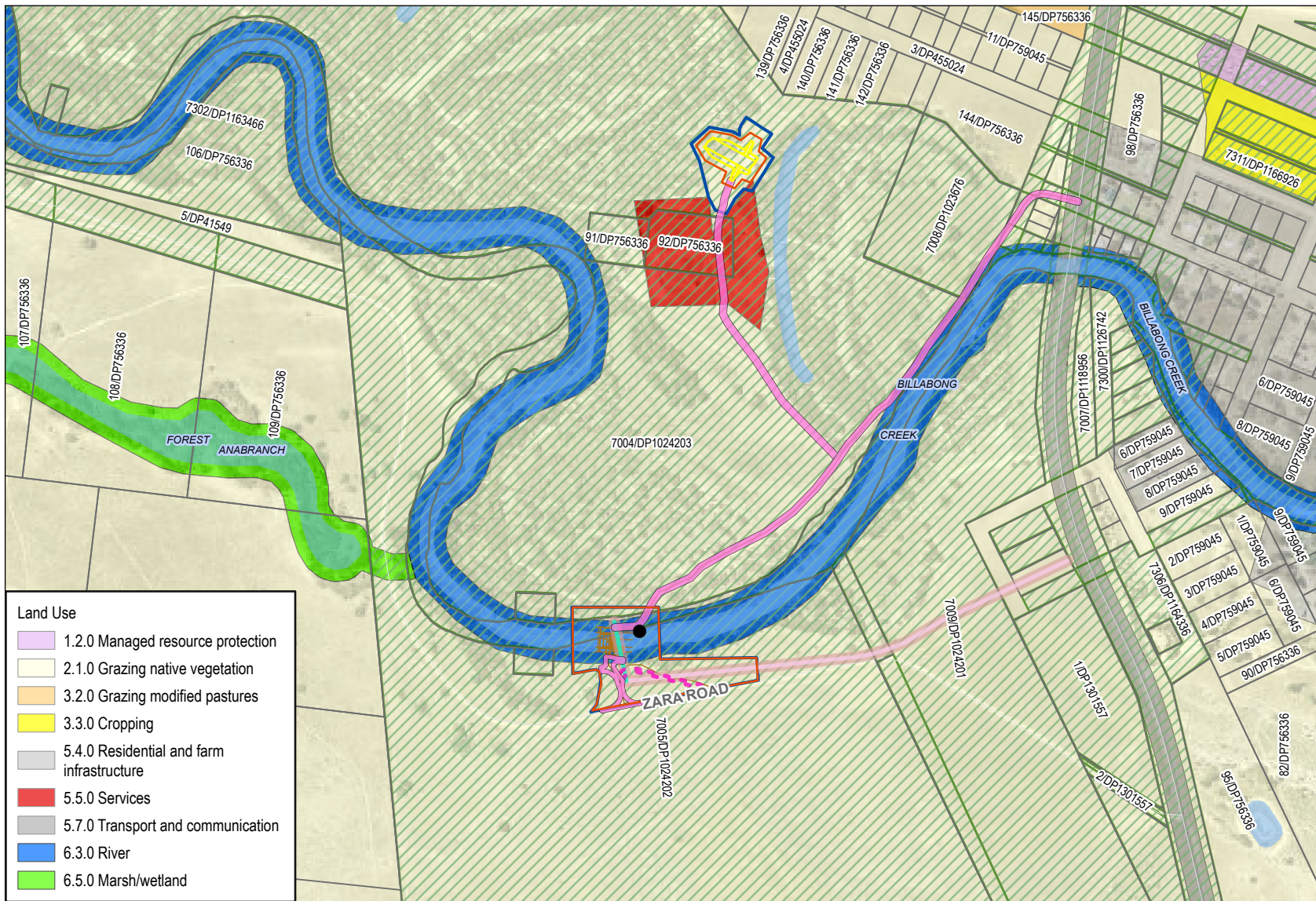


**Figure 3.2 Land Use - Hartwood**



Produced by 3Rivers for the SDLAM Program. 3Rivers does not warrant that this document is definitive nor free of errors and does not accept liability for any loss caused or arising from reliance upon information provided herein.

© Department of Customer Service 2020, 15/07/2024 3:23 PM schend, I:\Engineering\A4\Sydney\Projects\2\11232784\GIS\Map\Deliverables\SDLAM\_Variant1232784\_RP\0002\_Brochure\_EIS\_LandUse.aprx



### Proposal

- Proposed Wanganella Regulator
- Wanganella Bypass Channel
- Construction Activity Zone
- Clearing Area

### Power Supply

- Power Supply
- Power Supply (to run underground)
- Power Supply Buffer

### Access tracks

- Construction Only
- Construction plus O&M

### Existing Features

- Existing Weir
- Main Road
- Waterbodies
- Lot
- Crown Land

### Land Use

- 1.2.0 Managed resource protection
- 2.1.0 Grazing native vegetation
- 3.2.0 Grazing modified pastures
- 3.3.0 Cropping
- 5.4.0 Residential and farm infrastructure
- 5.5.0 Services
- 5.7.0 Transport and communication
- 6.3.0 River
- 6.5.0 Marsh/wetland

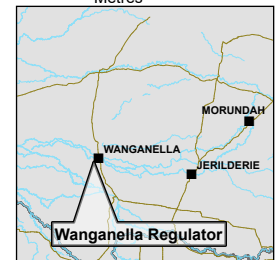
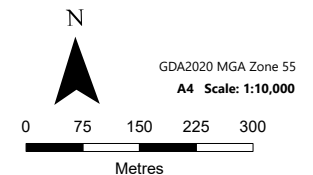


Figure 3.3 Land Use - Wanganella



Produced by 3Rivers for the SDLAM Program.  
3Rivers does not warrant that this document is definitive  
nor free of errors and does not accept liability for any loss  
caused or arising from reliance upon  
information provided herein

© Department of Customer Service 2020, 14/03/2024 6:30 PM schen4  
\\hs-hq\prod\GIS\sway\Projects\2023\2024\GIS\Map\Deliverables\SLAM\_Variant\2023\7564\_RFS\663\_Billabong\_ESD\_LandUse.aprx

## 3.2.2 Land use zoning

Currently three different Local Environment Plans (LEPs) are used within Edward River Council to regulate land use and development within the LGA. These are:

- Conargo Local Environmental Plan 2013
- Deniliquin Local Environmental Plan 2013
- Deniliquin Local Environmental Plan 1997.

The proposal site is located entirely within the Conargo LEP area.

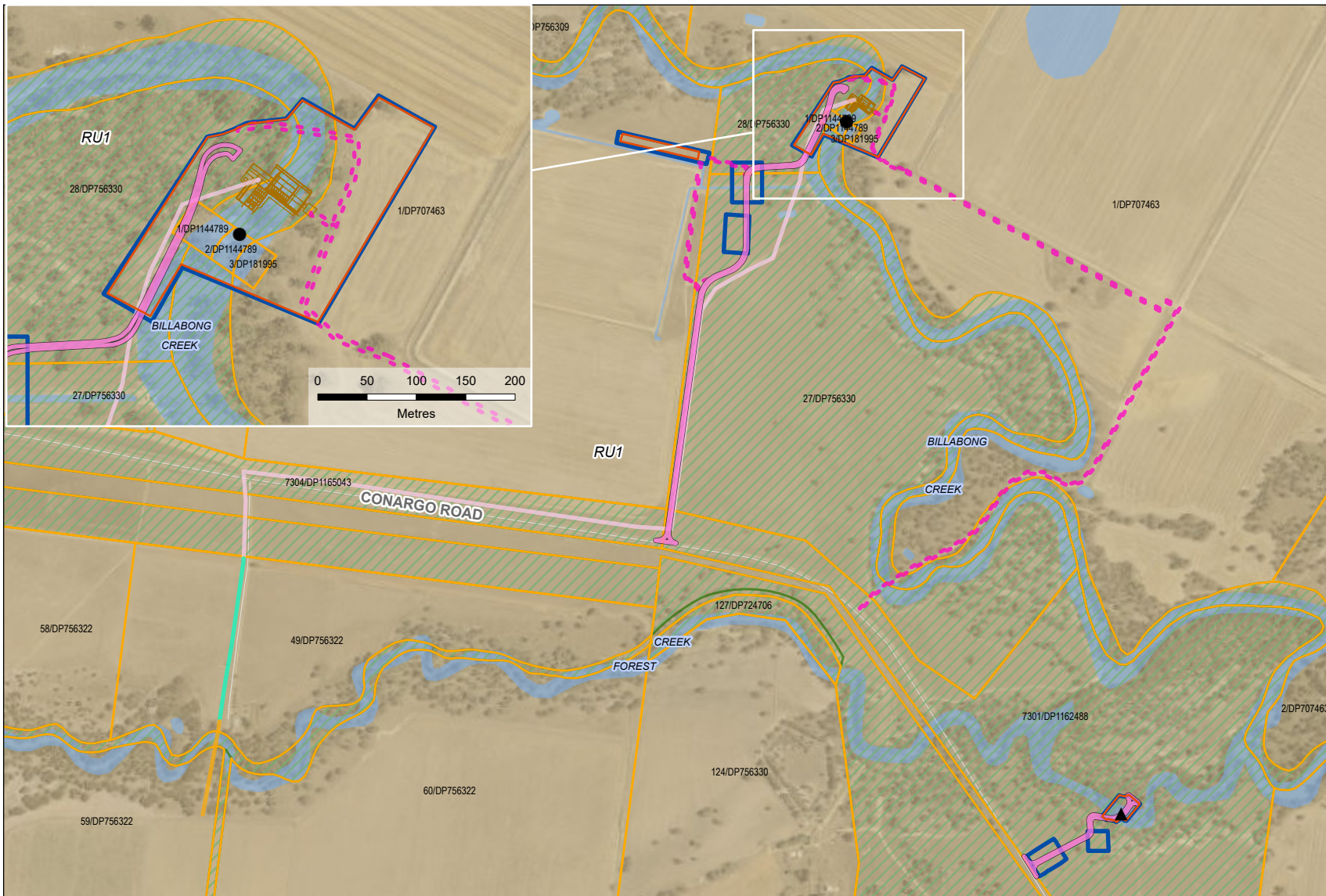
Within the LGA, the land is almost entirely zoned as RU1 Primary Production (98.9 per cent) with the objectives of this zone being:

- to encourage sustainable primary industry production by maintaining and enhancing the natural resource base
- to encourage diversity in primary industry enterprises and systems appropriate for the area
- to minimise the fragmentation and alienation of resource lands
- to minimise conflict between land uses within this zone and land uses within adjoining zones
- to allow the development of non-agricultural land uses that are compatible with the character of the zone.

