

Yanga National Park Supply Project: Management Trail Works

Review of Environmental Factors

March 2025





Acknowledgement of Country

The NSW Department of Climate Change, Energy, the Environment and Water acknowledges that it stands on Aboriginal land. We acknowledge the Traditional Custodians of the land, and we show our respect for Elders past, present and emerging through thoughtful and collaborative approaches to our work, seeking to demonstrate our ongoing commitment to providing places in which Aboriginal people are included socially, culturally and economically.

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Yanga National Park Supply Project: Management Trail Works

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More information

Prepared by 3Rivers on behalf of the NSW Department of Climate Change, Energy, the Environment, and Water

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This review of environmental factors has been prepared in a template developed by NSW Department of Climate Change, Energy, the Environment and Water and the National Parks and Wildlife Service specifically for use in assessing the potential environmental impacts of works proposed as part of the Murray (Millewa Forest) and Murrumbidgee (Yanga National Park) Valley National Parks Sustainable Diversion Limit Adjustment Supply Measure Project. It combines key elements of the review of environmental factors templates of each respective organisation.

Declaration

This review of environmental factors (REF) has been prepared by 3Rivers, a joint venture between Jacobs Group (Australia) and GHD, on behalf of NSW Department of Climate Change, Energy, the Environment and Water. The REF has been prepared to satisfy the requirements of Division 5.1 of the *Environmental Planning and Assessment Act 1979*. The REF takes into account the environmental factors specified in the Guidelines for Division 5.1 Assessments (Department of Planning and Environment, 2022a).

The REF provides a true and fair assessment of the proposed repair, maintenance and upgrade of six existing management trails within and immediately adjacent to Yanga National Park (the 'Proposal'), in relation to its likely effects on the environment. It examines and takes into account to the fullest extent possible all matters affecting or likely to affect the environment as a result of the Proposal.

Based on the information provided in the REF, it is concluded that:

- (1) The Proposal is not likely to have a significant impact on the environment, and an environmental impact statement is not required.
- (2) The Proposal is not likely to significantly affect threatened species or ecological communities or their habitat or be carried out in a declared area of outstanding biodiversity value. A species impact statement is not required.
- (3) The Proposal is not likely to significantly affect any matters of national environmental significance, nor is the activity being carried out on or is it likely to impact Commonwealth land.

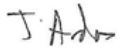
Based on the information presented in this REF, it is concluded that by adopting the safeguards identified in this assessment, it is unlikely that there would be significant adverse environmental impacts associated with the Proposal. Subject to the adoption of the safeguards to avoid, minimise or manage environmental impacts listed in this REF, the Proposal is recommended for approval.

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Date	7/03/2025

Certification

I, Julian Ardas, certify that I have reviewed this REF as a representative of the NSW Department of Climate Change, Energy, the Environment and Water and agree that, to the best of my knowledge, it accords with the *Environmental Planning and Assessment Act 1979* (EP&A Act), the Environmental Planning and Assessment Regulation 2021 (EP&A Regulation), and the Guidelines for Division 5.1 Assessments (DoE, 2022a) made under section 170 of the EP&A Regulation.

Signature:



Date: 06/01/2025

I, Jo Gorman, certify that I have reviewed this REF as a representative of the National Parks and Wildlife Service, and agree that, to the best of my knowledge, it accords with the EP&A Act, the EP&A Regulation, and the Guidelines for Division 5.1 Assessments (DoE, 2022a) made under section 170 of the EP&A Regulation.

Signature:



Date: 21/03/2025

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Executive Summary

NSW Department of Climate Change, Energy, the Environment and Water (the Department) are proposing to undertake repair, maintenance and upgrade works to existing management trails within and adjacent to the Yanga National Park in south-western NSW ('the Proposal'). The works are proposed to improve light and heavy vehicle access, including construction vehicle access requirements, for the Yanga National Park Supply Project ('Project'), as part of the Sustainable Diversion Limit Adjustment Mechanism (SDLAM) Program.

The proposed works would be carried out across six existing management trails, comprising up to approximately 20 km of trail network works, located between Murrumbidgee River in the west and Waugorah Road in the east. The trails are proposed to be utilised for construction related activities and will also be retained for ongoing operational access, primarily as a means for WaterNSW accessing the 1AS structure as well as for park operational land management purposes.

Depending on the existing condition of the management trails, the proposed works would involve regrading, compacting and laying of a geofabric membrane and crushed rock/gravel generally within the existing management trail footprint (approved corridor), passing bays, and trail drainage works (replacement of a pipe culvert, restoring the level of a trail levee and installation of two rock causeways).

The trails are primarily located on land reserved under Part 4 of the *National Parks and Wildlife Act 1974* (NPW Act), and managed by the NPWS, with the exception of Bronzewing Drive – Eastern Section (Trail ID04a) located on the adjoining Gayini (Nimmie-Caira) property, owned by the Nari Nari Tribal Council. A number of Crown roads declared under the *Roads Act 1993* traverse the Yanga National Park. The roads are not gazetted as part of the Yanga National Park. These roads intersect with discrete sections of management trails which are subject to works proposed under this REF, namely Bronzewing Drive, Redbank East Trail, Hamptons Bank Trail, River Trail and Steves Bank Trail.

Key details of the Proposal are provided in Table 1-1. A comprehensive description of the Proposal is provided in Section 3.

Table 1-1 Key details of the Proposal

Subject	Description
Description of Proposal	The Proposal includes repair, maintenance and upgrade works to six existing park management trails within and adjacent to the Yanga National Park, including regrading, compacting and laying of a new wearing surface (potentially consisting of geofabric membrane and suitable crushed rock/gravel) and constructing passing bays. The Proposal also includes trail drainage improvement works such as restoring the level of a trail levee, replacing a failed pipe culvert and constructing rock causeways in existing management trails. The proposed works are required to improve light and heavy vehicle access to existing and proposed water management structures.
Name of NPWS park or reserve	Yanga National Park
Location of activity	Yanga National Park, Central Forest Precinct
Street address	Yanga National Park (Sturt Highway, Balranald NSW, 2715)
Current and proposed management and ownership authority	The management trails are owned by the NSW Minister for the Environment responsible for administering the NPW Act, NPWS as the Park authority, with exception of a small stretch of existing access trail on Bronzewing Drive which is located on private land owned by the Nari Nari Tribal Council and small sections of Bronzewing Drive, Hampton's Bank Trail, Steves Bank Trail, River Trail and Redbank East Trail which intersect with Crown Roads. No change in ownership is proposed following construction of the Proposal. It is likely that an agreement will be established for future WaterNSW operational access.
Estimated commencement date	April 2025
Estimated completion date	May 2025

1 Introduction

1.1 Proposal overview

NSW Department of Climate Change, Energy, the Environment and Water (the Department) are proposing to repair, maintain and where required upgrade, a number of existing unsealed management trails within and adjoining the Yanga National Park (Park) (the Proposal). Such management trails are identified as primary access routes for both existing and proposed water management structures within the Yanga National Park (regulators).

The Proposal would result in improved vehicle access across the Yanga National Park and support construction access for a range of works. Such works would include those proposed by the Department under the Yanga National Park Supply Project, as part of the Sustainable Diversion Limit Adjustment Mechanism – Acceleration (SDLAM) Program, which would involve upgrading and replacing existing water management infrastructure within the Yanga National Park.

The works assessed under this REF are considered to be enabling works, which are therefore expected to be completed prior to the commencement of other proposed infrastructure works in the Yanga National Park. Approvals for those specific works are documented in a separate assessment.

On behalf of the Department, 3Rivers has prepared this review of environmental factors (REF) to assess the potential environmental impacts of the Proposal in accordance with the requirements of:

- Division 5.1 the Environmental Planning and Assessment Act 1979 (EP&A Act), section 170 of the Environmental Planning and Assessment Regulation 2021 (EP&A Regulation)
- Guidelines for Division 5.1 Assessments (DPE, 2022a)
- Guidelines for Preparing a Review of Environmental Factors: How to assess the environmental impacts of activities within NSW National Parks (DPE, 2022b).

1.1.1 The Proposal

Yanga National Park is located in south-western New South Wales (NSW) along the Murrumbidgee River, north east of Balranald (shown in Figure 1-1). The Yanga National Park is adjoined by the Yanga State Conservation Area and Yanga Nature Reserve located to the south east of the National Park, which are collectively referred to as the ‘Yanga Precinct’ in this REF. The Proposal would involve the repair, upgrade and maintenance of existing unsealed park roads and management trails (‘trails’), that lead to the existing and proposed water management structures within and adjoining Yanga National Park.

The proposed works would be carried out across six existing trails, comprising up to approximately 20 kilometres (km) of management and fire trail works located between Murrumbidgee River in the west and Waugorah Road in the east. Depending on the existing condition of the trail, repair, maintenance and upgrade works would involve activities such as re-grading, compacting and laying of a geofabric membrane and crushed rock/gravel generally within the existing trail footprint

(approved corridor). The proposed works also include the replacement of a failed pipe culvert, the construction of two rock causeways at existing low-level crossings on Bronzewing Drive, the installation of passing and turnaround bays on Bronzewing Drive and Redback East Trail, along with works to restore the trail level along Redbank East Trail.

The trails are primarily located on land reserved as Yanga National Park under Part 4 of the *National Parks and Wildlife Act 1974* (NPW Act) and managed by the NSW National Parks and Wildlife Service (NPWS), with the exception of Bronzewing Drive – Eastern Section (Trail ID04a) located on the Gayini (Nimmie-Caira) property owned by the Nari Nari Tribal Council. In addition, a number of Crown roads declared under the *Roads Act 1993* (Roads Act) which are not gazetted as part of the Yanga National Park intersect with discrete sections of Bronzewing Drive, River Trail, Hampton's Bank Trail, Steves Bank Trail and Redbank East Trail.

The Proposal is described in detail in Section 3.

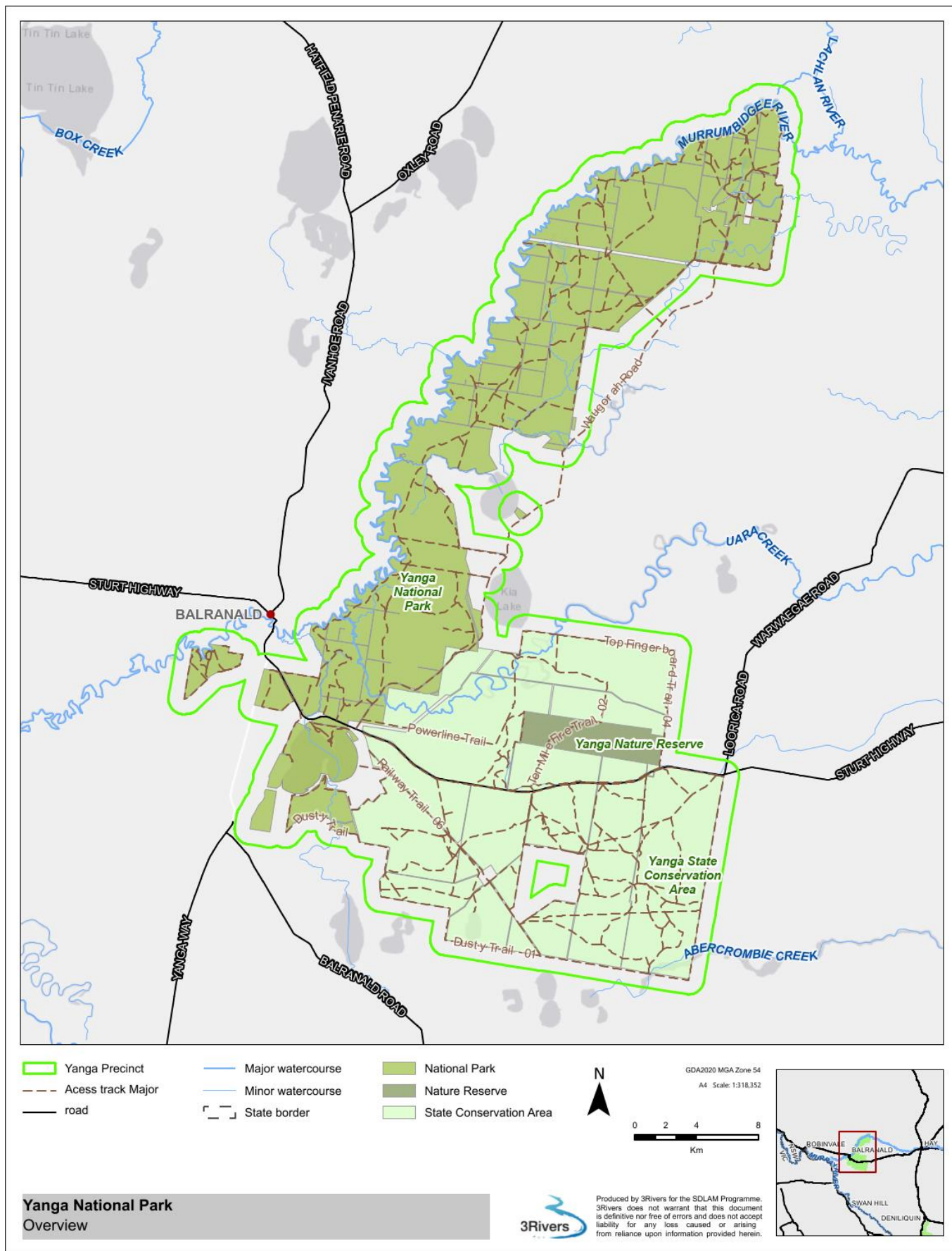


Figure 1-1 Regional context

1.1.2 Background information

Sustainable Diversion Limit Adjustment Mechanism

The Murray-Darling Basin Plan (the Basin Plan) aims to improve the management, health and sustainability of the Murray-Darling Basin (the Basin). Central to the Basin Plan are the Sustainable Diversion Limits (SDLs), which limit the amount of water that can be extracted from the Basin, while leaving sufficient water to maintain the environmental health of the Basin.