Table 3.2 illustrates the land use zoning for the broader LGA with RU1 Primary production zone accounting for 98.8 per cent with the remaining area classified as a range of smaller use zones. The footprint for the proposed new regulators is located solely on land zoned as RU1 Primary Production (see also Figure 3.4 and Figure 3.5).

**Table 3.2** Land use zoning for regional study area and proposal site

Land use zoning	Total (ha)	(%)	Proposal site zoning (Conargo LEP)			
			Hartwood	(%)	Wanganella	(%)
RU1 – Primary Production	877,502	98.8%	15.08	100%	6.38	100%
C1 – National Parks and Nature Reserves	3,458	0.4%	-	-	-	-
C2 – Environmental Conservation	2,618	0.3%	-	-	-	-
R5 – Large Lot Residential	1,385	0.2%	-	-	-	-
E4 – General Industrial	889	0.1%	-	-	-	-
R1 – General Residential	632	0.1%	-	-	-	-
Other	1,956	0.2%	-	-	-	-
<b>Total</b>	<b>888,440</b>	<b>100.0%</b>	<b>15.08</b>	<b>100%</b>	<b>6.38</b>	<b>100%</b>



**Proposal**

- Proposed Hartwood Regulator
- Construction Activity Zone
- Clearing area

**Power Supply**

- Power Supply
- Power Supply (Existing aboveground)
- Power Supply (to run underground)

**Access tracks**

- Construction Only
- Construction plus O&M

**Existing features**

- Existing weir
- Existing block bank
- Main road
- Waterbodies

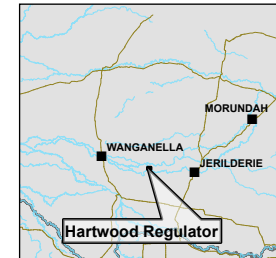
**Land Zoning**

- RU1, Primary Production
- Crown Land
- Lot

N

GDA2020 MGA Zone 55  
A4 Scale: 1:15,000

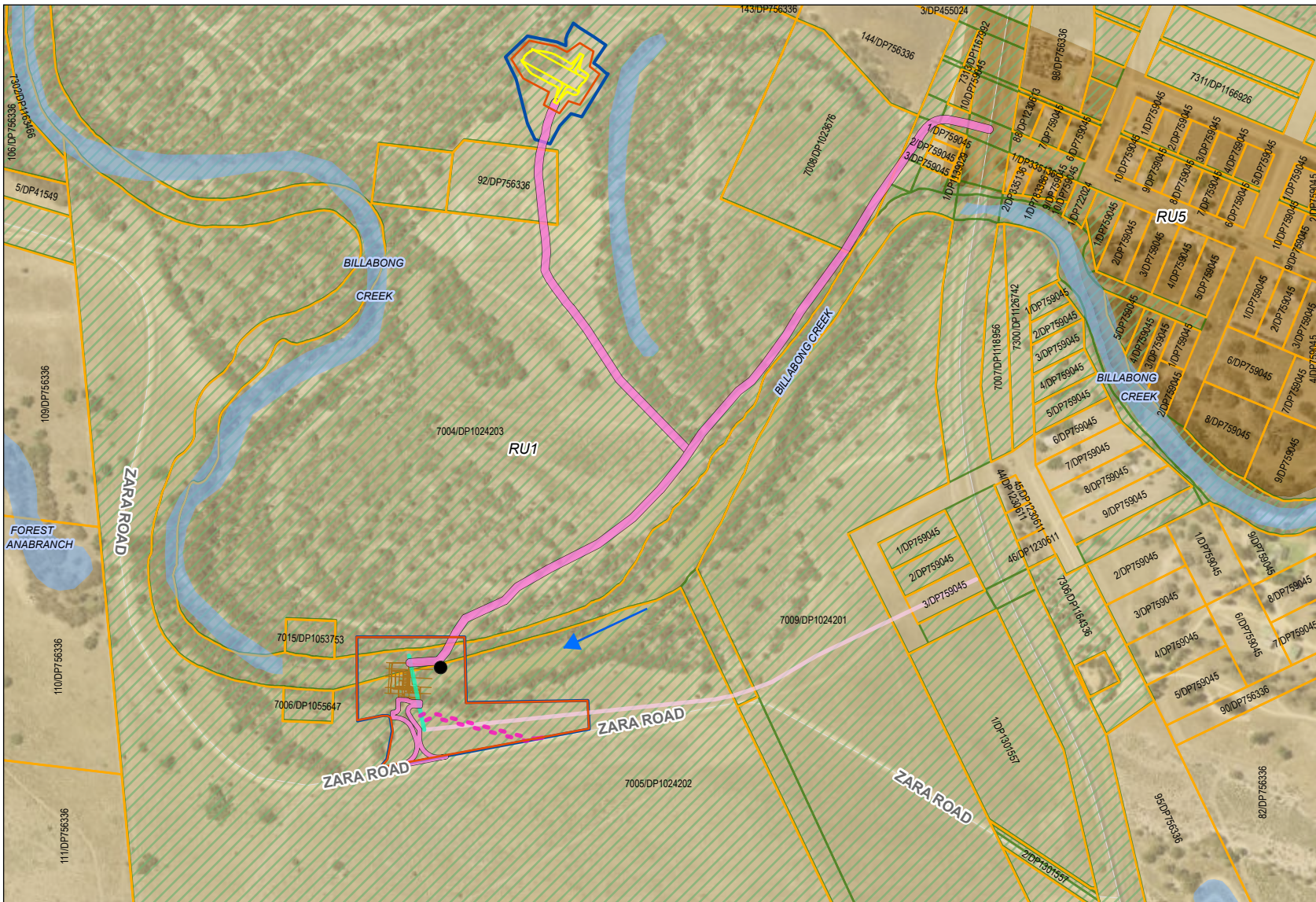
0 100 200 300 400  
Metres



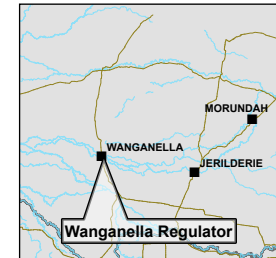
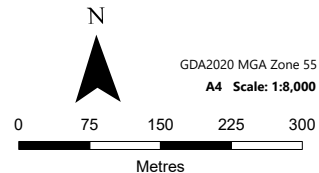
**Figure 3.4 Land Zoning - Hartwood**



Produced by 3Rivers for the SDLAM Program.  
3Rivers does not warrant that this document is definitive nor free of errors and does not accept liability for any loss caused or arising from reliance upon information provided herein.



- ### Proposal
- Proposed Wanganella Regulator
  - Wanganella Bypass Channel
  - Construction Activity Zone
  - Clearing Area
- ### Power Supply
- Power Supply
  - Power Supply (Existing aboveground)
  - Power Supply (to run underground)
- ### Access Tracks
- Construction Only
  - Construction plus O&M
- ### Existing Features
- Existing Weir
  - Main Road
  - Water Bodies
- ### Land Zoning
- RU1, Primary Production
  - RU5, Village
  - Crown Land
  - ➔ Flow Direction
  - Lot



**Figure 3.5 Land Zoning - Wanganella**



Produced by 3Rivers for the SDLAM Program.  
 3Rivers does not warrant that this document is definitive  
 nor free of errors and does not accept liability for any loss  
 caused or arising from reliance upon  
 information provided herein

### 3.2.3 Land and soil capability classes

Most agricultural enterprises depend on the local natural resource base that determines the sustainability of a location for a specific enterprise. There is a range of natural resources that need to be considered including soil type, topography, and climate and water availability. The land and soil capability assessment scheme uses the biophysical features of the land and soil including landform, slope gradient, drainage, climate and soil properties to provide a broad scale assessment of land capability. Land capability for agricultural production in the proposed developments is a function of a range of natural resource conditions including geomorphology, topography, vegetation and soils.

Land in NSW is commonly classified according to the capability of land to remain stable under particular land uses. Land capability systems classify land in terms of inherent physical characteristics or constraints and consider the optimum use of land rather than the maximum use and in general will not change over time. The 8-class classification is shown in Table 3.3 and shows that Class 1 to 3 are considered to be capable of being regularly cultivated while the remaining classes are not capable of being regularly cultivated and are suitable for grazing. It should be noted, however, that the adoption of nil-till or minimum till cropping technology can extend the capability of class 4 and above land as suitable for cultivation.