In 2009, the Murray-Darling Basin Authority determined that the average baseline diversion level, or the existing level of water extraction, for the basin was 13,623 gigalitres. The Murray-Darling Basin Authority also determined that the long-term SDL for the entire basin was 10,873 gigalitres per year, which is 2,750 gigalitres lower than the 2009 baseline diversion level. As part of the Basin Plan, this 2,750 gigalitres of water is proposed to be recovered for the environment through a combination of licence buybacks, water recovery, and efficiency projects. To provide flexibility, the Basin Plan includes a Sustainable Diversion Limit Adjustment Mechanism (SDLAM) to adjust the SDLs. In 2017, the Murray-Darling Basin states and the Commonwealth Government agreed on a package of 36 SDLAM projects across the southern connected Murray-Darling Basin, with the aim of recovering 605 gigalitres of water each year for the Murray-Darling River system.

The NSW Government is currently developing nine projects in collaboration with local communities, key stakeholders and other Basin states with funding from the Commonwealth Government. A number of these projects have been brought forward by the NSW Government, through the implementation of the NSW SDLAM Acceleration Program (the Acceleration Program, refer to Figure 1-2). The Acceleration Program will deliver up to 45 gigalitres of the outstanding amount needed to reach the 605 gigalitre target required by the Basin Plan each year. The Yanga National Park Supply Project is one of the projects in the Acceleration Program.

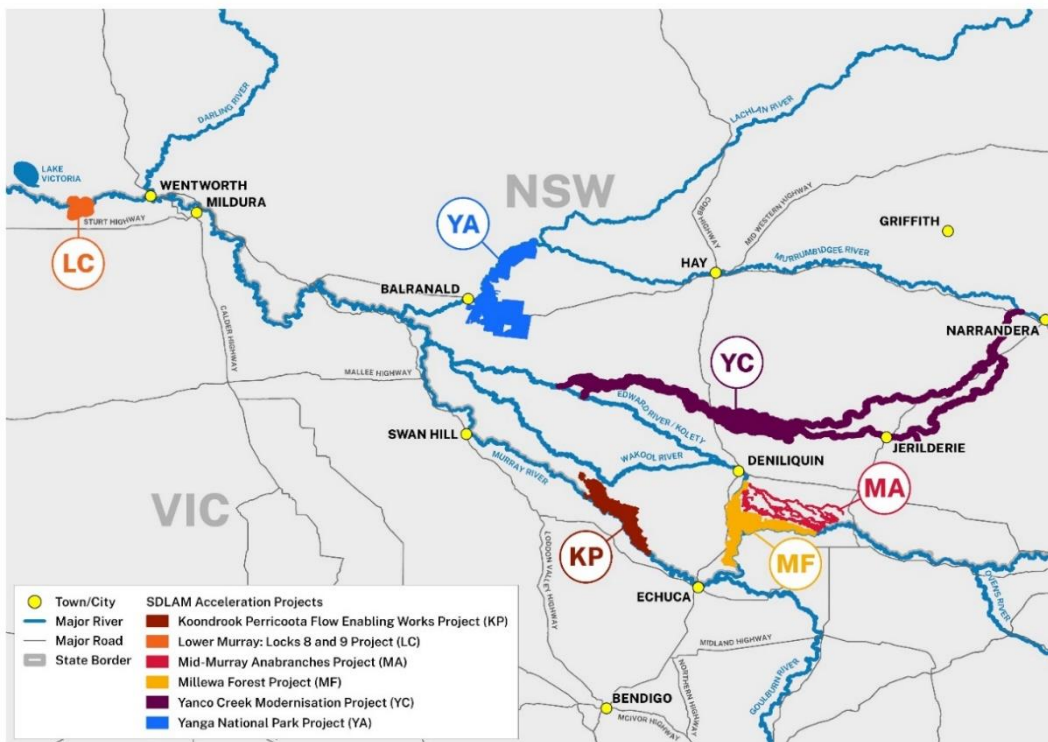


Figure 1-2 Overview of the NSW SDLAM Acceleration Program

Yanga National Park Supply Project

The Proposal is part of the Yanga National Park Supply Project, which proposes a number of works across and adjoining the Yanga National Park to improve management of the ecological health and ecosystem functions of the Yanga National Park by modernising ageing infrastructure, removing constraints to environmental flows and addressing barriers to native fish movement. The Proposal seeks to facilitate and support the Yanga National Park Supply Project, by improving light and heavy vehicle access, including construction vehicle access requirements, to existing and proposed water management structures such as levee banks, culverts and regulators within and adjacent to Yanga National Park, as part of the SDLAM Program.

For reference purposes, the Area of Interest has been divided into three zones:

1. Upper Yanga
2. Central Yanga
3. Lower Yanga.

Each of these areas has been mapped on Figure 1-3.

It should be noted that the benefits to be delivered as a result of implementing both the work in this REF and all other project components under the Yanga National Park Supply Project are tied together with the Nimmie-Caira Project located on adjacent land parcels.

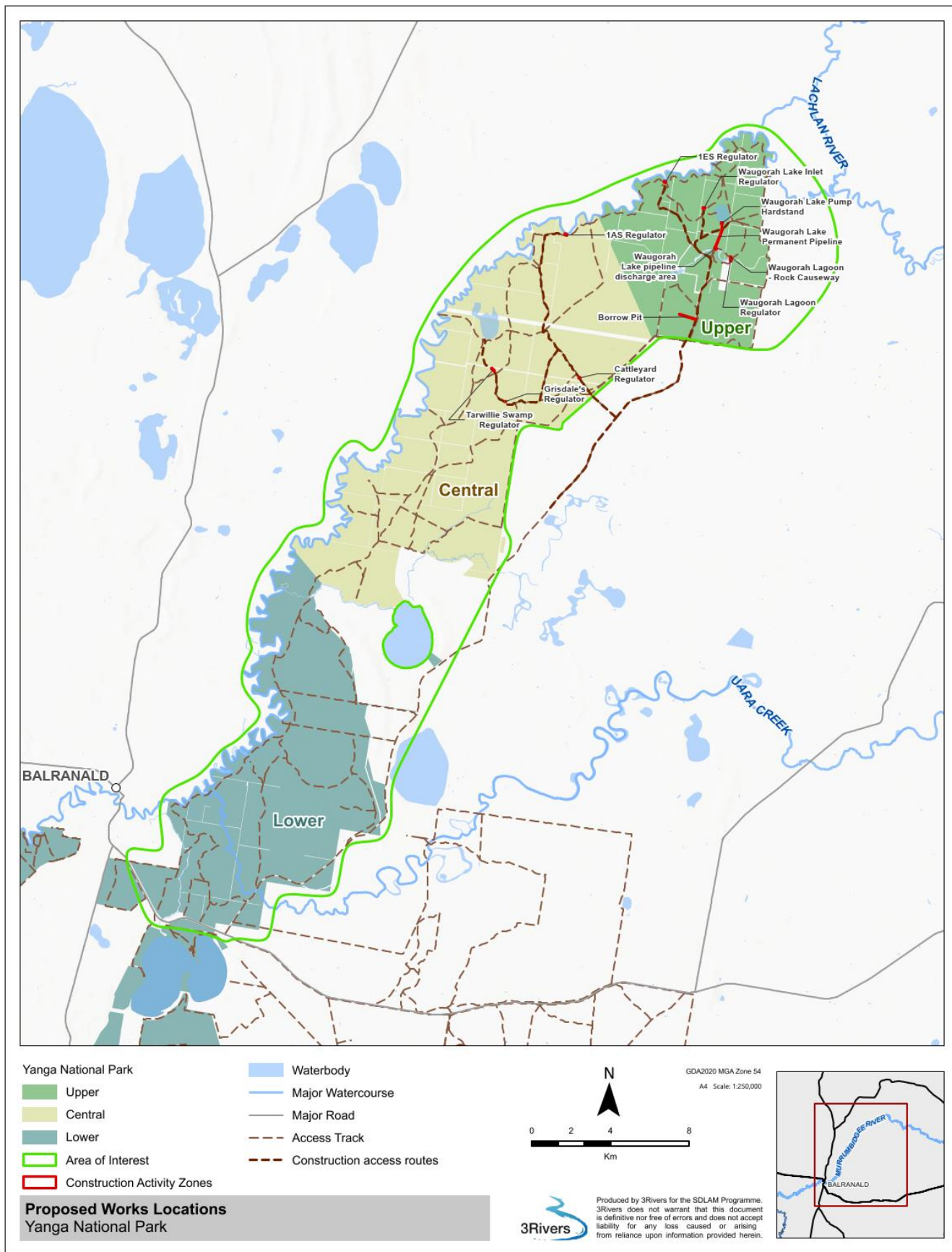


Figure 1-3 Yanga National Park Supply Project areas of interest

1.2 Purpose of this document

The purpose of this Review of Environmental Factors (REF) is to describe the Proposal, document the likely impacts on the environment, and detail measures to mitigate impacts that cannot be avoided. The REF is the key document which the Department would use to discharge its duty under section 5.5 of the EP&A Act, including taking into account the environmental factors listed in Table 1 of the *Guidelines for Division 5.1 Assessments* (DPE, 2022a).

The findings of the REF would be considered when assessing:

- Whether the Proposal is likely to have a significant impact on the environment and therefore the requirement for an environmental impact statement (EIS) to be prepared and approval sought from Minister for Planning under division 5.2 of the EP&A Act
- The permissibility of the works under the NPW Act and the authorisation that would be issued under the NPW Act to construct and operate the new infrastructure
- The significance of any impact on threatened species as defined by the *Biodiversity Conservation Act 2016* (BC Act) and *Fisheries Management Act 1994* (FM Act) (referred to in section 1.7 of the EP&A Act) and therefore the requirement for a Species Impact Statement (SIS) or a Biodiversity Development Assessment Report.

In the event of any discrepancy between the attachments and this REF, this REF takes precedence.

2 Proposal need and justification

2.1 Proposal objectives

The Project proposes works to improve the management of the Yanga National Park's ecological health and ecosystem functioning by modernising ageing infrastructure, removing constraints to environmental flows and addressing barriers to native fish movement. The Proposal would support the Yanga National Park Supply Project. Specifically, the objectives of the Proposal are to:

- Improve safety for trail users
- Improve access for key park management activities including improve access along management and fire trails within the Yanga National Park
- Remove key access constraints within the Yanga National Park including failed culverts and improve low-level crossings
- Improve light and heavy vehicle access, including construction vehicle access requirements, to existing and proposed water management structures under the Project. This includes temporary filling of engineered breaches in trafficable levee banks to enable safe access for construction plant and vehicles. These breaches will be reinstated to original surveyed heights following completion of construction works for the broader Project.
- Minimise further damage to existing trails and increase durability through surface compaction and improvement including more efficient drainage, and therefore decrease ongoing maintenance frequency and associated cost for NPWS.

2.2 Existing infrastructure

This section describes the condition of relevant existing infrastructure including unsealed management trails, Twin Bridges bank, Tarwillie Gate low-level crossings and the Bronzewing Drive pipe culvert.

2.2.1 Management trails

The Yanga Precinct contains an extensive network of approximately 200 km of unsealed management trails, which provide access for land management operations and supports water management across the floodplain incorporating levee banks, causeways, culverts, regulators and bridges. However, significant rainfall events and high river flows can render large portions of the Yanga National Park inaccessible for months at a time, cutting off access to key infrastructure and causing significant flood damage. As many of the trails are only accessible by four-wheel drive vehicles during dry conditions, particularly in the central section of the Yanga National Park, trails are periodically closed to prevent damage and ensure staff safety. A number of these trails are

legacy infrastructure, originally formed on Yanga Station to support access and operation of water management structures for pastoral use, with some of the trails now surplus to NPWS needs.

The existing trails generally comprise unsealed single lane access tracks. Following recent unprecedented flooding in late 2022/ early 2023, a number of the trails are in poor condition and unsafe for light and heavy vehicles, particularly during and following wet weather conditions, where vehicles are more likely to become bogged. An overview of the existing trail network as relevant to the proposed works is shown in Figure 2-1.

The Proposal includes six existing trails that are nominated for repair, maintenance or upgrade. The trails nominated for repair, maintenance or upgrade have been assigned with an existing trail condition type (T1 to T7), with T1 being described as ‘very good condition’ while T7 is described as ‘very poor condition’ (refer to **Error! Reference source not found.**).

A summary of the existing condition and length of each trail nominated for works under the Proposal is provided in Table 2-2.

Table 2-1 Access trails condition classification

Trail type (SDLAM – Specification)	Description of existing trail condition types
T1 (Type A)	Very good condition with gravel surface
T2 (Type A)	Good condition with worn or corrugated surface
T3 (Type A)	Good condition with no gravel (High strength sub-grade not susceptible to rutting during wet weather).
T4 (Type B)	Good soil condition with poor geometry (High strength sub-grade not susceptible to rutting during wet weather, however existing geometry needs to be improved)
T5 (Type C)	Moderate condition (Acceptable for current level of use, but likely degrade under construction traffic)
T6 (Type C)	Poor condition (Weak sub-grade with existing minor rutting)
T7 (Type D)	Very poor condition (Very weak sub-grade susceptible to deep rutting during wet weather and impassable for prolonged periods after wet weather).

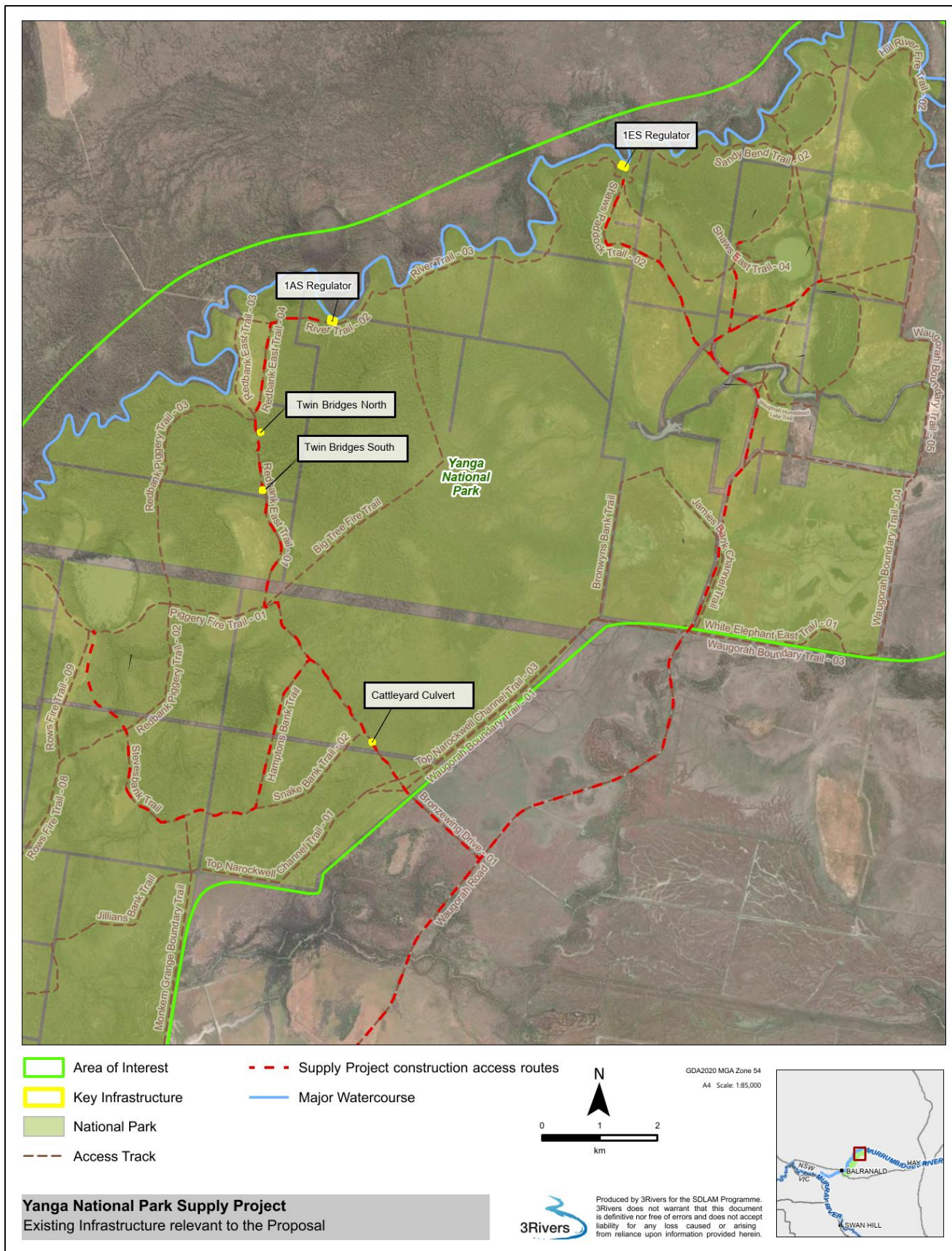


Figure 2-1 Overview of existing trail network and key infrastructure

Table 2-2 Existing condition of management trails

Trail ID	Trail name	Chainage (m)	Approx. length (km)	Trail type	Image of management trail
01	Hamptons Bank Trail	0-3000	3 km	T7	
02	Hamptons Bank Trail / Snake Bank Trail	3000-4500	1.5 km	T7	

Trail ID	Trail name	Chainage (m)	Approx. length (km)	Trail type	Image of management trail
03	Steves Bank Trail	4500-8419	3.9 km	T7	
04a	Bronzewing Drive – Eastern Section	0-2000	2 km	T5	

Trail ID	Trail name	Chainage (m)	Approx. length (km)	Trail type	Image of management trail
04b	Bronzewing Drive	2000-3000	1 km	T7	 Trail condition at Bronzewing Drive near park entrance  Existing low point at Bronzewing Drive between Tarwillie Gate and White Elephant Supply Channel

04c	Bronzewing Drive	3000-4700	1.7 km	T7	  Existing pipe culvert at Bronzewing Drive near Hamptons Bank Trail turn off
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Trail ID	Trail name	Chainage (m)	Approx. length (km)	Trail type	Image of management trail
04d	Bronzewing Drive	4700-6200	1.5 km	T5	
05a	Redbank East Trail	6200-8000	1.8 km	T5	

Trail ID	Trail name	Chainage (m)	Approx. length (km)	Trail type	Image of management trail
05b	Redbank East Trail	8000-9700	1.7 km	T7	
06	Redbank East Trail / River trail (Central)	10000-12348	2.3 km	T7	

2.2.2 Redbank East Trail – Twin Bridges bank (Approx. Chainage 8000 – 9700 m)

The trail levee embankments around the north and south Twin Bridges regulators on Redbank East Trail (Trail ID05b) were reformed during the construction of the regulators in 2009, with the original crest levels of the trail levee built to 67.40 metres Australian Height Datum (m AHD) and 67.50 m AHD respectively. However, erosion and settlement since its initial construction has reduced the crest level of the levee and trail. The lowest bank level around the Twin Bridges north regulator is currently understood to be approximately 66.50 m AHD and approximately 66.7 m AHD around the south regulator, resulting in increased and undesired overtopping of the banks when the regulators are closed. As a result, river flows and rainfall can cut-off access along Redbank East Trail for extended periods, causing significant damage and preventing access for maintenance and operation of key NPWS and WaterNSW assets such as the 1AS regulator and Mercedes regulator.

2.2.3 Bronzewing Drive – Tarwillie Gate Low-level crossings (Approx. Chainage 1700 – 2160 m)

Currently, access at the entrance to the central section of the Yanga National Park on Bronzewing Drive (Trail ID04b) is hampered by the poor condition of two existing low-level crossings at small flood runners approximately 100 m apart, between Tarwillie Gate and the White Elephant Supply channel crossing. The existing crossings are comprised of bare compacted ground in poor condition within the existing trail footprint, over which vehicles and machinery can cross. A photo of the existing condition of one of the low points is shown in Figure 2-2 below.



Figure 2-2 Existing low-level crossing on Bronzewing Drive

2.2.4 Bronzewing Drive – Pipe culvert (Approx. Chainage 3500 m)

As Bronzewing Drive (Trail ID04c) continues west from the low-level crossings through the Yanga National Park, an existing pipe culvert (approximately 600 mm diameter) at a small flood runner

crossing the trail is in poor condition. There are potholes in the trail above the culvert and notable scouring erosion around the inlet. A photo of the existing condition of the existing culvert is shown in Figure 2-3 below.



Figure 2-3 Existing pipe culvert on Bronzewing Drive

2.3 Proposal justification

As described in Section 2.1 and Section 2.2, a number of key trails are in poor condition and unsafe for operations and vehicle movements associated with proposed future construction activity. Further, high river flows and rainfall can cut-off access along and to these trails for extended periods, causing significant damage and preventing access for maintenance and operation of WaterNSW and NPWS assets such as water management structures.

Early (or temporary) works are required to ensure construction activities can be delivered efficiently and to create enduring improved access throughout the central section of the Yanga National Park.

2.3.1 Options and alternatives considered

The proposed scope of works has been revised as the design has progressed, with several alternatives and options considered in consultation between NPWS and the Department. Options and alternatives considered included:

- **Option 1 - Repair and maintenance to additional trails:** This option would involve works at a number of additional trails. This option was not progressed due to environmental and cultural heritage considerations. Trails located in the northern section of the Yanga National Park were also dismissed given the existing trails are understood to be in good condition.
- **Option 2 - Upgrade trails to meet fire trail standards:** This option would involve upgrading trails to meet NSW Fire Trail Standards under the *Rural Fires Act 1997* consistent with the *NSW Draft Mid-Murray Fire Trail and Access Plan (Mid-Murray FAFT)*, and transitional

management standards in accordance with the *Murrumbidgee Valley National Park (Yanga Precinct) Fire Management Strategy 2014* (OEH, 2015). Where feasible, fire trail standards have been considered and partially applied for the proposed works. The intent is to value add to the future FAFT upgrades but not to fully comply with FAFT standards under this REF.

- **Option 3 - Repair, maintenance and upgrade works for six existing trails:** This option would involve repair, maintenance and upgrade works for the six selected existing trails that are identified in Table 2-2. Option 3 would facilitate construction access to sites identified within the scope of the Yanga National Park Supply Project under the SDLAM Acceleration program and would provide the following benefits:
 - Improved access for light and heavy vehicles along priority access points.
 - Improved access for NPWS to undertake key park management activities
 - Improved user safety
 - improve management trail durability and minimised further damage to existing trails.
- **Do nothing' approach:** This option would involve not carrying out any works. This option would be unsuitable as it would not provide the necessary access required to undertake priority land management operations such as fire management and weed management. The 'do nothing' option would also result in further damage to existing trails, along with the associated increased maintenance frequency and cost for NPWS.

Option 3 is the preferred option for the Proposal. Refer to Section 3.2 for further details on the proposed scope of works and Section 2.3.2 for further justification for the preferred option.

2.3.2 Justification for preferred option

The proposed scope of works was selected as the preferred option in consultation with NPWS, based on the following factors:

- Improved access to the proposed Project and the water management infrastructure sites
- Existing trail condition
- Capital cost
- Potential impacts to the environment and cultural heritage sites
- Alignment with key trails for NPWS land management operations
- Alignment with key management (fire) trails as identified in the *NSW Draft Mid-Murray Fire Trail and Access Plan*, and *Murrumbidgee Valley National Park (Yanga Precinct) Fire Management Strategy 2014* (OEH, 2015).

Option 3 was selected as the preferred option as it would:

- Facilitate improved construction access to Project sites including the proposed new or upgraded 1AS, Tarwillie Swamp, Cattleyard and Grisdale's regulators.
- Facilitate construction access to other sites identified within the scope of the Yanga National Park Supply Project under the SDLAM Acceleration program
- Improve vehicle access for light and heavy vehicles along priority trails (Bronzewing Drive and Redbank East)

- Focus on maintaining the existing trafficable surface of trails in poor condition to minimise vegetation clearing and avoid impacts to identified cultural heritage sites.
- Minimise further damage to existing trails and improve durability through surface compaction and more efficient drainage.
- Address additional access constraints including a failed culvert, low-level crossings and a lowered levee along Redbank East Trail at Twin Bridges
- Decrease ongoing maintenance frequency and associated cost for NPWS due to improvements in trail durability and removal of existing assets in poor condition
- Greatly improve access along key fire trails for light vehicles and along Bronzewing Drive for larger firefighting tankers, therefore aiding in wildfire suppression operations.

3 Proposal description

3.1 Location of activity

The Proposal comprises repair, maintenance and upgrade works along six existing unsealed management trails within and adjacent to the Yanga National Park. The Proposal would generally occur within the existing trail footprint (approved corridor). The key Proposal areas include:

- **Area of Interest** - comprises the entire park locality subject to desktop assessment, inclusive of all proposed works (approx. 35,597 hectares (ha))
- **Contractor Activity Zone (CAZ)** - comprises areas where general construction activities would occur (including earthworks, vegetation clearing, lay down of machinery and materials). The combined CAZ of all the proposed works has been conservatively assumed to be subject to direct impacts as a worst-case scenario (up to approximately 12 ha). However, given most works are to be restricted to the existing trail footprint, the works would only require up to approximately 3 ha of native vegetation removal. Removal of all identified hollow bearing trees within the CAZ will also be avoided.

Further detail on the proposed works is provided in Section 3.2, with a summary of the planning and ownership details of the Proposal detailed in Table 3-1 below. An overview of the Proposal is shown in

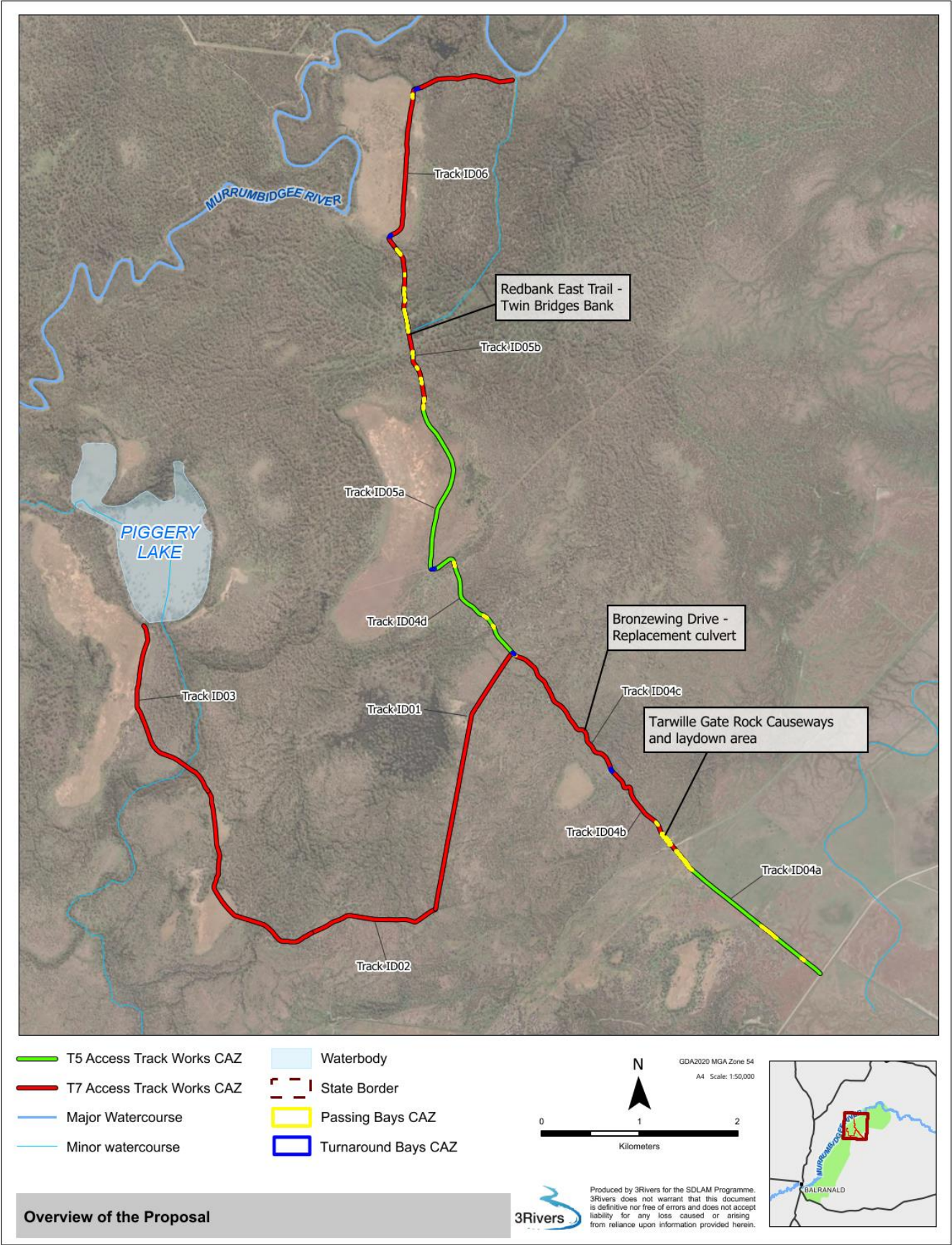


Figure 3-1 below, with detailed figures of each trail section presented in Section 3.6.