Table 3.3 Land and soil capability

Broad category	LSC Class	General definition
Land capable of being regularly cultivated and used for a wide variety of land uses (cropping, grazing, horticulture, forestry, nature conservation) (Slope <10%)	1	<b>Extremely high capability land:</b> Land has no limitations. No special land management practices required. Land capable of all rural land uses and land management practices.
	2	<b>Very high capability land:</b> Land has slight limitations. These can be managed by readily available, easily implemented management practices. Land is capable of most land uses and land management practices, including intensive cropping with cultivation.
	3	<b>High capability land:</b> Land has moderate limitations and is capable of sustaining high-impact land uses, such as cropping with cultivation, using more intensive, readily available and widely accepted management practices. However, careful management of limitations is required for cropping and intensive grazing to avoid land and environmental degradation.
Land capable of a variety of land uses (cropping with restricted cultivation, pasture cropping, grazing, some horticulture, forestry, nature conservation) (Slope 10%-20%)	4	<b>Moderate capability land:</b> Land has moderate to high limitations for high-impact land uses. Will restrict land management options for regular high-impact land uses such as cropping, high-intensity grazing and horticulture. These limitations can only be managed by specialised management practices with a high level of knowledge, expertise, inputs, investment and technology.
	5	<b>Moderate–low capability land:</b> Land has high limitations for high-impact land uses. Will largely restrict land use to grazing, some horticulture (orchards), forestry and nature conservation. The limitations need to be carefully managed to prevent long-term degradation.
Land capable for a limited set of land uses (grazing, forestry and nature conservation, some horticulture) (Slope 20%-33%)	6	<b>Low capability land:</b> Land has very high limitations for high-impact land uses. Land use restricted to low-impact land uses such as grazing, forestry and nature conservation. Careful management of limitations is required to prevent severe land and environmental degradation.
Land generally incapable of agricultural land use (selective forestry and nature conservation) (Slope > 33%)	7	<b>Very low capability land:</b> Land has severe limitations that restrict most land uses and generally cannot be overcome. On-site and off-site impacts of land management practices can be extremely severe if limitations not managed. There should be minimal disturbance of native vegetation.
	8	<b>Extremely low capability land:</b> Limitations are so severe that the land is incapable of sustaining any land use apart from nature conservation. There should be no disturbance of native vegetation.
Other	98	Rock and disturbed terrain
	99	Water

Table 3.4 and Figure 3.6 are the land and soil capability classifications for the regional study area and the proposal site. Across the regional study area:

- Classes 1, 2 and 8 do not occur
- Class 3 comprises 95,258 hectares (11 per cent of the total)
- Class 4 comprises 400,749 hectares (45 per cent)
- Class 5 comprises 327 hectares (22 per cent)
- Class 6 comprises 116,652 hectares (13 per cent)
- Class 7 comprises 2,098 hectares (0.2 per cent)

Based on the NSW land and soil capability assessment, the majority of the land is classified as moderate to high capability land which is capable of being regularly cultivated as per the definitions in Table 3.3. The land within the proposal footprint predominantly comprises of Class 4 and 5 land is generally representative of the broader land and soil capability across the regional study area.

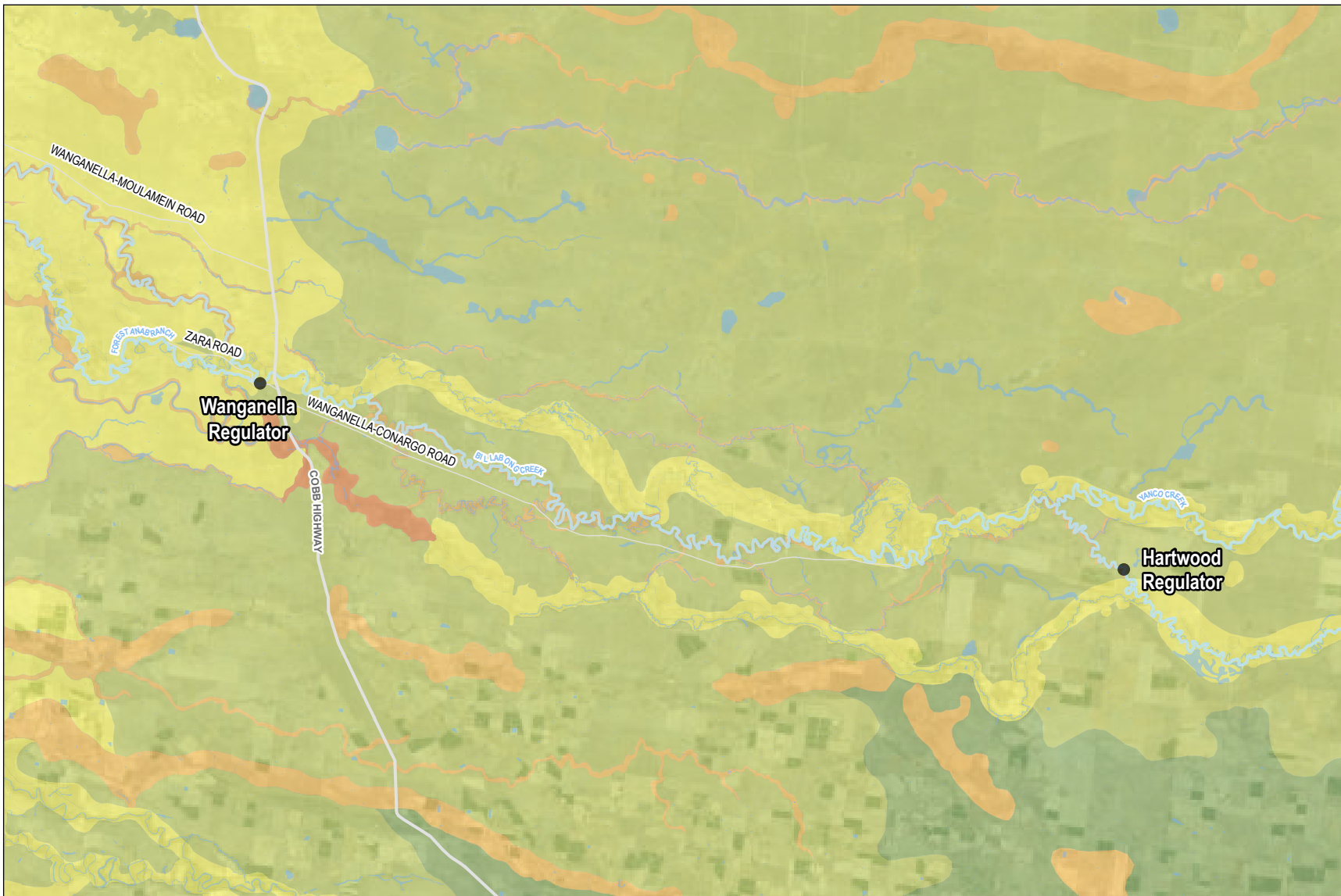
**Table 3.4** Land and soil capability for regional study area and proposal site

Land and soil capability class	Edward River LGA		Proposal site area (ha)			
	Area (ha)	(%)	Hartwood <sup>^</sup>	(%)	Wanganella <sup>^</sup>	(%)
3	95,258	11%	-	-	-	-
4	400,749	45%	5.18	70%	0.14	3%
5	273,684	31%	0.63	8%	4.21	97%
6	116,652	13%	1.61	22%	-	-
7	2,098	0.2%	-	-	-	-
<b>Total</b>	<b>888,442</b>	<b>100%</b>	<b>7.42</b>	<b>100%</b>	<b>4.34</b>	<b>100%</b>

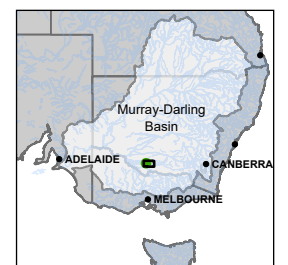
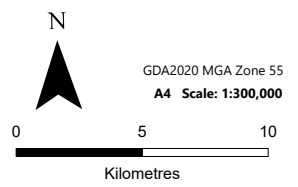
Source: NSW OEH (2012) Land and Soil Capability Mapping of NSW

<sup>^</sup>Table above does not include the areas for access tracks and power supply corridor.

\* Numbers have been rounded to the nearest whole number with the exception of any figures <1%.



- Existing Features**
- Existing Weir
  - Major Watercourse
  - Main Road
  - Water Bodies
- Land and Soil Capability**
- 3 - Moderate limitations
  - 4 - Moderate to severe limitations
  - 5 - Severe limitations
  - 6 - Very severe limitations
  - 7 - Extremely severe limitations
  - Crown Land



**Figure 3.6 Land And Soil Capability For The Regional Study Area**



Produced by 3Rivers for the SDLAM Program.  
3Rivers does not warrant that this document is definitive nor free of errors and does not accept liability for any loss caused or arising from reliance upon information provided herein

© Department of Customer Service 2020, Earthstar Geographics; 14/03/2024 5:17 PM vshend  
HighResInhd AUS/Sydney/Project/02112537654/GIS/Map/Cell/variables/SDLAM\_Vanoval12537654\_RFS/063\_Billing/ES\_LandUse.aprx

### 3.2.4 Strategic agricultural land

Strategic agricultural land is identified under the NSW Government’s Strategic Regional Land Use Policy (2012). Strategic agricultural land is highly productive land that has unique natural resource characteristics (such as soil and water resources) and socio-economic value (such as high productivity, infrastructure availability and access to markets). Two categories of strategic agricultural land have been identified by the NSW Government: critical industry clusters and biophysical strategic agricultural land. The NSW Department of Primary Industries has also identified a third category of State Significant Agricultural Land (SSAL) which has recently been on public exhibition.