Table 3-1 Planning and ownership details of the Proposal

Trail ID	Location	Approx. Chainage (m)	DP/ lot #	Existing asset owner / land holder	Land tenure	Part of Yanga National Park
01	Hamptons Bank Trail	0-3000	[Redacted] [Redacted] [Redacted] [Redacted]	NPWS / Crown Lands	Yanga National Park - Reserved land under Part 4 of the NPW Act (Approx. Chainage 1480 – 1540 m is Crown Land - Crown Road declared under Roads Act)	Yes
02	Hamptons Bank Trail / Snake Bank Trail	3000-4500	[Redacted] [Redacted] [Redacted]	NPWS / Crown Lands	Yanga National Park - Reserved land under Part 4 of the NPW Act (Approx. Chainage 3610 – 3640 m is Crown Land - Crown Road declared under Roads Act)	Yes
03	Steves Bank Trail	4500-8419	[Redacted] [Redacted] [Redacted] [Redacted]	NPWS / Crown Lands	Yanga National Park - Reserved land under Part 4 of the NPW Act (Approx. chainage 6740 – 6880 m is Crown Land - Crown Road declared under Roads Act)	Yes
04a	Bronzewing Drive – Eastern Section	0-2000	[Redacted] [Redacted]	NPWS / Private Landholder	Yanga National Park - Reserved land under Part 4 of the NPW Act (Approx. chainage 0 – 1630 m is on Private land owned by the Nari Nari Tribal Council)	Partially
04b	Bronzewing Drive	2000-3000	[Redacted]	NPWS / Crown Lands	Yanga National Park - Reserved land under Part 4 of the NPW Act (Approx. chainage 2320 – 2400 m is Crown Land - Crown Road declared under Roads Act)	Yes

Trail ID	Location	Approx. Chainage (m)	DP/ lot #	Existing asset owner / land holder	Land tenure	Part of Yanga National Park
04c	Bronzewing Drive	3000-4700	[Redacted] [Redacted]	NPWS	Yanga National Park - Reserved land under Part 4 of the NPW Act	Yes
04d	Bronzewing Drive	4700-6200	[Redacted]	NPWS	Yanga National Park - Reserved land under Part 4 of the NPW Act	Yes
05a	Redbank East Trail	6200-8000	[Redacted]	NPWS / Crown Lands	Yanga National Park - Reserved land under Part 4 of the NPW Act (Approx. chainage 6450 – 6650 m is Crown Land - Crown Road declared under Roads Act)	Yes
05b	Redbank East Trail	8000-9700	[Redacted] [Redacted]	NPWS	Yanga National Park - Reserved land under Part 4 of the NPW Act	Yes
06	Redbank East Trail / River trail (Central)	9700 - 12348	[Redacted] [Redacted] [Redacted]	NPWS / Crown Lands	Yanga National Park - Reserved land under Part 4 of the NPW Act (Approx. chainage 11730 – 11760 m is Crown Land - Crown Road declared under Roads Act)	Yes

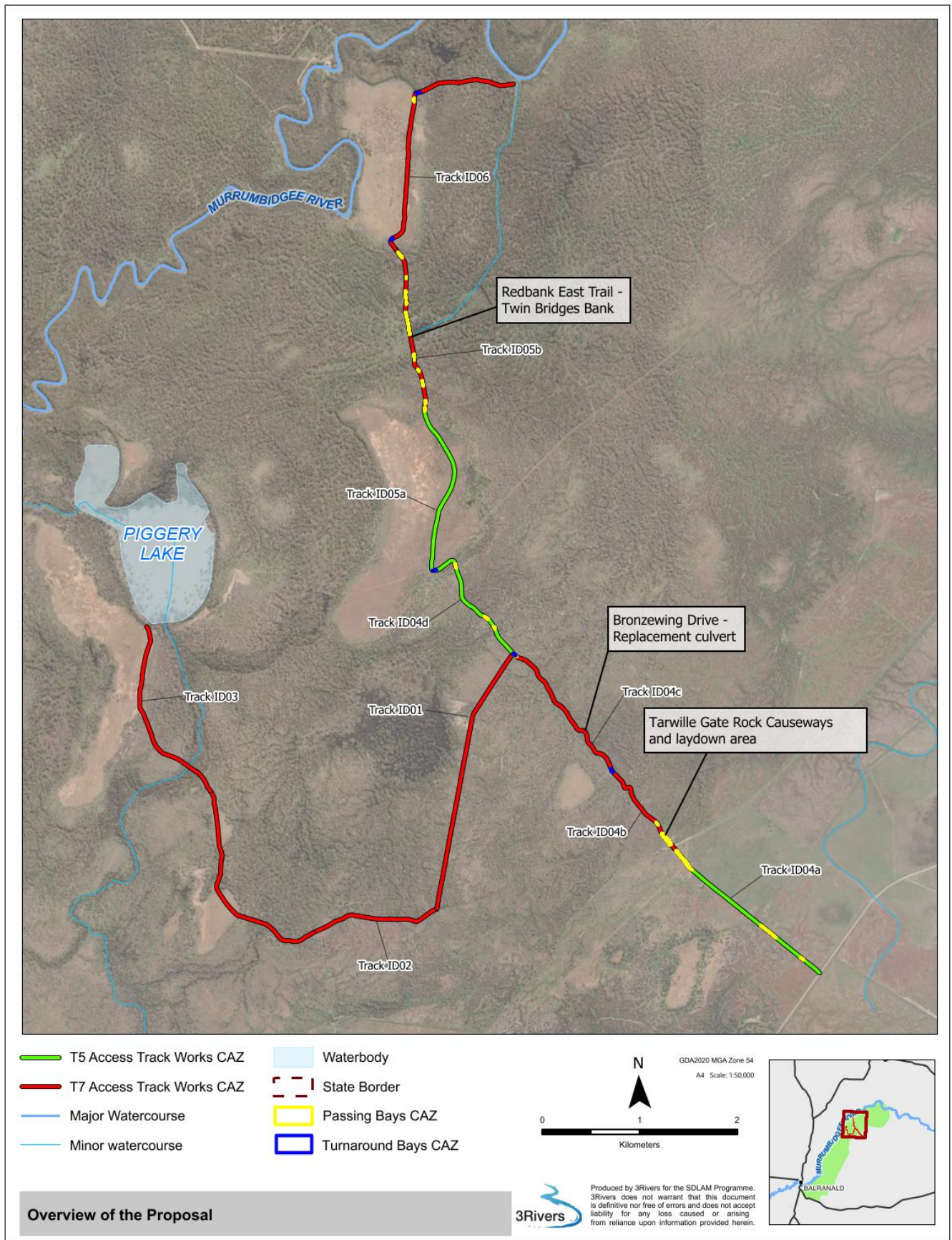


Figure 3-1 Overview of the Proposal

3.2 Proposed works

A summary of the proposed works for each section of trail is provided in Table 3-2 below. The proposed works are required to fulfil the objectives listed in Section 2.1.

The proposed works are to be undertaken in accordance with all applicable standards and specifications including but not limited to:

- TfNSW specification r11 - Stormwater drainage shall generally be in accordance with TfNSW specification r11
- The Department Specifications - SDLAM Program specific technical specifications including earthwork and access track specifications
- NPWS Erosion and Sediment Control on Unsealed Roads - A Field Guide for Erosion and Sediment Control Maintenance Practices on Unsealed Roads (NPWS, 2010)
- NSW fire trail standards (RFS, 2023) - It is not within the scope of these works to upgrade the existing management trails to Strategic Fire Trails. Where feasible, the proposed works have at discrete locations (including trail widths and passing bays) been designed to meet the standards.
- Australian standards - Demolition all works shall comply with AS 2601. The replacement pipe culvert shall be designed and installed in accordance with AS/NZS 4058:2007 (Precast concrete pipes) and AS/NZS 3725:2007 (Design for installation of buried concrete pipes).

Table 3-2 Proposed works for each trail ID section

Trail ID	Location	Chainage (m)	Approx. length (km)	Trail Type	Proposed works
01	Hamptons Bank Trail	0-3000	3 km	T7	• Regrading to create cross fall and match existing longitudinal drainage, followed by placement of up to 250 mm of crushed rock and compaction. • Temporary filling of engineered breaches within the management trail on levee banks.
02	Hamptons Bank Trail / Snake Bank Trail	3000-4500	1.5 km	T7	• Regrading to create cross fall and match existing longitudinal drainage, followed by placement of up to 250 mm of crushed rock and compaction. • Temporary filling of engineered breaches within the trail on levee banks.
03	Steves Bank Trail	4500-8419	3.9 km	T7	• Regrading to create cross fall and match existing longitudinal drainage with placement of up to 250 mm of crushed rock on top of a basal geo-grid and geotextile separator. • Temporary filling of engineered breaches within the trail on levee banks.

Trail ID	Location	Chainage (m)	Approx. length (km)	Trail Type	Proposed works
04a	Bronzewing Drive	0-2000	2 km	T5	• Regrading to create cross fall and match existing longitudinal drainage, followed by placement of up to 125 mm of crushed rock and compaction. • Temporary filling of engineered breaches within the trail on levee banks.
04b	Bronzewing Drive	2000-3000	1 km	T7	• Regrading to create cross fall and match existing longitudinal drainage with placement of up to 250 mm of crushed rock on top of a basal geo-grid and geotextile separator. • Install two rock causeways at existing low-level crossings along Bronzewing Drive. • Construct passing and turnaround bays between the intersection with Top Narockwell Channel Trail and Snake Bank Trail.
04c	Bronzewing Drive	3000-4700	1.7 km	T7	• Regrading to create cross fall and match existing longitudinal drainage, followed by placement of up to 250 mm of crushed rock on top of a basal geo-grid and geotextile separator. • Temporary filling of engineered breaches within the trail on levee banks • Replace existing failed pipe culvert along Bronzewing Drive. • Construct passing and turnaround bays between the intersection with Snake Bank Trail and Hamptons Bank Trail.
04d	Bronzewing Drive	4700-6200	1.5 km	T5	• Regrading to create cross fall and match existing longitudinal drainage, followed by placement of up to 125 mm of crushed rock and compaction. • Temporary filling of engineered breaches within the trail on levee banks • Construct passing bay near intersection with Piggery Fire Trail.
05	Redbank East Trail	6200-8000	1.8 km	T5	• Regrading to create cross fall and match existing longitudinal drainage, followed by placement of up to 125 mm of crushed rock and compaction. • Temporary filling of engineered breaches within the trail on levee banks • Construct passing and turnaround bay prior to Twin Bridge South regulator.

Trail ID	Location	Chainage (m)	Approx. length (km)	Trail Type	Proposed works
05b	Redbank East Trail	8000-9700	1.7 km	T7	• Regrading to create cross fall and match existing longitudinal drainage, followed by placement of up to 250 mm of crushed rock on top of a basal geo-grid and geotextile separator. • Temporary filling of engineered breaches within the trail on levee banks • Reinstatement of trail level around the Twin Bridge North and Twin Bridge South regulators to original design level of 66.8 m AHD.
06	Redbank East Trail / River trail (Central)	10000-12348	2.3 km	T7	• Regrading to create cross fall and match existing longitudinal drainage, followed by placement of up to 250 mm of crushed rock on top of a basal geo-grid and geotextile separator. • Construct passing and turnaround bays between Twin Bridge North regulator and Mercedes Culvert.

Table 3-2 provides a general overview of the proposed scope of works. The final extent and treatment types may be subject to minor revisions in consultation between NPWS, the Department and the contractor, following a site assessment of the trails prior to construction commencement. This REF provides a conservative assessment or ‘worst-case scenario’ of the scope of works and potential impacts.

3.2.1 Management trail maintenance

The proposed works would be carried out across six existing trails, comprising up to approximately 20 km of trail works generally located between Murrumbidgee River in the west and Waugorah Road in the east. Depending on the existing condition of the trails (T5 or T7), repair, upgrade and maintenance works would involve regrading, compacting and laying crushed rock/gravel within the existing trail footprint (or approved corridor) as described in Table 3-2 above. An indicative schematic of the proposed management trail works is shown in Figure 3-2.

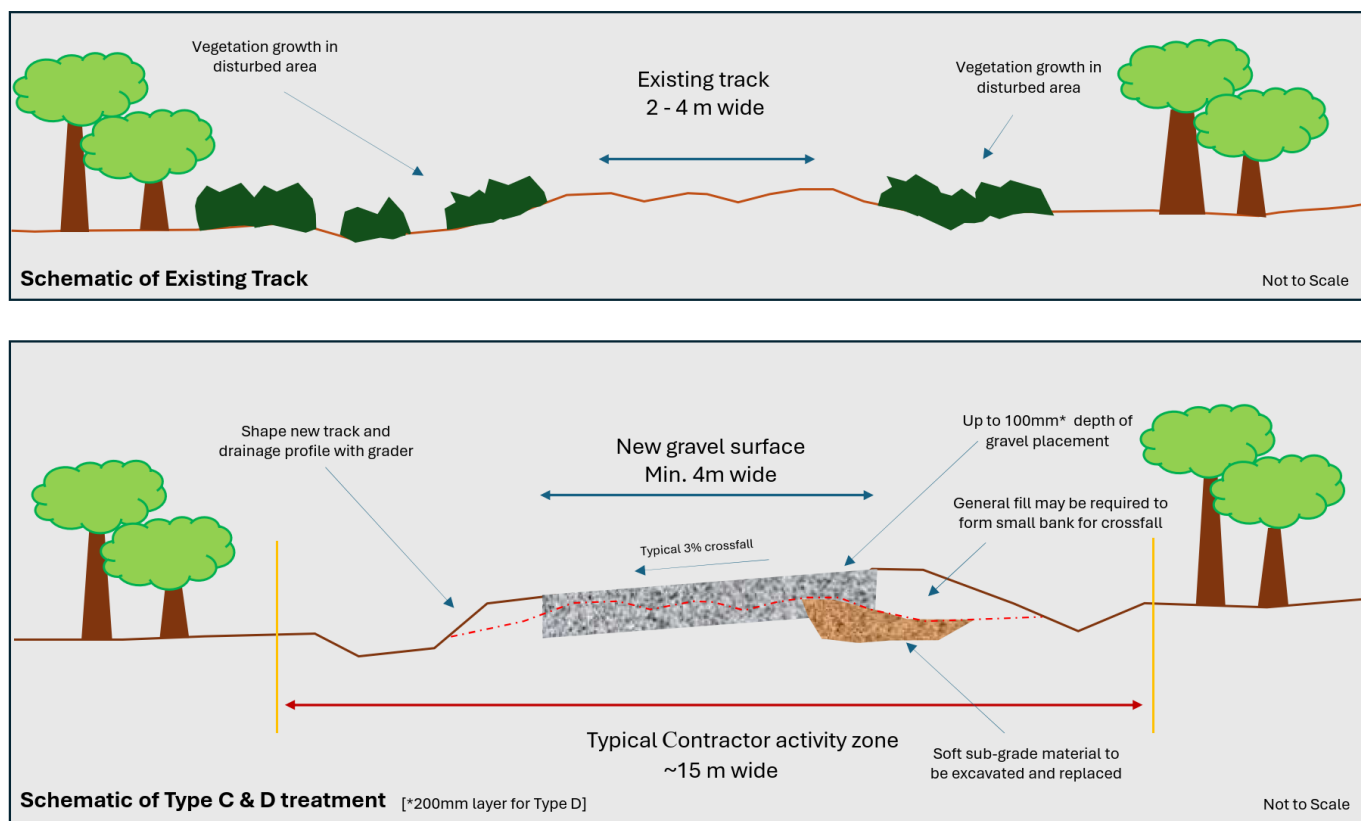


Figure 3-2 Indicative schematic of trail types

3.2.2 Filling of engineered breaches

Temporary filling of existing low points and depressions within the Hamptons, Snake Bank, Bronzewing Drive, Redbank East and Steves Bank Trails (Trails ID01, 02, 03, 04a, 04c, 04d, 05, 05b) may be required to enable safe access for construction plant and vehicles. These breaches were constructed as part of the Rivers Environmental Restoration Project (RERP) in 2008. Rock armoured breaches were placed in creek lines and aim to reinstate a more natural flow regime within the Yanga National Park. Placement of suitable fill material would be restricted to the existing trail footprint, with the quantities of fill material required at each low point to be determined based on site conditions at the time of construction. Following construction of the Project, as directed by NPWS, the contractor will remove the fill material and reinstate the trail level at the impacted low points to pre-construction levels. The temporary filling of these low points would improve construction access to the proposed 1AS, Cattleyard, Grisdale's and Tarwillie Swamp environmental regulators under the Project.

3.2.3 Twin Bridges Bank

Localised filling of existing low points on the trail levee on Redbank East Trail (Trail ID05b) is required to restore the trail to original crest levels. This was based on crest levels specified during the design of the Twin Bridge South and North regulators. Imported fill material and geotextile separator would be placed along discrete stretches of trails with up to 483 mm of fill at the lowest point. The final extent and placement of the fill material and geotextile separator would be determined onsite by the contractor in consultation with the Department and NPWS. The design

surface level along Redbank East Trail would be levelled at 66.8 m AHD. A survey long section of the trail levee is shown in Figure 3-3 below.

The reinstated trail levee level and improved trail surface would improve vehicle access and reduce flood damage to the trail. Where required, the trail levee banks may be modified to accommodate the raised trail level including contouring the bank to a suitable grade and stabilising with in-situ material or rock as applicable. Where required, the existing River red gum regrowth along the banks would be removed to facilitate the track reinstatement. The proposed works would improve construction access to the proposed replacement 1AS regulator under the Project.

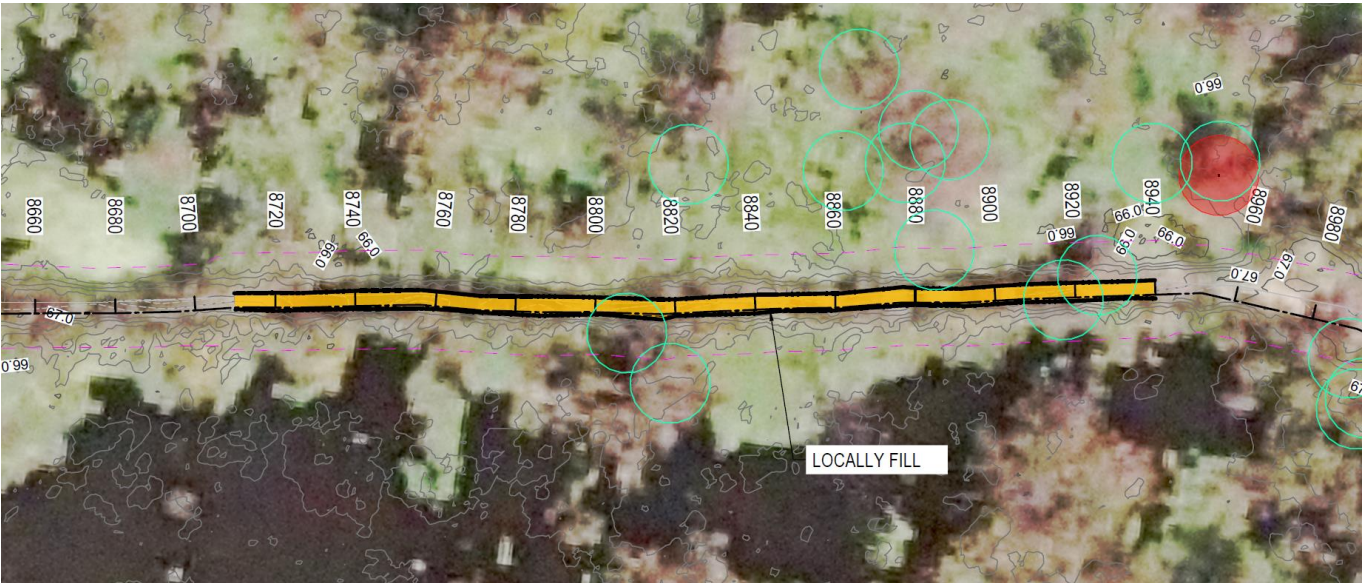


Figure 3-3 Survey long section of trail levee at Twin Bridges regulators

3.2.4 Passing bays

Passing bays would be constructed along Redbank East Trail, River and Bronzewing Drive. The passing bays would be tapered at either end and approximately 40 metres in length and four metres wide. An indicative general arrangement of the proposed passing bays is shown in Figure 3-4.

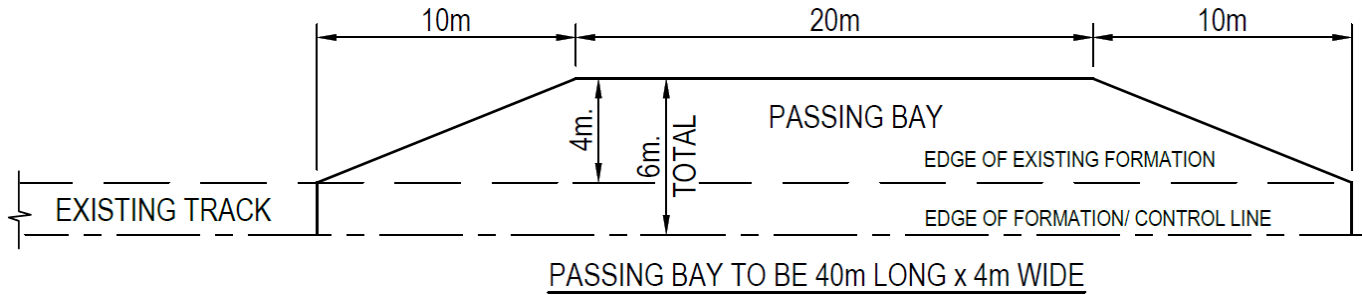


Figure 3-4 Indicative passing bay arrangement

The passing bays would be installed at the approximate locations summarised in **Error! Reference source not found.**Table 3-3 below.

Table 3-3 Location of proposed passing bays

Trail	Trail ID	Location	Approx. Chainage (m)
Bronzewing Drive	04a	Immediately prior to Rock Causeway 1	1680 to 1720

Trail	Trail ID	Location	Approx. Chainage (m)
	04b	After the Rock Causeway 2	2260 to 2300
	04c	After Cattleyard Culvert near the trail to Sand Hill	3020 to 3060
	04c	Immediately prior to intersection with Hampton Creek Trail	4640 to 4680
	04d	Immediately prior to intersection with Piggery Trail	6090 to 6130
Redbank East Trail	05	Prior to Twin Bridge South	7890 to 7930
	06	After Twin Bridge North	9720 to 9760
	06	Prior to Mercedes Culvert	11220 to 11260

3.2.5 Turnaround bays

Turnaround bays would be constructed along Bronzewing Drive and Redbank East Trail. The turnarounds would be approximately 6 m wide (i.e. Up to approximately 4 m beyond the existing trail corridor) and up to 6 m long. The turnarounds would align with existing T-intersections at:

- Bronzewing Drive and Snake Bank Trail (Approximate chainage 3,000 m)
- Bronzewing Drive and Hamptons Bank trail (Approximate chainage 4,750 m)
- Redbank East Trail and Piggery Fire trail (Approximate chainage 6,100 m)
- Redbank East Trail and Redbank Piggery Trail (Approximate chainage 9,750 m)
- Redbank East Trail and River Trail (Approximate chainage 11,100 m)

3.2.6 Tarwillie Gate Rock causeways

At Bronzewing Drive (Trail ID04b), between Tarwillie Gate and White Elephant Channel crossing, two rock causeways spanning existing low points would be installed on either side of the WaterNSW bridge. The rock causeway on the western side of the bridge (Rock Causeway 1) is approximately 20 m wide by 240 m long. The rock causeway on the eastern side of the bridge (Rock Causeway 2) is approximately 20 m wide by 150 m long. The final lengths and widths of the rock causeways are to be determined based on the final design and site-specific conditions at the time of construction. A long section of the rock causeways is shown in Figure 3-5.

An indicative cross section of the proposed rock causeways is shown in Figure 3-6. The rock causeways would consist of select clay fill and geotextile separator overlain by imported coarse gravel (riprap) fill and compacted. The proposed works would improve construction access to the proposed 1AS, Cattleyard, Grisdale's and Tarwillie Swamp environmental regulators under the Project.

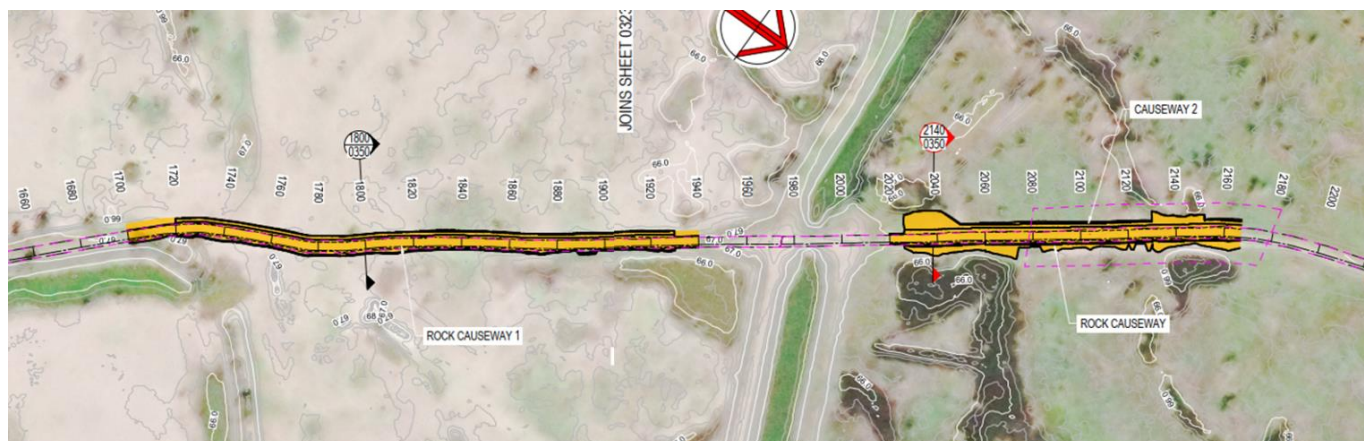


Figure 3-5 Long section at White Elephant supply channel crossing

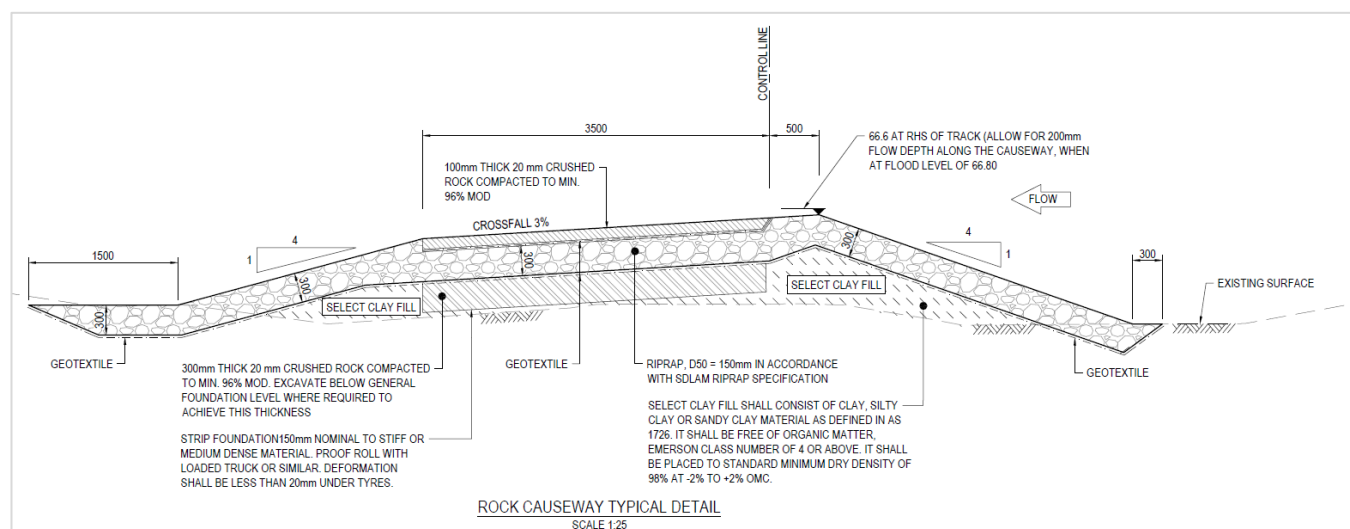


Figure 3-6 Indicative rock causeway cross section (refer Drawing DE19-823-YANC2-DE-CV-DRG-0360)

3.2.7 Pipe culvert replacement

At Bronzewing Drive (Trail ID04c), an existing damaged 600 diameter (nominal) pipe culvert is to be replaced to enable construction access and improve operational access to key waterway infrastructure. This new precast culvert would be a nominal 600 diameter (to be confirmed on site) and is intended to be a like-for-like replacement of the existing pipe culvert. The precast concrete pipe culvert unit shall be designed and installed in accordance with Australian standards AS/NZS 4058:2007, AS/NZS 3725:2007 and the NSW Fire Trail Standards where applicable.