#### State Significant Agricultural Land

State Significant Agricultural Land mapping will be used to identify where the State’s most important agricultural land is situated and will assist planning authorities to make decisions about agricultural land by understanding its value and contribution to regional economies.

The draft SSAL map is derived from existing statewide information where the most relevant characteristics related to the best agricultural lands are used. The biophysical attributes (biological and physical characteristics of land and climate) of SSAL represent the most capable, fertile and productive agricultural lands in the state, and support a variety of successful agricultural industries. SSAL mapping shows:

1. Land with certain biophysical attributes;
2. Irrigated Areas; and
3. State and Regionally Significant Farmland in the Mid and Far North Coast as identified in the Northern River Farmland Protection Project Final Recommendations, February 2005 and the Mid North Coast Farmland Mapping Project Final Recommendations Report 2008.

Figure 3.7 shows the location of mapped SSAL adjacent to the new regulators. Section 4 identifies potential impacts on these mapped areas from the construction and operation phases of the proposal, while section 5 outlines the proposed mitigation options to avoid impacts on agricultural operations.



Source: NSW DPI (2022) Draft State Significant Agricultural Land Map

Figure 3.7 Draft SSAL mapping adjacent to the Hartwood Regulator (left) and the Wanganella Regulator (right)

## Critical industry clusters

Critical industry clusters are concentrations of highly productive industries within a region that are related to each other, contribute to the identity of that region and provide significant employment opportunities. Two critical industry clusters exist in NSW – for equine and viticulture industries in the Upper Hunter region. The NSW Government has not identified any critical industry clusters within close proximity of the proposal site.

## Biophysical strategic agricultural land

Biophysical strategic agricultural land (BSAL) is land with high quality soil and water resources capable of sustaining high levels of productivity. A total of 2.8 million hectares of BSAL has been identified and mapped at a regional scale across the State by the NSW Government.

No BSAL land has been identified within the regional study area.

## 3.2.5 Current agricultural enterprises within the regional study area

The agricultural resources within the regional study area are described in the following sections.

### Agricultural production

As outlined in section 3.2.1, agricultural land use covers approximately 94.6 per cent of all land within the Edward River LGA. Table 3.5 below provides an overview of the major agricultural crops across the regional study area, with a total area of 60,160 hectares of wheat being the dominant crop followed by barley, canola and oats.

Table 3.5 Major crops within the regional study area – approximate area (ha)

Crop production	Total (ha)	(%)
Wheat	60,160	43
Oats	8,330	6
Barley	42,811	30
Rice	6,543	5
Canola	13,874	10
Other crops	8,705	5

Source: ABS (2022a) Agricultural Commodities Produced, Australia, 202-21, Estimates by Local Government Areas

The number of livestock establishments, livestock types and numbers within the regional study area is shown in Table 3.6. Sheep and lambs, followed by pigs and then beef cattle are the predominant livestock enterprises across the regional study area. The majority of cattle, sheep and goats are produced under extensive outdoor grazing production systems, though cattle and sheep may be 'finished off' in feedlots. The majority of pigs and poultry are produced under intensive indoor shed production systems.

Table 3.6 Livestock numbers for the regional study area

Livestock type	Total (no. of head)	No. of businesses
Cattle (beef)	33,838	132
Cattle (dairy)	10,005	19
Sheep and lambs	567,453	225
Pigs	36,598	13
Poultry (layers)	2,190	1

Source: ABS (2022a) Agricultural Commodities Produced, Australia, 202-21, Estimates by Local Government Areas

## Agricultural value

The annual gross value of agricultural production across the regional study area is \$326 million (Table 3.7). The majority of the value of production is from broadacre crops followed by livestock slaughtered (predominantly sheep, lambs and cattle). Sale of livestock products (mainly wool and milk) accounted for 13 per cent of the gross value of agricultural production.

Table 3.7 Gross value of agricultural production in the regional study area

Commodity	Gross value Edward River LGA (\$)	% of total
Broadacre crops	132,763,664	41%
Hay	17,900,691	5%
Nurseries, cut flowers or cultivated turf	13,980,690	4%
Fruit and nuts	8,252,679	3%
Vegetables	35,965,216	11%
Livestock products	43,930,968	13%
Livestock slaughtered and other disposals	73,501,523	23%
<b>Total Agricultural production</b>	<b>326,295,431</b>	<b>100%</b>

Source: ABS Agricultural Commodities Produced, Australia, 2021-22, Value of Agricultural Commodities Produced, Australia, 2020-21

## 3.3 Non-agricultural land uses

As outlined in section 3.2.1, the predominant land use within the vicinity of the proposed regulators is agricultural land or land zoned RU1 – Primary Production. Other land uses potentially relevant to the proposal are described below.

### 3.3.1 Urban and non-agricultural land uses

#### Hartwood regulators

The Hartwood regulators are located in an agricultural area with the nearest urban area, Conargo, being located about eight kilometres to the west of the proposal site. The nearest residential dwelling is located on agricultural land about 1.8 kilometres to the south of the Hartwood Regulator and 1.2 kilometres west of the Forest Creek Block bank.

#### Wanganella regulator

The Wanganella regulator is located in a predominately agricultural area, however it is located about one kilometre south-west of the Wanganella urban area. The proposed flood bypass channel is located about 500 metres west of the main street of Wanganella. The nearest residential dwellings are located about 500 metres from the flood bypass channel and about 870 metres west of the nearest residential dwelling which is positioned on an agricultural property.

The Wanganella Landfill is located adjacent to the flood bypass channel and is accessed from the Cobb Highway via an existing track, which is also proposed as an access track for the proposal. The landfill allows for the disposal of the following waste types:

- bricks
- concrete
- garden waste
- general household waste
- oil
- steel
- tyres.

### 3.3.2 Crown land

Table 3.8 outlines the Crown land which is located within the proposal site (see also Figure 3.8). The travelling stock reserves (TSR) outlined in Table 3.8 are discussed further in section 3.3.3.

**Table 3.8** *Crown land within the proposal site*

Regulator	Lot/DP	Reserve Number	Reserve Purpose	Crown licences
Hartwood	Lot 28 DP756330	R92577	Future public requirements	Grazing
	Lot 27 DP 756330	R30139	TSR	None
	Lot 7301 DP1162488	R30139	TSR	None
	Lot 7304 DP1165043	R987	TSR	None
Wanganella	Lot 7004 DP1024203	R88408	Preservation of Fauna/Public Recreation	None
	Lot 92 DP 756336	R88408	Not specified	None
	Lot 7009 DP 1024201	R58165	TSR	None

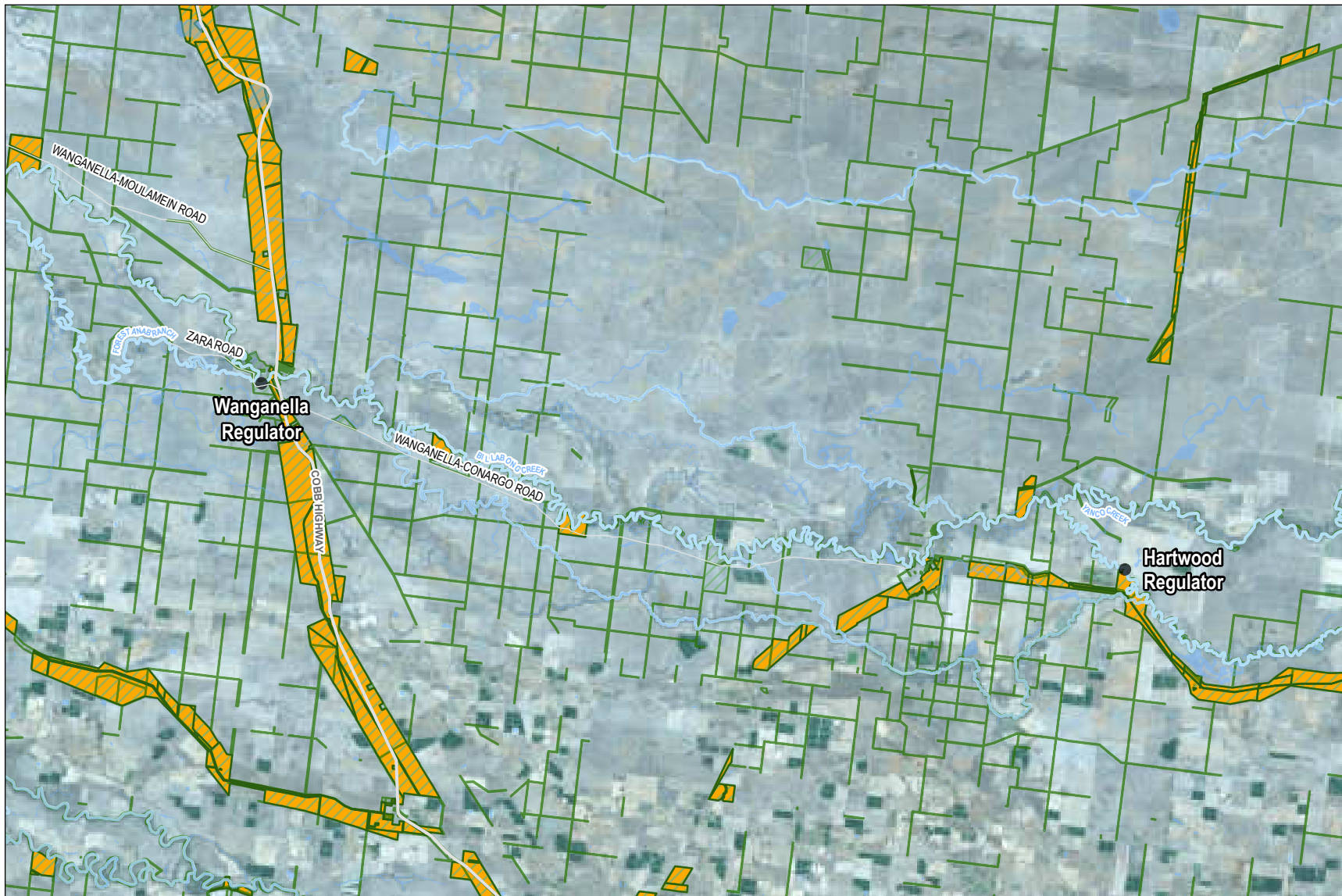
### 3.3.3 Travelling stock reserves

The proposal site is located within and adjacent to a number of travelling stock reserves (TSR) as described in Table 3.9. The location of these reserves is shown in Figure 3.8.