The pipe culvert would continue to be an open structure that allows flows to pass freely under the trail into Tarwillie Swamp to the south. No regulator control gate would be installed. The structure will be designed to be hydraulically similar to the existing structure. The existing structure would be removed, with the replacement culvert to be placed in the same location to minimise vegetation clearing and ground disturbance. The proposed works would improve construction access to the proposed 1AS, Cattleyard, Grisdale's and Tarwillie Swamp environmental regulators under the Yanga National Park Supply Project.

3.3 Construction Methodology

3.3.1 Site establishment

Any identified site constraints and/or high-risk areas (i.e., identified cultural heritage sites) in proximity to the CAZ will be demarcated prior to the commencement of the proposed works. The laydown area at Tarwillie Gate would be established. A condition assessment of the trails would be undertaken by the contractor to determine the final scope of works.

3.3.2 Trail maintenance, upgrade and repair

Where required, discrete areas of minor vegetation management (i.e. slashing, pruning and removal) would occur within the trail corridor using mechanical methods where small patches of low-lying vegetation in poor condition has encroached into the trail corridor, primarily along the shoulder (verge).

A suitably sized grader would be used to regrade the trails to create a suitable camber. Following this, for trails in:

- Moderate to poor condition (T5 classification), up to approximately 125 mm of imported clean crushed rock and/or gravel would be placed as infill on the trail surface using a tipper truck. The trail would then be compacted to 100mm depth using suitable compaction plant such as a multi-tyre and/or drum roller to provide a smooth trafficable surface and the match existing longitudinal drainage. Finally, a grader would grade the trail to create a crossfall.
- Poor condition (T7 classification), up to approximately 250 mm of imported clean crushed rock and/or gravel would be placed as infill on the trail surface using a tipper truck. The crushed rock would be underlain by a basal geo-grid and geotextile separator. The trail would then be compacted to 200mm depth using suitable compaction plant to provide a smooth trafficable surface and to the match existing longitudinal drainage. Finally, a grader would grade the trail to create a crossfall.
- Adjoining existing regulator and culvert trail approaches reflective flexible guideposts would be installed each side of the Trail and on both approaches as required.

3.3.3 Twin Bridges Bank/Trail level reinstatement

A portion of Bronzewing Drive between Twin Bridge North and Twin Bridge South regulators would be levelled to 66.8 m AHD by raising low points in the trail surface. This would be achieved by placing suitable fill material within the existing trail footprint, a basal geo-grid and geotextile separator along with crushed gravel would also be applied in accordance with the T7 classification. Where required, an excavator would be used to reshape the banks along the trail levee to a suitable grade followed by stabilisation with in-situ material or rock as applicable.

Removal of native vegetation primarily comprised of River red gum saplings would be required along the banks to facilitate works to the banks. Depending on inundation levels at the time of construction, installation of a coffer dam upstream of the 1AS Regulator may be required to create safe construction access along Twin Bridges Bank.

3.3.4 Passing bays & Turnaround bays

The passing bays and turnaround bays on Bronzewing Drive and Redbank East Trail (T7 classification) would be constructed by placing up to approximately 250 mm of imported clean crushed rock and/or gravel on the trail shoulder using a tipper truck. The crushed rock would be underlain by a basal geo-grid and geotextile separator. The trails would then be compacted using suitable compaction plant to provide a smooth trafficable surface and to the match existing longitudinal drainage. Where required, minor vegetation clearing would occur adjacent to the trail corridor within the CAZ. Where relevant, the passing bays are to be installed in accordance with the NSW fire trail standards (RFS, 2023).

3.3.5 Culvert replacement

The defunct existing pipe culvert on Bronzewing Drive would be removed and replaced with a 'like for like' (nominal sizing of 600 mm to be confirmed onsite) pipe culvert replacement. Minor vegetation clearing along the trail edge and banks within the CAZ would occur to create space for plant, equipment and materials laydown and temporary storage. The trail levee banks would be modified to accommodate the replacement culvert. The replacement culvert would be installed in accordance with the manufacturer's requirements and its associated steps, including backfilling of the trail levee banks surrounding the culvert.

3.3.6 Rock causeways

The proposed rock causeways on Bronzewing Drive will require minor earthworks. The existing surface would be stripped (nominally up to 150 mm deep), with placement of a layer of select clay fill and a geotextile separator to be overlain by rip rap (50 mm diameter), placed to a minimum depth of 300 mm, followed by imported coarse gravel fill and compaction using suitable compaction plant. Discrete areas of vegetation slashing and removal using mechanical methods immediately along the shoulder of the crossing may be required.

3.3.7 Temporarily filling of existing bank breaches

Placement of suitable fill material would be restricted to the existing trail footprint at each depression, with the quantities of fill required at each low point to be determined based on-site conditions at the time of construction. Imported clean fill material would be placed as infill on the depression, followed by up to 250 mm of imported clean crushed rock and/or gravel, trails would then be compacted using suitable compaction plant to provide a smooth trafficable surface. Following construction of the Project, as directed by NPWS, the contractor will remove the fill material and reinstate the trail level at the impacted low points and depressions to pre-construction or agreed levels.

3.3.8 Vegetation clearing (Outside of the trail corridor)

Vegetation outside the trail corridor at the trail level reinstatement (Trail ID05b), rock causeways (ID04b), Steves Bank Trail sections with no formed trail (ID03) and culvert replacement (Trail ID04c) CAZ would be cleared using mechanical methods to create space for the new infrastructure and

associated construction plant and materials laydown and temporary storage. Cleared vegetation would be disposed of or reused as follows:

- In consultation with NPWS, any low-lying vegetation and River red gum saplings (Up to 50 mm diameter breast height) would be grubbed and disposed off site.
- Vegetation suitable for use in the site rehabilitation activities including juvenile River red gums (would be retained on site for later reuse by NPWS and/or for onsite rehabilitation to be completed by the contractor in accordance with the site rehabilitation plan (refer to Section 9.1).
- Other cleared vegetation would be mulched and either disposed off-site at a suitably licenced waste facility or, if requested by and agreed with NPWS, made available for NPWS to reuse within the Yanga National Park.

3.3.9 Spoil management

Any residual spoil material would be stockpiled separately, and where suitable (i.e., can be classified as virgin excavated natural material or excavated natural material), reused onsite as backfill and/or for construction of earthen cofferdams for works proposed under the Project. If any residual spoil is not suitable for beneficial reuse, the residual spoil material would be disposed off-site at an appropriately licenced waste facility.

3.3.10 Demobilisation/ rehabilitation

All temporarily affected land during construction, including stockpiles and laydown areas will be restored to as close as possible to their original state upon completion of the proposed works. Rehabilitation activities would occur in accordance with the approved site rehabilitation plan. The repaired and upgraded trails would be left in a stable and suitable condition for long-term use. Upon completion of the works, all materials used or generated (including waste) would be removed from site for re-use or lawfully disposed of.

3.3.11 Plant and equipment

The following indicative plant and equipment would be used for construction of the Proposal, and includes:

- Grader
- Excavator/bulldozer
- Concrete truck (if required for pipe culvert headwall)
- Multi-tyre and drum roller
- Wacker Packer and or trench roller
- Hand tools
- Low loader, to cart the pipe culvert
- Tipper truck and dog trailer, to cart materials and plant
- 15 to 20-tonne Franna crane, to unload and place the pipe culvert

- Electrical generator, for use of electrical equipment
- Water cart
- Support 4WD vehicles and trailer(s)
- Chipper or mulcher for vegetation.

3.3.12 Construction workforce and vehicle movement

Construction of the Proposal is anticipated to involve a maximum workforce of approximately five people at any one time. Light vehicle movements would be associated with employees and smaller deliveries. All access points to be utilised including those trails subject to repair and maintenance works are anticipated to have the capacity to accommodate these vehicle movements, with the additional vehicles passings through the surrounding road network considered likely to have a negligible impact on the performance of the trail network.

Construction would generate heavy vehicle movements associated with the transportation of construction machinery and materials (i.e., crushed rock /gravel) to the site. No oversized deliveries are anticipated to be required as part of the proposed works. During peak construction, there would be up to eight vehicle movements (including three heavy vehicles) per day associated with haulage and transportation of construction machinery (Excavator and Roller) and materials (i.e., crushed rock /gravel via a Tipper truck) to the site. A suitably sized Low loader and Franna crane would also be required to transport and install the replacement pipe culvert and headwall. Additional vehicle movements within the Yanga National Park and adjoining areas would be anticipated onsite associated with compaction and grading of the trails.

3.4 Access and ancillary facilities

Construction access to site would occur from Waugorah Road via Sturt Highway to the south of the Yanga National Park. In consultation with NPWS, an existing NPWS stockpile area located at the entrance to the Yanga National Park on Bronzewing Drive would be used for stockpiling of imported materials (i.e., crushed rock /gravel/pipe culvert and headwall). The laydown area is approximately 45 metres in length and 40 metres wide.

3.5 Operation

Upon commissioning and handover of the Proposal, ownership, maintenance and operational responsibility of the proposed new infrastructure would be handed over to NPWS as the existing landholder. During operation, the proposed replacement culvert and rock causeways would not result in material changes to the inundation extent or depth within the Yanga National Park as the structures are to be hydraulically similar to the existing infrastructure (prior to their deterioration). The proposed Redbank East Trail levee works may result in very minor localised inundation changes in Twin Bridges Swamp. However, the restored trail level would provide operational access and reduce undesirable bank overtopping and result in a marginal increase in inundation levels upstream of the levee during infrequent unregulated high flow events, along with a minor decrease in inundation levels downstream.

3.6 Proposal activity footprint

As described in Section 3.1, the Proposal would directly impact an area of up to approximately 12 ha during the construction phase. The CAZ for the Proposal are shown in Figure 3-7 to Figure 3-13 and the areas of the CAZ are provided in Table 3-4.

Table 3-4 Proposed CAZ footprints

Trail ID	Trail name	CAZ area (ha)		
		Cleared	Vegetated	Total
01	Hamptons Bank Trail	1.3	0.0	1.3
02	Hamptons Bank Trail / Snake Bank Trail	0.6	0.0	0.6
03	Steves Bank Trail	1.1	0.7	1.8
04a	Bronzewing Drive – Eastern Section	1.0	0.1	1.1
04b	Bronzewing Drive – Trail works	0.4	0.1	0.5
	Bronzewing Drive – Rock Causeway 1	<0.1	0.3	0.3
	Bronzewing Drive – Rock Causeway 2	<0.1	0.2	0.2
	Indicative Laydown area	0.0	0.2	0.2
04c	Bronzewing Drive – Trail works	0.9	0.2	1.1
	Bronzewing Drive – Replacement culvert	<0.1	<0.1	0.1
04d	Bronzewing Drive	0.7	0.2	0.9
05a	Redbank East Trail	0.8	<0.1	0.8
05b	Redbank East Trail – Trail & Twin Bridges Bank works	1.0	0.8	1.8
06	Redbank East Trail / River trail (Central)	1.1	<0.1	1.1
TOTAL		8.9	2.9	11.8



Figure 3-8 Proposed Snake Bank Trail CAZ (T7 works)

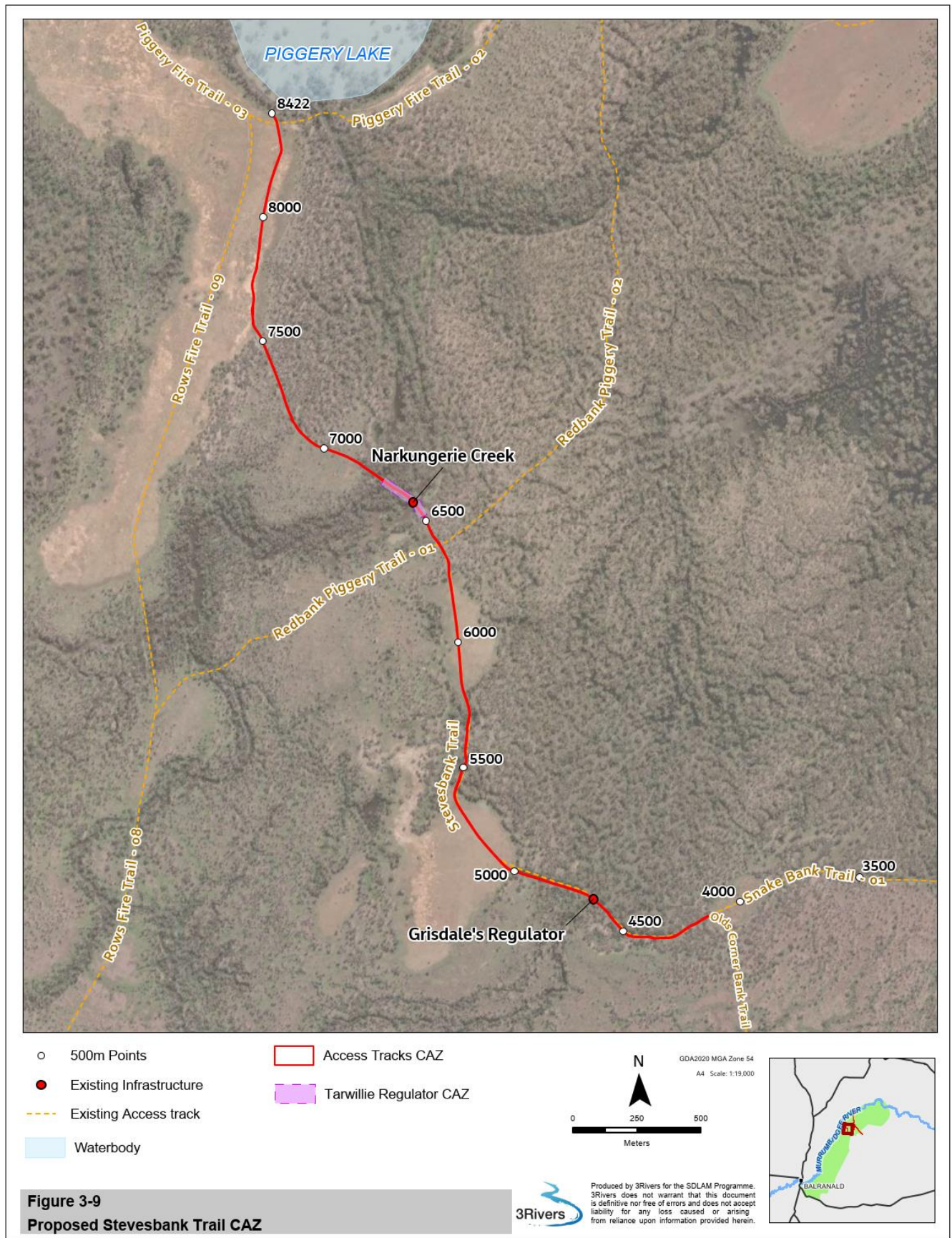


Figure 3-9 Proposed Steves Bank Trail CAZ (T7 works)