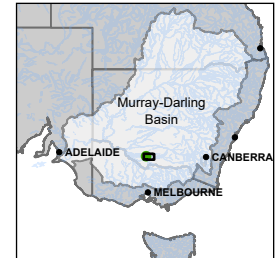
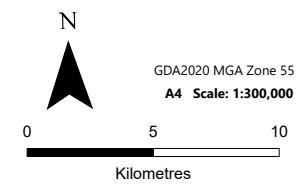
**Table 3.9** *Travelling stock reserves within proposal site*

TSR	Regulator	Location	Element of proposal
R30139	Hartwood	Along both sides of Conargo Road include expansion north to Billabong Creek in the vicinity of the proposal	Transmission line Contractor activity zone Construction and operational access Forest Creek block bank
R987	Hartwood	Along Conargo Road	Transmission line
R58165	Wanganella	Along Cobb Highway	Transmission line
R88643	Wanganella	West of Cobb Highway	Adjacent to construction and operational access

All TSRs located within or adjacent to the proposal site are Category 2 reserves which are used for travelling stock, emergency management or biosecurity purposes. They could also be used for other reasons such as biodiversity conservation, First Nations People's cultural heritage or recreational purposes.



- Existing Features**
- Existing Weir
  - Main Road
  - Major Watercourse
  - Waterbodies
  - Travelling Stock Reserves
  - Crown Land



**Figure 3.8 Travelling Stock Reserves And Crown Land**



Produced by 3Rivers for the SDLAM Program.  
 3Rivers does not warrant that this document is definitive  
 nor free of errors and does not accept liability for any loss  
 caused or arising from reliance upon  
 information provided herein

© Department of Customer Service 2020, 14/03/2024 6:22 PM schen4  
 full:\hd\gnd\AU\Sydney\Projects\2 112537654\GIS\Map\Deliverables\SDLAM\_Variant12537654\_RFS\603\_Bibliography\_FIG\_LandUse.aprx

## 3.3.4 Aboriginal Land Claims and Native Title

### NSW Aboriginal Land Claims

A search of the Land Claim Register managed by the Office of the Registrar *Aboriginal Land Rights Act 1983* (NSW) was completed. The following lots at each of the regulators are subject to at least one Aboriginal Land Claim (number of claims shown in brackets):

- Hartwood
  - Lot 28 DP756330 (2)
  - Lot 27 DP 756330 (1)
  - Lot 7301 DP1162488 (2)
  - Lot 7304 DP1165043 (2)
- Wanganella
  - Lot 7004 DP1024203 (1)
  - Lot 7009 DP 1024201 (3)
  - Lot 3 Section 23 DP 759045 (2) – noting that this is not Crown Land but adjacent lots are Crown Land.

All of the above Aboriginal Land Claims are currently under investigation by DPHI - Crown Lands and are yet to be determined.

### Native Title

A search of the national Native Title Tribunal's Native Title Vision was completed on 15 December 2023. No Native Title Claims apply to the land at Hartwood.

Works at Wanganella are located within an active claim area (VC2021/001) referred to as Wamba Wemba. While this application is active, it was not accepted for registration on two occasions in April 2022 and October 2022. As this has not been registered for the purposes of this assessment this claim has not been considered active, however mitigation is proposed to ensure further consideration is made in the event the claim is registered.

## 4. Impact assessment

The following sections outline the construction and operational impacts arising from the proposal and have been split into general land use impacts, agricultural land use impacts and non-agricultural land use impacts. Each section addresses the impact arising from the proposal and the implications for the respective land use. The impacts on each stage of the proposal are associated with:

- access tracks: construction and ongoing operations and maintenance
- preliminary work areas for construction activities (including borrow pit)
- regulator: construction of the two new regulators
- power supply corridor (combination of above and underground)
- Wanganella flood bypass channel
- Forest Creek block bank.

### 4.1 Construction impacts

#### 4.1.1 General land use impacts

Direct impacts on land use during construction would result from the permanent and temporary land requirements for the proposal and the short-term presence of construction equipment, plant, vehicles, compounds and work sites within the construction footprint. During construction, the use of this land would change from those uses described in section 3.2.1 to a construction site. Public access to this land (where it is currently available) would be restricted.

During the construction phase, approximately 21.46 hectares of land would be affected. The land that would be affected is currently used for:

- grazing native vegetation (14.69 hectares)
- cropping (1.02 hectares)
- irrigated cropping (1.29 hectares) – access tracks located on mapped irrigated cropping land, however utilise existing access tracks
- rivers (4.36 hectares) – this accounts for the new regulators and associated works located within the watercourses.

The majority of land affected by the proposal is zoned RU1 Primary production (21.46 hectares or approximately 0.001 per cent of RU1 zoned land within the LGA).

It is noted that land uses have been defined using NSW DCCEEW mapping, and land use zoning is based on LEP mapping. There may be some discrepancies between the two data sets, which generate small differences in total areas within some land use categories.

#### 4.1.2 Agricultural land use impacts

The following tables (Table 4.1 and Table 4.2) outline the lots which are located within the proposal site for the two new regulators. The table outlines the mapped land use (based on NSW DCCEEW mapping), the current land use of the site, the element of the proposal which will impact on the lot and the implications for agriculture at either the construction or operation phase. The locations of these lots are shown in Figure 3.2 and Figure 3.3 for Hartwood and Wanganella respectively. Table 4.1 outlines the impacts on agricultural production for Hartwood regulator. For Hartwood, the majority of the works are located on Crown Land and currently have very limited agricultural activities being undertaken. The proposal will result in the permanent removal of small areas of mapped agricultural land for the Hartwood regulator, flood bypass channel and access tracks for ongoing operations and maintenance. There will also be temporary impacts relating to access tracks for construction, preliminary work areas and the borrow pit. The proposal will not directly impact on irrigated cropping land and will not result in changes to the overall agricultural resource base of the region.

Table 4.1 Impacts on agriculture – Hartwood regulator

Lot/DP	Mapped land use	Current use	Element of proposal	Implications for agriculture
Lot 28 DP756330	Grazing native vegetation	Crown Land Future public requirements Crown licence for grazing	Construction and operational access Power supply corridor	<u>Construction</u> Temporary construction impacts arising from the power supply corridor (0.5 ha) and access track for construction. Following construction activities, routine agricultural operations should be able to continue. <u>Operation</u> Access tracks for ongoing operations and maintenance would result in the removal of 0.2 ha of grazing land.
Lot 1 DP707463	Cropping Irrigated cropping	Private land used for cropping and irrigated cropping	Construction access Preliminary work area	<u>Construction</u> Temporary removal of cropping land for preliminary work area (approx. 1.7 ha). Access required on existing formed tracks for construction access of approximately 1.03 ha. Any land only required temporarily would be undertaken under a formal lease arrangement. A licence to occupy would also potentially be required for any construction works for temporary access tracks of for contractor activity zone.
Lot 27 DP 756330	Grazing native vegetation	Crown Land TSR	Power supply corridor Preliminary work area Construction and operational access	<u>Construction and operation</u> This parcel of land would require a permanent access track (0.62 ha) to be constructed, a power supply corridor (2 ha) and temporary preliminary work areas for construction activities (1.3 ha)
Lot 56 DP756322	Irrigated cropping	Private land used for irrigated cropping	Construction access Borrow pit	<u>Construction</u> Construction access and borrow pit located on residual land not required for irrigated cropping. Borrow pit would result in the removal of 0.70 ha of agricultural land and a further 0.2 ha of land required for temporary construction access.
Lot 7301 DP1162488	Grazing native vegetation	Crown Land TSR	Construction and operational access Forest Creek block bank	<u>Construction and operation</u> Access tracks would be required for both construction and ongoing operations and maintenance and would result in the removal of 0.2 ha of grazing land. Proposed construction works areas would result in the temporary removal of 1.14 ha of grazing land.
Lot 7304 DP1165043	Grazing native vegetation	Reserve	Power supply corridor	<u>Construction</u> Temporary construction impacts arising from the power supply corridor (2.5 ha). Following construction activities, routine agricultural operations should be able to continue as per the current use of the road reserve.
Lot 49 DP756322	Residential and farm infrastructure	Private land used for cropping	Power supply corridor	<u>Construction</u> Temporary construction impacts arising from the power supply corridor (0.9 ha) with almost all underground. The land for the power supply corridor is currently mapped as Residential and farm infrastructure and will not impact on adjacent agricultural land.