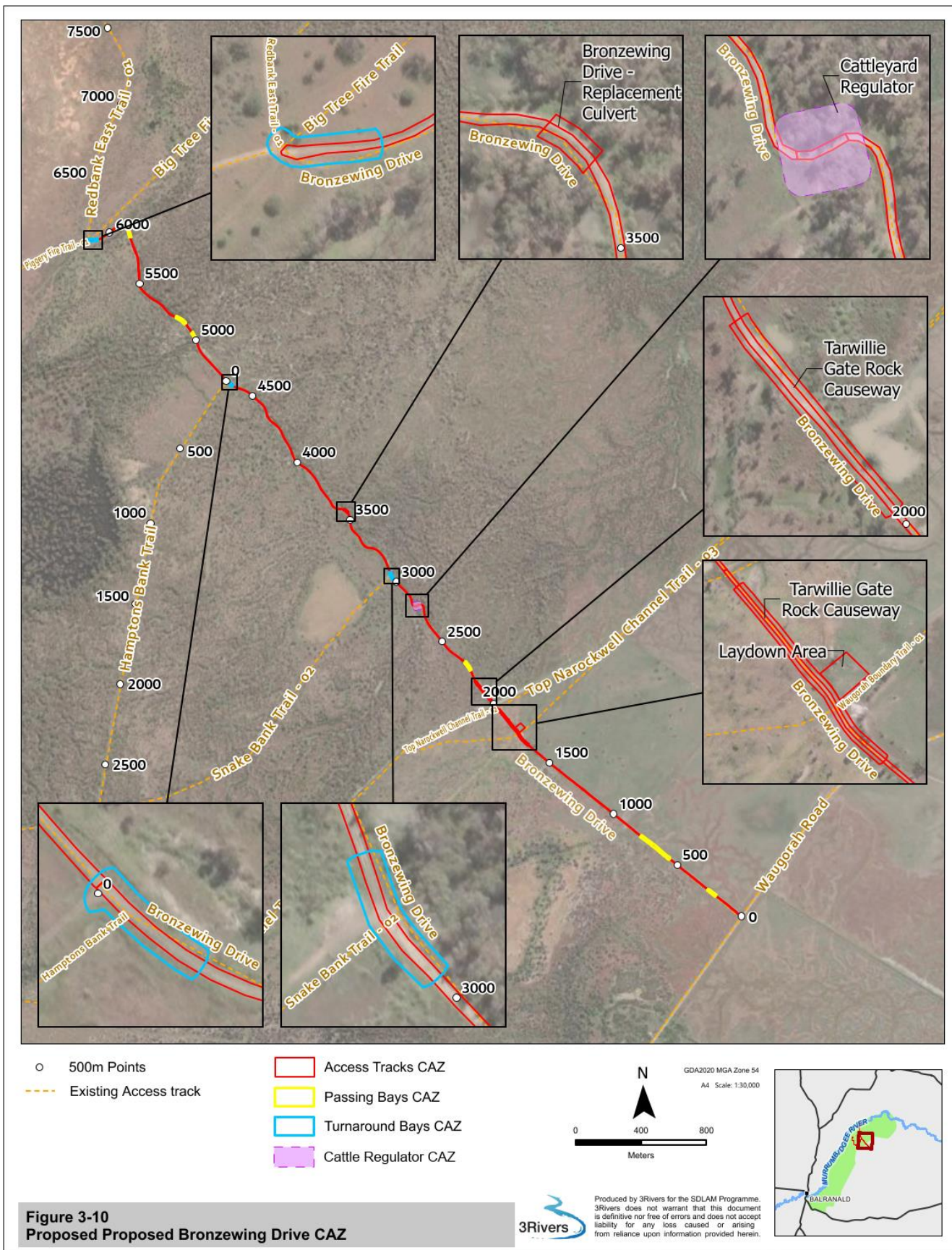


Figure 3-10 Proposed Proposed Bronzewing Drive CAZ (T5/T7 works)

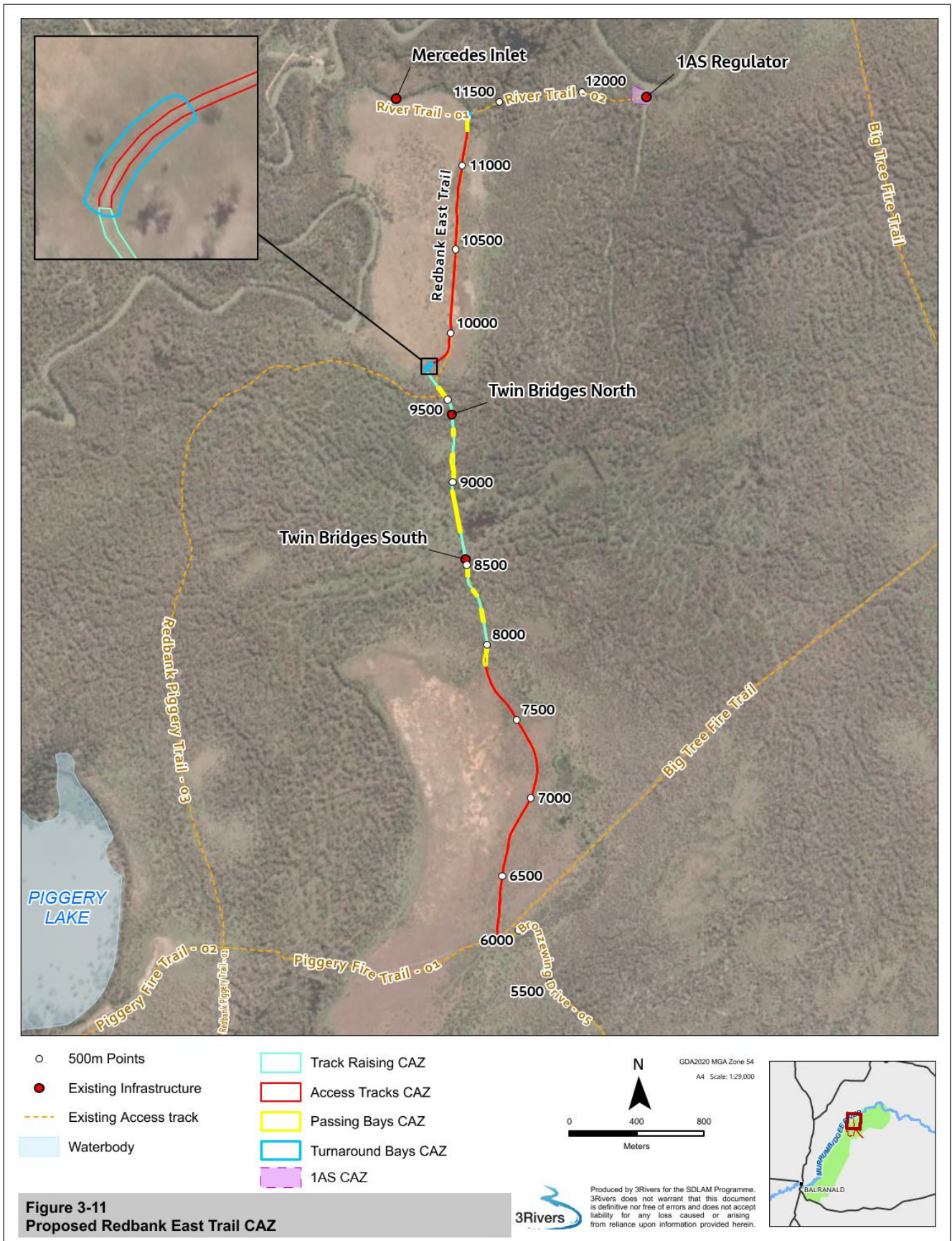


Figure 3-11 Proposed Redbank East Trail CAZ Overview

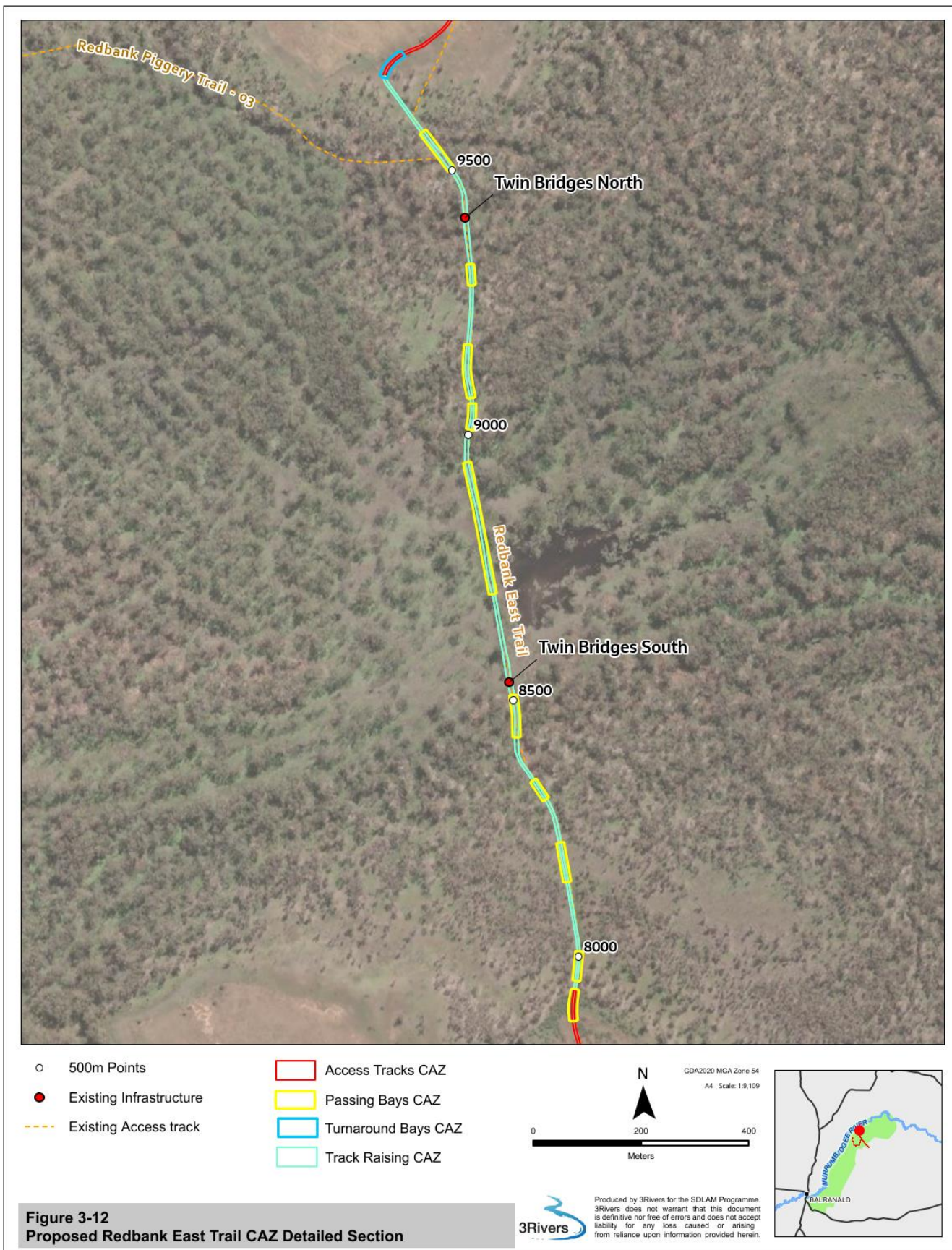


Figure 3-12 Proposed Redbank East Trail CAZ (T7/ Trail Raising Works) – Detailed section



Figure 3-13 Proposed River Trail CAZ (T7 Works) – Detailed section

3.7 Timing and staging

The construction period for the Proposal is generally anticipated to be staggered over a 12-week period from construction commencement to commissioning in early 2025, subject to the weather being dry and contractor resourcing. All proposed works are currently anticipated to be completed by April 2025. The following working hours are proposed:

- Monday to Friday – 7:00 am to 6:00 pm
- Saturday – 8:00 am to 5:00 pm
- Sunday and Public Holidays – No work

This includes an allowance for work on Saturday's outside of the standard working hours (i.e., from 1pm to 5pm Saturday's) as defined in the EPA Interim Construction Noise Guidelines 2009 (ICNG). Any further works to be undertaken outside of standard construction hours would be subject to an out of hours application process which would include consultation with affected surrounding landholders and NPWS where required.

3.8 Capital Investment Value

A preliminary estimate of the cost to construct the Proposal has been prepared by 3Rivers and is about \$2.5 million excluding GST (3Rivers, 2024).