Lot/DP	Mapped land use	Current use	Element of proposal	Implications for agriculture
Lot 59 DP756322	Irrigated cropping	Private land used for irrigated cropping	Power supply corridor	<u>Construction</u> Temporary construction impacts for existing above ground power supply. Will not impact on irrigated cropping

Table 4.2 outlines the impacts on agricultural production for Wanganella regulator and the respective areas impacted as a result of construction or operation activities. As outlined for Hartwood, the construction of the new Wanganella regulator will have a minimal impact on the overall agricultural resource base of the region as all the land required for the proposal is classified as Crown Land and there is very limited agricultural production currently occurring on these parcels.

**Table 4.2** *Impacts on agriculture – Wanganella regulator*

Lot/DP	Mapped land use	Current use	Element of proposal	Implications for agriculture
Lot 7004 DP1024203	Grazing native vegetation	Crown Land Preservation of Fauna/Public Recreation	Wanganella flood bypass channel Construction and operational access	<u>Construction and operation</u> Unclear if current land use has a crown license for grazing. Wanganella flood bypass channel would result in the temporary removal of 1.3 ha for construction activities and the permanent removal of 0.34 ha of land mapped as grazing native vegetation and approximately 0.22 ha of land required for access tracks for construction and operational purposes.  The construction and operation of the flood bypass channel being constructed would likely avoid additional impacts to Wanganella Landfill.
Lot 7005 DP1024202	Grazing native vegetation	Crown Land	Construction and operational access Power supply corridor	<u>Construction and operation</u> Power supply corridor will result in an easement of approximately 1.02 ha. Following construction activities, routine agricultural operations should be able to continue.
Lot 7009 DP 1024201	Grazing native vegetation	Crown Land TSR	Power supply corridor	The proposal would also result in the establishment of an access track for construction and operational purposes off the existing access road. This track would require the temporary removal of 0.1 ha of land and the operational access would result in the permanent removal of a further 0.1 ha of land mapped as grazing native vegetation.
Lot 92 DP 756336	Services	Crown Land and used as Wanganella Landfill	Construction and operational access	<u>Construction and operation</u> No implications as no change in existing land use.

The construction of the proposal is anticipated to start in 2025, and be completed by 2026. The regulators would be constructed during the dry season. The following impacts have been identified for the construction phase with the main impact associated with the temporary removal of land from agricultural production. During the construction phase, approximately 21.46 hectares of land would be affected with approximately 15 hectares classified as grazing native vegetation and it would have negligible impact on the value of production across the regional study area. Table 4.3 outlines the impacts on land use during construction, including those associated with non-agricultural land.

Table 4.3 Construction impacts

Issue	Potential impacts
<b>Impacts on agricultural land</b>	
Effects on agricultural land and production (including irrigated land)	<p>Land use change will occur within the proposal area as this land will be removed from agricultural production during construction. Hartwood regulator is predominately located on moderate and moderate-low capability land (Class 4 and 5) while Wanganella regulator is located on moderate-low capability land (Class 5). Land use for the new regulators is classified as grazing native vegetation which has historically been used for extensive livestock grazing. There is a small area of land mapped as cropping land associated with the preliminary work area for Hartwood regulator. An existing borrow pit near Hartwood Weir would be extended to provide material for the construction of Hartwood Regulator and Forest Creek block bank. This is situated on land classified as grazing native vegetation and land is already disturbed due to its previous use as a borrow pit. The sites would be rehabilitated and restored to previous conditions, as far as possible.</p> <p>The proposal also avoids any land mapped as draft SSAL and uses existing access tracks, a new track would be constructed to provide access to the eastern side of Hartwood Regulator and new culvert installed where it crosses an irrigation channel used for farming.</p> <p>Soil and/or surface/groundwater resources are compromised by construction and operation activities. The new regulators will require power supply to be provided by a mix of underground and overhead electricity cables connecting the structures to the grid. Where the power supply is underground, reinstatement of agricultural land will need to commence progressively and would need to be re-profiled to original contours and soil amelioration, fertiliser and new seed to be evenly dispersed over the disturbed area.</p>
Interrupted management	<p>Construction activities (including heavy construction vehicles/ equipment) could damage internal roads, crossings etc. and temporarily limit access throughout a property during construction. Construction activities may temporarily block access to land which is not otherwise directly associated with the proposal. Without mitigation, impacts could include inability to access areas for routine husbandry operations (e.g. crop spraying, harvesting), inability for livestock to graze pastures (including if water supplies are disrupted). Alternative access (if required) will need to be agreed with affected landholders to ensure continuous and uninterrupted access to other parcels of land not required for construction.</p>
Internal roads and load limits	<p>Heavy construction vehicles/ equipment could damage internal roads, crossings etc. and temporarily limit access throughout a property. Post construction settlement could interrupt traffic movement.</p> <p>Access to the proposal site is via a number of existing, unsealed roads and tracks. The access tracks require minimum width and height clearance for heavy machinery. Vegetation removal would be required to meet heavy machinery access requirements. After clearing, subgrades would be applied to any unsealed access tracks. Minor remediation works would also be undertaken. Unsealed tracks would then be capped with a layer of crush rock road base.</p> <p>None of the existing tracks would be sealed as part of the proposal, however, upgrades with crushed rock would be required for existing tracks. Access would be impacted during wet weather and have limited capacity. As such, construction vehicles would follow a strict communication protocol on single lane access tracks. It is also likely that dedicated turn out bays would be constructed for machinery movement on longer sections of single lane traffic.</p> <p>A Traffic Management Plan (TMP) would be prepared and will provide details of the traffic management to be implemented during construction to ensure that traffic flow on the surrounding network is maintained where possible.</p> <p>While there would be the generation of additional traffic, the impacts are considered to be temporary and manageable. Therefore, construction and operation activities should not impact on landholders being able to access their properties at critical times (e.g. planting, harvesting) which could negatively affect routine agricultural operations. Where possible the proposal uses existing roads adjacent to irrigated land and co-ordination with landholders will need to be confirmed during peak harvesting periods.</p>
Fences	<p>Construction activities may result in fences being temporarily cut and/or permanently realigned to improve access efficiency. Unless repaired or appropriately planned, cut fences could result in unintended livestock mixing which in turn could disrupt planned breeding programs, require added costs to muster and draft livestock.</p> <p>Fences with adjoining agricultural land would need to be maintained in a condition to minimise the possibility of livestock straying onto adjoining properties or non-agricultural land. The maintenance of shared boundary fencing between property owners is to be confirmed.</p>

Issue	Potential impacts
	<p>Access to all properties would need to be maintained at all times during construction of the proposal. As some access tracks go through private property, gates would need to be kept closed to prevent livestock from leaving their paddocks. The Contractor shall manage gate keeping especially on heavy truck movements for certain activities. Temporary cattle grids or boom gates may also be installed with landowner consultation.</p> <p>Prior to construction, boundary fencing associated with the new regulators would need to be undertaken to a stock proof standard (at a minimum).</p>
Dust	<p>During construction, there is the potential for impacts as a result of airborne particulate matter and dust deposition to settle on crops and pastures, however dust suppression protocols would reduce the occurrence and the impacts on production are likely to be minimal. Air quality within and surrounding the proposal is expected to be consistent with a typical rural environment dominated by cropping and grazing activities. Impacts from dust and other particulate matter are expected to be minimal due to distance of sensitive receivers from the new regulators.</p>
Noise and vibration	<p>Construction of the proposal might result in noise impacting on sensitive receivers. Both proposal sites are in isolated areas having a large separation distance from receivers and standard construction hours would be adopted in accordance with the Interim Construction Noise Guidelines. These impacts would be limited in their extent and duration given the short-term nature of construction at each site. Livestock generally become habituated to noise and although grazing patterns may be altered productivity is not affected.</p>
Groundwater, surface water and water supply	<p>Construction activities could damage water channels, culverts, pipelines, dams etc. thus restricting supplies for irrigation and/or livestock.</p> <p>A new track would be constructed to provide access to the eastern side of Hartwood Regulator. This would require installation of a culvert where the proposed access track crosses an irrigation channel used for farming.</p> <p>Construction activities at all locations have the potential to generate sediment during ground disturbance where erosion control is not implemented. Works near or within waterways and drainage lines therefore have the potential to cause sedimentation and higher turbidity in downstream ephemeral and permanent water bodies where present. A floating silt curtain would be installed downstream of each work area to capture any potential silt or debris mobilised from construction activities to minimise turbidity within the creek. In addition, silt fencing would be installed along the toe of the batters to prevent the flow of silt in the creek. Jute matting would also be placed on the batter to help reduce sediment transportation.</p>
Flooding	<p>Depending on the seasonality, frequency, extent and duration of the flooding could result in repairs to fencing, damage to machinery loss of productivity with the potential to cause erosion. The flow levels and changes have to be managed within the capacity of Billabong Creek in accordance with the design criteria of the proposal to manage maximum flows to avoid negative flooding impacts.</p>
Weed and pests (Biosecurity)	<p>Construction activities create the possibility of introducing or spreading weeds, pests and diseases onto or adjacent to the contractor activity zones. In addition, soil disturbance could reduce competition against current weeds and necessitate increased control costs.</p> <p>Weed, pest and disease incursions or proliferation will potentially reduce crop and livestock production and increase farm costs unless properly controlled.</p> <p>The proposal would result in the increased movement of vehicles and people to, around and within the proposal site during construction. The main biosecurity risk relates to the spread of weeds that may result from the increased movement of vehicles. Weed seeds could be transported through and within the site on clothing and via vehicle wheels and undercarriages.</p> <p>Under the <i>Biosecurity Act 2015</i> landholders have a legal obligation to manage identified priority weeds on land that they own or occupy and to fulfil their obligations in accordance with the General Biosecurity Duty. The General Biosecurity Duty under the Act provides a general obligation on people to be aware of their surroundings and take action to prevent the introduction and spread of pests, diseases, weeds and contaminants.</p> <p>Pesticides may be used to control weeds during construction and operation and should be applied in accordance with the <i>Pesticides Act 1999</i>, such that only registered pesticides are used based on label instructions and are designed to minimise impact on adjoining land.</p>
Movement of water away from agriculture	<p>Use of water during construction could reduce water availability for agriculture.</p> <p>The amount of water that would be required during construction is unknown at this stage. Water would be used for concrete pouring, compaction of work areas and access roads, and dust suppression. Water would be obtained from Billabong Creek.</p>

## 4.1.3 Non-agricultural land use impacts

### Urban land uses

The proposal would not result in any direct impacts to any urban land uses including residential properties. There is potential for some amenity impacts at Wanganella due to the proximity of the works to the village of Wanganella including some dwellings located on the outskirts of the village. These amenity impacts are assessed in the following assessments undertaken as part of the proposal:

- traffic and access impacts (EIS Chapter 15 and Appendix P Traffic and access impact assessment)
- noise and vibration impacts (EIS Chapter 16 and Appendix Q Noise and vibration impact assessment)
- visual amenity (EIS Chapter 17).

The Wanganella Landfill while not directly impacted by the proposal would share an access road with the proposal. This has the potential to impact on access to the landfill. Works would be undertaken to ensure access is maintained and that the community would be able to access the landfill at all times.

The proximity of the landfill to the works would make it a desired location for the disposal of waste. The material which can be disposed are limited and outlined in section 3.3.1. Due to the small scale of the landfill the use of this landfill by the proposal would potentially reduce its capacity and life span due to the relatively small community that it services. The proposal would not utilise the landfill for the disposal of any materials unless previously discussed with Edward River Council.

### Crown Land

The proposal would result in impact on a number of Crown Land parcels. Impacts on Crown Land reserved for TSRs are discussed further in section 3.3.3.

The proposal would also impact upon three parcels of Crown Land not reserved for TSRs. Impacts on these properties are outlined in Table 4.4.

**Table 4.4** Impacts on Crown Land not reserved as a travelling stock reserve

Regulator	Lot/DP	Reserve Number	Impacts
Hartwood	Lot 28 DP756330	R92577	The land is reserve for a public purpose with the proposal resulting in the establishment of a transmission line and temporary and permanent access tracks. The proposal is considered a public purpose and therefore results in the land being used for it intended purpose.  There is a Crown license in place which permits grazing and would potentially be impacted. Further consultation with the license holder is required to understand continued use of land for grazing.
Wanganella	Lot 7004 DP1024203	R88408	The land is reserved for the preservation of fauna/public recreation. The proposal would result in the establishment of the flood bypass channel and the establishment of temporary/permanent access tracks to the works areas. The proposal would result in some impacts on biodiversity within this lot and therefore potentially impact on some vegetation which his being protected. Overall the proposal is not considered to dramatically impact the use of this lot.
	Lot 92 DP 756336	R88408	This land has no specific use identified. The proposal includes a temporary/permanent access track on this lot and is not expected to impact the use of this Crown Land.

Acquisition of Crown land would be undertaken in consultation with the Department of Planning and Environment, and in accordance with the requirements of the *Crown Land Management Act 2016* (NSW) and the *Land Acquisition (Just Terms Compensation) Act 1991* (NSW). Any land only required temporarily would be undertaken under Lease from Crown Lands. A licence to occupy would also potentially be required for any construction works.

## Travelling stock reserves

For the TSRs which are to be impacted by the proposal (refer to Table 3.9) all would include construction works for permanent infrastructure. The works proposed during construction in these areas would be the establishment of access tracks and the construction of the required transmission lines.

During construction these construction works have the potential to impact upon the use of the relevant stock reserves. This would potentially include works occurring across the full width of the reserve and therefore potentially impacting on the ability to move stock along the reserves. Such impacts would be minimised with the implementation of mitigation measures.

## Aboriginal land claims and Native Title

### Aboriginal Land Claims

The proposal would result in works being located within Aboriginal Claims which are yet to be determined. DPI Water has commenced consultation activities with the claimants with all required approvals for works within claimed lands to be obtained by DPI Water.

### Native title

The physically large scale of the only existing Native Title Claim and its undetermined status (noting it has been rejected for registration), makes it difficult to assess the ultimate impact on this claim should it be registered and then determined. Any acquisition of non-alienated Crown lands would be subject to the 'future acts' provisions of the Native Title Act 1993 (Cth).

## 4.2 Operational impacts

### 4.2.1 General land use impacts

Direct impacts on land use during operation would result from the permanent land requirements for any permanent infrastructure required for the proposal.

About 10 hectares of land would be permanently affected by the proposal, comprising land that is mainly used for:

- operational footprint of the new regulators
- operational footprint of the Wanganella flood bypass channel
- power supply corridor (above and underground)
- access tracks for operations and maintenance purposes.

The majority of the land impacted is associated with the power supply corridor and this number likely overinflates the area of land required as the power supply corridor will be a combination of above and below ground and alignment has been carefully selected to follow boundary alignments. Operationally, the footprint also includes the new regulators which will be primarily located within Billabong Creek.

Crown land would be used for access and electricity transmission as well as the establishment of the Wanganella flood bypass channel. While it is not expected that the development will significantly impact the use of the crown land, detailed consideration of the travelling stock reserve should be considered.

If acquisition of Crown land would be required, it would be undertaken in consultation with the relevant Department, and in accordance with the requirements of the *Crown Land Management Act 2016* (NSW) and the *Land Acquisition (Just Terms Compensation) Act 1991* (NSW). Any land only required temporarily would be undertaken under Lease from Crown Lands. A licence to occupy would also potentially be required for any construction works.

### 4.2.2 Agricultural land use impacts

Table 4.5 outlines the issues for agricultural operations and the associated potential impacts.

Table 4.5 Operation impacts

Issue	Potential impacts
<b>Impacts on agricultural land</b>	
Removal of agricultural land from production	<p>Refer to construction impacts above. The proposal will temporarily remove approximately 10 ha of agricultural related land across the regional study area with approximately 7 ha on land mapped as being able to be used for extensive livestock grazing and of moderate to low land capability. Removal of this land from agricultural production would have negligible impact on the value of production across the regional study area.</p> <p>Following construction, the sites would be rehabilitated and restored to previous conditions, as far as possible.</p>
Access	<p>Access to the regulators will require permanent tracks for operation and maintenance. At Hartwood, a new track would be constructed to provide access to the eastern side of Hartwood Regulator. This would require installation of a culvert where the proposed access track crosses an irrigation channel used for farming.</p>
Fences	<p>During operation, fences with adjoining agricultural land would need to be maintained in a condition to minimise the possibility of livestock straying onto adjoining properties or non-agricultural land. The maintenance of shared boundary fencing between property owners to be confirmed and outlined in the lease agreement.</p>
Biosecurity	<p>Operation activities create the possibility of introducing or spreading weeds, pests and diseases onto or adjacent to the new regulators</p> <p>Weed, pest and disease incursions or proliferation will potentially reduce crop and livestock production and increase farm costs unless properly controlled. Weed and pest control, including for noxious weed and pests, would be subject to ongoing routine monitoring and management and consultation with relevant regulatory bodies as required.</p> <p>Under the <i>Biosecurity Act 2015</i> landholders have a legal obligation to manage identified priority weeds on land that they own or occupy and to fulfil their obligations in accordance with the General Biosecurity Duty.</p> <p>Pesticides may be used to control weeds during operation and should be applied in accordance with the <i>Pesticides Act 1999</i>, such that only registered pesticides are used based on label instructions and are designed to minimise impact on adjoining land.</p> <p>NSW DPI's <i>Managing biosecurity risks in land use planning and development guide</i> (DPI 2020) provides steps on how to mitigate potential biosecurity risks on site.</p>
Land Use Conflict	<p>Land use conflicts occur when one land use is perceived to infringe upon a neighbouring land use. In rural areas, land use conflicts commonly occur between agricultural and residential uses or non-agricultural land uses.</p> <p>Given the remote location of the new regulators and the mitigation measures proposed, the land use conflict is considered to be low.</p> <p>In addition, the NSW Government has developed a comprehensive, State-wide approach to deal with the issue of 'right to farm'. The concept of 'right to farm' has multiple facets but the common interpretation – and the one used in this policy - relates to a desire by farmers to undertake lawful agricultural practices without conflict or interference arising from complaints from neighbours and other land users.</p>
Flooding	<p>A flood bypass channel would be constructed to reduce potential upstream flooding impacts from the Wanganella Regulator. The channel would enable flood waters to drain between the billabongs in the Wanganella Reserve during flood events. It would be around 85 metres long, 40.0 metres wide and 1.7 metres deep and located north of the Wanganella landfill. Once completed the channel sides and base would be natural and vegetated with a local native grass species.</p> <p>For further information refer to the flooding assessment in the Hydrology and Flooding Technical Assessment. The proposal may result in some land being subject to additional inundation by the proposed works, however these areas are relatively minor and localised. The effects of these inundation areas are considered to be negligible and will be assessed as part of the broader Reconnecting River Country package of works.</p>
<b>Impacts on non-agricultural land uses</b>	
Impacts on mineral titles and applications	<p>Impacts on mineral titles and applications would be as described in Table 4.3 with operational impacts to be the same as described for the construction phase.</p>
Impacts on Crown Land	<p>Impacts on Crown Land would be as described in Table 4.3 with operational impacts to be the same as described for the construction phase.</p>

## 4.2.3 Non-agricultural land use impacts

### Urban land uses

The proposal is not expected to result in any impacts on any urban land uses including the Wanganella Landfill.

### Crown Land

Operation is not expected to have any other impacts on Crown land beyond those identified for construction (see section 4.1.3).

### Travelling stock reserves

Impacts on travelling stock reserves during operation are considered to be limited with the only a small number of proposal elements proposed to be permanent within the reserves.

The proposal would require the establishment of a permanent access track within reserve R30139 to maintain access to the new Hartwood Weir. The presence of such a track once established would not impact upon the use of the TSR as the tracks would not impede the movement of stock along the reserves. It would result in a slight reduction in grazing area which would be replaced by gravel however the available land within the reserve offsets the loss of this grazing space.

The proposal would require the establishment of transmission lines within reserves R30139 and R987 at Hartwood and in reserve R58165 at Wanganella. The establishment of transmission lines within these reserves would result in some permanent infrastructure being present within the stock reserves. This would be limited to transmission line poles where required. Where possible the positioning of poles in the reserves during detailed design would be avoided however due to the extent of the reserves in some locations poles are considered likely to be required. The positioning of poles is not expected to impact the use of the reserve with the area lost for the establishment of a pole unlikely to result in any notice reduction in space for the movement of livestock. Detailed design would however aim to minimise any inconveniences with the positioning of poles such as the creation of pinch points.

### Aboriginal land claims and Native Title

Impacts on Aboriginal land claims and any potential Native Title would be as described in section 4.1.3, though the amount of land to be impacted would be reduced and be limited to areas which are required for permanent infrastructure.

## 4.3 Cumulative impacts

The other projects planned in the study area were reviewed to determine if the proposal has the potential to result in significant cumulative impacts. No potential cumulative impacts relevant to land use and agriculture were identified. As such, no further cumulative assessment was conducted.

## 5. Mitigation and management of impacts

Table 5.1 lists the mitigation and management measures that would be implemented to manage potential impacts to land use identified in section 4.

Table 5.1 Land use mitigation and management measures

ID	Impact	Environmental safeguard	Responsibility	Timing
LU1	Biosecurity (Weeds and pathogen management)	<p>As part of the CEMP document weed and pathogen management should be documented. Measures must be auditable and linked to management outcomes such as:</p> <ul style="list-style-type: none"> <li>– 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.</li> <li>– 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.</li> <li>– Evaluate disturbed areas post-construction and implement rehabilitation in accordance with the appropriate safeguards.</li> <li>– 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. Plants used within waterways must be cleaned before exiting the site if working between multiple waterways.</li> </ul>	Contractor	Pre-construction, construction and operation
LU2	Land use and property impacts, including severance and other impacts on operations	<p>The design and construction planning will continue to be refined to minimise potential impacts on land uses and properties as far as reasonably practicable.</p> <p>Consultation with landholders will be ongoing to identify opportunities to minimise impacts on farming operations where practicable.</p> <p>Property owners and occupants will be consulted in accordance with the communication management plan for the proposal, to ensure that owners/occupants are informed about:</p> <ul style="list-style-type: none"> <li>– the timing and scope of activities in their area</li> <li>– any potential property impacts/changes, particularly in relation to potential impacts on access, services, or farm operational arrangements</li> <li>– activities that have the potential to impact on livestock.</li> </ul> <p>Feasible and reasonable property-specific measures will be identified in consultation with landholders, and implemented during construction, where construction is located on or immediately adjacent to private properties and has the potential to affect farm operational arrangements.</p>	Contractor	Pre-construction and construction

ID	Impact	Environmental safeguard	Responsibility	Timing
LU3	Native Title	Consultation with the claimants of Native Title Claim VC2021/001 will be undertaken to confirm any further plans to get the claim registered. In the event further attempts to register the claim are proposed consultation with the claimant will occur with regards to the proposed works within the claim area.	NSW DCCEEW	Pre-construction
LU4	Property acquisition and easements	All property acquisition and easements will be carried out in accordance with the <i>Land Acquisition (Just Terms Compensation) Act 1991</i> .	NSW DCCEEW	Pre-construction
LU5	Traffic and access	Landowners will be consulted about access arrangements.	Contractor	Prior to construction / construction
LU6	Reinstatement	Disturbed areas will be revegetated with endemic riparian and floodplain species (replacing like for like) to be undertaken as soon as practical, progressively. Rehabilitation at construction sites to include replacing topsoil. Mature trees removed from the construction footprint will be cut into appropriate sections and relocated adjacent to waterways. Existing woody debris will also be relocated. Any reinstatement plans in proximity to the proposal will be reviewed and approved by WaterNSW beforehand.	NSW DCCEEW	Construction
LU7	Wanganella Landfill	Access to the Wanganella Landfill is to be maintained at all times. Any loss of public access is to be notified to the community in advance with an alternate access to be provide where possible.	Contractor	Construction
LU8		Wanganella Landfill is not to be used for the disposal of waste without the prior approval from Edward River Council. It should also only be used for the disposal of materials agreed upon with Council.	Contractor	Construction
LU9	Travelling Stock Reserves	Access along the Travelling Stock Reserves is to be maintained at all times. Where access cannot be maintained, consultation with Local Land Services will be undertaken to confirm any requirements during any full closures of the reserve.	Contractor	Construction
LU10		Consultation with Local Land Services will be undertaken to confirm any specific requirements for works within a travelling stock reserve in relation to their use and any fencing or similar required during construction.	Contractor	Construction

## 6. Conclusions

NSW DCCEEW is proposing to replace two existing weirs along Billabong Creek with new regulators. The two existing weirs, Hartwood Weir and Wanganella Weir are situated on Billabong Creek within the Yanco Creek system and both will be demolished. These weirs were built in the early 20th century and have been used to regulate flows through Billabong Creek, create weirs pools for irrigation and, in the case of Wanganella Weir, provide town water supply.

The new regulators would be fully automated and remotely operated to deliver water more efficiently. The proposal is needed to improve the operator's ability to deliver the right amount of water to the right place at the right time. The new regulators would also feature fishways to support fish movement past the new structures.

GHD completed this assessment to assess potential Land Use issues from the construction and operation of the proposal, and where required, identify feasible and reasonable mitigation and management measures. Given the rural and regional location of the proposal, this report also considered the impacts on other land uses including agriculture. In addition to agriculture, potential impacts were assessed for urban land uses, Crown land, travelling stock reserves, irrigation channels and Aboriginal Land Claims and Native Title

GHD completed a desktop assessment of the impacts of the proposal during both construction and operations stages on the current land use with the aim of addressing the desired SEARs. Consultation with agencies and adjacent landholders to inform this assessment was undertaken by other specialists.

Direct impacts on land use during construction would result from the permanent and temporary land requirements for the proposal and the short-term presence of construction equipment, plant, vehicles, compounds and work sites within the construction footprint. During the construction phase, approximately 21.46 hectares of land would be affected (15.06 hectares associated with Hartwood regulator and 6.38 hectares associated with Wanganella regulator). The land that would be affected is predominantly used for extensive livestock grazing and smaller areas of cropping land. The proposal avoids irrigated agricultural land. The new regulators will be located within the Billabong Creek.

Operationally, the proposal would be operated in accordance with the operating requirements established with the new asset owner and developed in consultation with key stakeholders. These operating requirements are known as the Yanco Creek System Operating Plan. The operational footprint is considered to be small and access to the regulators will require permanent tracks for maintenance.

Crown land would be used for access and electricity transmission as well as the establishment of the Wanganella flood bypass channel. Acquisition of Crown land would be undertaken in consultation with the relevant Department, and in accordance with the requirements of the *Crown Land Management Act 2016* (NSW) and the *Land Acquisition (Just Terms Compensation) Act 1991* (NSW). Any land only required temporarily would be undertaken under Lease from Crown Lands. A licence to occupy would also potentially be required for any construction works on private land.

The most significant impact of the proposal on agricultural production is the temporary removal of the construction footprint from agricultural production during construction and subsequent impacts such as access and roads, dust, noise and vibration and biosecurity. Following rehabilitation of the construction footprint, normal agricultural production will be able to resume. The area of agricultural land required for operations is negligible.

The land use impacts and opportunities identified and assessed in this report will be managed and mitigated through a range of measures and strategies recommended in the body of the report.

As the weirs are currently in states of declining condition and functionality, and are barriers to the movement of fish through the creek, their condition limits their ability to regulate flows through the Yanco Creek system and leads to inefficiencies in how water is delivered to the environment and irrigators. The proposal would assist delivery of improved environmental outcomes compared to current conditions.

## 7. References

Australian Bureau of Statistics (ABS) (2022), 2021 Census Working Population Profile Edward River LGA

Australian Bureau of Statistics (ABS) (2022a), Agricultural Commodities, Australia–2020-21 - Agricultural commodity estimates by 2021 Local Government Areas (LGA)

Australian Bureau of Statistics (ABS) (2022b), Value of Agricultural Commodities Produced, Australia, 2020-21 - Gross and local value estimates by 2021 Local Government Areas (LGA)

NSW Department of Primary Industries, 2011, Land Use Conflict Risk Assessment Guide.

NSW Department of Primary Industries, 2013a, Agricultural Impact Statement Technical Notes.

NSW Department of Primary Industries, 2013b, Infrastructure proposals on rural lands

NSW Department of Primary Industries, 2022, Draft State Significant Agricultural Land Mappin



[ghd.com](http://ghd.com)

→ **The Power of Commitment**