3.9 Public utility adjustment

No public utility adjustments are required to enable the proposed construction works to occur.

3.10 Land access and acquisition

The Proposal would be accessed from the Sturt Highway, onto Waugorah Road and then via numerous management and fire trails within the Yanga National Park.

As discussed in Section 3.1, the Proposal would primarily be carried out Yanga National Park as land reserved under the NPW Act and managed by the NPWS. However, Bronzewing Drive – Eastern Section (Trail ID04a) is located on private land outside of the Yanga National Park as shown on Figure 3-1. This land was purchased in 2013 under an agreement between the Australian and New South Wales (NSW) government as part of the Gayini Nimmie-Caira Project, with ownership subsequently transferred to the Nari Nari Tribal Council. The land is now co-managed for conservation purposes by consortium led by the tribal council and The Nature Conservancy in partnership with other stakeholders. Prior to construction, a land agreement would be obtained with the Nari Nari Tribal Council to carry out the proposed works at this section of trail on Bronzewing Drive.

However, discrete sections of the proposed works to Bronzewing Drive, Hampton's Bank Trail, Steves Bank Trail, River Trail and Redbank East Trail traverse existing Crown roads which are

excluded from the gazetted Yanga National Park. DCCEEW would obtain appropriate authorisation from Crown Lands to undertake construction works on all Crown land parcels. However, as the Crown roads are understood to be 'paper roads' with no formed trail and/or existing users, the works would not impact on the use of these Crown roads during operation or construction.

As the proposed works are focused on maintenance and upgrades to existing trails, no permanent land use change is proposed, and no land acquisition is planned for the Proposal. There is no public access to the Yanga National Park via Bronzewing Drive.

4 Legislative context

4.1 Permissibility and assessment pathway

The State Environmental Planning Policy (Transport and Infrastructure) 2021 (TISEPP) facilitates the effective delivery of infrastructure across NSW.

For all existing management and fire trail works, with the exception of Bronzewing Drive – Eastern Section (Trail ID04a), the Proposal is located on land reserved under the NPW Act. Clause 2.73(1)(a) of the TISEPP allows for ‘development permitted without consent’ on land reserved under the NPW Act if the development is for a use authorised by, or under that Act. The trail works subject to this REF, are consistent with the NPW Act, with respect to the:

- Objects of the NPW Act, under section 2A
- Management principles relevant to a national park under section 30E
- Adopted statutory plan of management for the Yanga Precinct as it applies to the Proposal, under section 81
- Regulation of use of a park under Part 2 of the *National Parks and Wildlife Regulation 2019* (NPW Regulation).

For Bronzewing - Eastern Section (Trail ID04a), the Proposal is located on land not reserved under the NPW Act, and an alternative planning pathway is proposed for these works. Clause 2.109(1) of the TISEPP allows for development for the purpose of a road or road infrastructure facilities to be carried out by or on behalf of a public authority without consent on any land. As such, these works also be permissible without consent.

Further detail on the permissibility of the Proposal, assessment pathway and relevant legislation is provided below.

4.1.1 National Parks and Wildlife Act 1974

Objects of the NPW Act

The Proposal is consistent with the objects of the NPW Act because it would assist in achieving the objects relating to the conservation of nature and management of reserved land. The objects of this Act are to be achieved by applying the principles of ecologically sustainable development. A comparison of the objectives of the Proposal against the objects of the NPW Act is outlined in Table 4-1.

Table 4-1 Consistency of the Proposal with objects of NPW Act

Object of the NPW Act (Section 2A of the NPW Act)	Consistency of the Proposal with the objects
<i>a. the conservation of nature, including, but not limited to, the conservation of—</i> <i>i. habitat, ecosystems and ecosystem processes, and</i> <i>ii. biological diversity at the community, species and genetic levels, and</i> <i>iii. landforms of significance, including geological features and processes, and</i>	The Proposal would repair, maintain and in discrete areas, upgrade existing park management and fire trails, to allow improved access for key park management activities. The Proposal also seeks to facilitate and support the Project by improving light and heavy vehicle access, including construction vehicle access, to existing and proposed water management structures within the Yanga National Park, as part of the SDLAM Acceleration Program. The general aim of the broader Project is to improve conditions for the conservation of habitats, ecosystems and biological diversity. The Project would have benefits to Murray Darling Basin ecosystems, through improved of environmental outcomes for flood-dependent vegetation communities, keystone species such as Murray Cod and broader floodplain landscapes as well as more efficient watering of high value ecological assets.
<i>iv. landscapes and natural features of significance including wilderness and wild rivers,</i>	There is no declared wilderness (under the NSW <i>Wilderness Act 1987</i>) or wild rivers (Division 9 of the NPW Act) within the Area of Interest or surrounding locality. The Proposal is located away from key waterways such as Murrumbidgee River, Waugorah Creek and Urara Creek with minimal instream footprint. The majority of the CAZ is located in disturbed land within the footprint of the existing trails. The Proposal would seek to improve existing trail condition and durability and reduce the potential for further erosion and scour, thereby minimising impacts to the adjacent environment.
<i>b. the conservation of objects, places or features (including biological diversity) of cultural value within the landscape, including, but not limited to—</i> <i>i. places, objects and features of significance to Aboriginal people, and</i> <i>ii. places of social value to the people of New South Wales, and</i>	The Proposal considers the cultural values of the landscape through the assessment process, and avoids impacts to objects, places or features of cultural value. The consultation process for the Proposal has continually engaged the Aboriginal community to ensure the conservation and promotion of Aboriginal heritage and the shared history associated with the Yanga National Park. The Proposal would foster public appreciation for the natural and cultural values of Yanga National Park by facilitating the effective management of its natural and cultural heritage.
<i>iii. places of historic, architectural or scientific significance,</i>	The historic heritage assessment has considered the rich heritage context of the Yanga National Park. The Proposal would not impact on areas of historical, architectural or scientific significance.

Object of the NPW Act (Section 2A of the NPW Act)	Consistency of the Proposal with the objects
<i>c. fostering public appreciation, understanding and enjoyment of nature and cultural heritage and their conservation,</i>	The Proposal would not impact on visitor and tourist use and enjoyment of the Yanga National Park as the Proposal is focused on inaccessible areas of the Yanga National Park. Although there is no public access in this section of the Yanga National Park at present, the Proposal would enhance the potential for future visitors to appreciate, understand and enjoy by the public through improved access and park management.
<i>d. providing for the management of land reserved under this Act in accordance with the management principles applicable for each type of reservation.</i>	The proposed works are considered consistent with the management principles outlined in Section 30E of the NPW Act as detailed below and the specific Yanga Plan of Management directions as detailed in Section 0.

Section 2A(1)(d) of the NPW Act states that the management of land reserved under the Act is to be undertaken in accordance with the management principles applicable for each type of land reservation. Section 30E of the NPW Act outlines the management purposes and principles objectives for National Parks as detailed below:

- (1) *The purpose of reserving land as a National Park is to identify, protect and conserve areas containing outstanding or representative ecosystems, natural or cultural features or landscapes or phenomena that provide opportunities for public appreciation and inspiration and sustainable visitor or tourist use and enjoyment so as to enable those areas to be managed in accordance with subsection (2).*
- (2) *A National Park is to be managed in accordance with the following principles —*
 - (a) *the conservation of biodiversity, the maintenance of ecosystem function, the protection of geological and geomorphological features and natural phenomena and the maintenance of natural landscapes,*
 - (b) *the conservation of places, objects, features and landscapes of cultural value,*
 - (c) *the protection of the ecological integrity of one or more ecosystems for present and future generations,*
 - (d) *the promotion of public appreciation and understanding of the National Park's natural and cultural values,*
 - (e) *provision for sustainable visitor or tourist use and enjoyment that is compatible with the conservation of the National Park's natural and cultural values,*
 - (f) *provision for the sustainable use (including adaptive reuse) of any buildings or structures or modified natural areas having regard to the conservation of the National Park's natural and cultural values,*
 - (fa) *provision for the carrying out of development in any part of a special area (within the meaning of the Hunter Water Act 1991) in the National Park that is permitted under section 185A having regard to the conservation of the National Park's natural and cultural values,*
 - (g) *provision for appropriate research and monitoring.*

The proposed works are considered to be consistent with the management principles for National Parks in sections 30E of the NPW Act as they would assist in the conservation of the ecological integrity and ecosystem function of the Yanga National Park through improving access for key park management activities. The proposed works would also facilitate construction access to existing and proposed water management structures as part of the Project. The construction of these structures would assist in the conservation of the ecological integrity and ecosystem function of the Yanga National Park.

As detailed in Table 4-1, the Proposal would also improve access for scientific research and monitoring within the Yanga National Park. The Proposal is consistent with the objects of the NPW Act and management principles for a national park.

National Park Estate (Riverina Red Gum Reservations) Act 2010 No 22

The *National Park Estate (Riverina Red Gum Reservations) Act 2010 No 22* was enacted to facilitate the reservation of certain former state forest land in the Riverina area to the national park estate under the NPW Act. The Act facilitated the reservation of additions to Yanga National Park, with several former state forests such as Kieeta State Forest added to the Yanga National Park.

Yanga Precinct adopted Plan of Management

Yanga National Park is managed in accordance with the *Yanga National Park, Yanga State Conservation Area and Yanga Nature Reserve Plan of Management* (Yanga PoM), (NPWS, 2020). Section 2.3 of the PoM outlines specific management directions for the Yanga Precinct to provide a balanced approach to conserving natural and cultural heritage values within the Yanga Precinct. The Proposal will provide improved access for the ongoing management and conservation of these values and is therefore considered to be consistent with the specific management directions of the Yanga Precinct PoM.

A comparison of the objectives of the Proposal against the management directions for the Yanga Precinct is outlined in Table 4-2.

Table 4-2 Consistency of the Proposal with management directions for the Yanga Precinct

Objects	Consistency of the Proposal with Yanga PoM Management directions
<i>Using an adaptive management approach to restore and maintain the Parks' key ecological values, particularly the health and condition of the river red gum communities</i>	The Proposal would provide increased means to restore, manage and maintain key ecological and cultural values of the Yanga Precinct through improved management access. The Proposal would also support the Project which would restore aging waterway infrastructure to facilitate improved adaptive management of flows across the Yanga Precinct, providing NPWS with greater asset functionality and more efficient operational capacity. Thereby, the Proposal aims to protect and enhance the existing ecological values of the Yanga Precinct including flood-dependent vegetation communities such as River red gums.

Objects	Consistency of the Proposal with Yanga PoM Management directions
<i>Applying deliberate management interventions to reverse the effects of former land uses and restore native ecosystem elements</i>	The Proposal seeks to improve trail stability and minimise erosion and scour along key trails within and adjacent to Yanga Precinct. The Proposal would also support the broader Project which would remove physical barriers to the movement of water and native fish across the floodplain including remnant pastoral infrastructure. The Project will assist in the restoration and protection of the ecological health of the Lowbidgee floodplain and Murrumbidgee River.
<i>Providing a more natural watering regime for this section of the Lowbidgee wetlands</i>	The Proposal would support the Project which would restore key flow regulating assets to allow for the exclusion of inflows from the Murrumbidgee River to enable a drying regime in the forest and remove physical barriers such as undersized regulators to restore natural flow paths across the floodplain. The works would also allow NPWS to adaptively manage water levels in key waterbodies such as Waugorah Lake and Tarwillie Swamp to enhance, prolong or trigger natural waterbird breeding events.
<i>Continuing engagement with the community, government agencies and other stakeholders</i>	The engagement process undertaken to date has consulted a broad range of local community and government agencies to ensure that local and best-practice knowledge collaboratively guides Project and Proposal outcomes. Further details on consultation for the Proposal is provided in Chapter 5.
<i>Involving the aboriginal community in conserving and promoting aboriginal heritage and the continuing shared history associated with the Parks</i>	The consultation process for the Proposal has engaged the Aboriginal community on an ongoing basis to ensure the conservation and improved understanding of key cultural heritage values as well as the shared history associated with the National Park.
<i>Conserving and promoting the Parks' rich historic heritage, in recognition of the important place that the former Yanga station occupies in the history of the pastoral industry and of western NSW</i>	The historic heritage assessment has considered the conservation of historic heritage values of the Yanga Precinct, through avoidance of impacts to key historic sites.
<i>Presenting and promoting the Parks as a community asset for recreation, enjoyment and appreciation by visitors with the involvement of the local community and potential business partners</i>	The Proposal would not impact on visitor and tourist use and enjoyment of the Yanga Precinct as the Proposal is focussed on inaccessible areas of the Yanga Precinct. However, the Proposal would enhance the potential for future public visitation by improving park management and future access to key areas of the Yanga Precinct.

Objects	Consistency of the Proposal with Yanga PoM Management directions
<i>Encouraging research and monitoring that will add to existing knowledge about restoring natural and cultural values.</i>	The technical studies supporting this REF have further considered and contributed to the existing body of knowledge regarding restoration of natural and cultural values within the Yanga Precinct. Improved access to and within the Yanga Precinct will allow for additional monitoring during flow events.

The Proposal is considered to be consistent with the management principles for National Parks in sections 30E respectively of the NPW Act, refer to Table 4-3.

Table 4-3 Consistency of the Proposal with the management principles for National Parks in Sections 30E of the NPW Act

Management principle	Consistency of the Proposal
<i>(1) The purpose of reserving land as a National Park is to identify, protect and conserve areas containing outstanding or representative ecosystems, natural or cultural features or landscapes or phenomena that provide opportunities for public appreciation and inspiration and sustainable visitor or tourist use and enjoyment so as to enable those areas to be managed in accordance with subsection (2).</i>	The Proposal would support the protection and conservation of ecosystems, natural features and landscapes at Yanga National Park by improving access for key park management activities. The Proposal would have a minimal impact on visitor and tourist use and enjoyment of Yanga National Park. There would be some temporary air quality, noise, traffic and visual impacts during the construction phase of the Proposal (refer to Section 6.8, Section 6.9, Section 6.10 and Section 6.11.6.11.2). These impacts would be minor with implementation of the safeguards detailed in Section 9.3.
<i>(2) A National Park is to be managed in accordance with the following principles—</i>	

Management principle	Consistency of the Proposal
<i>(a) the conservation of biodiversity, the maintenance of ecosystem function, the protection of geological and geomorphological features and natural phenomena and the maintenance of natural landscapes,</i>	The Proposal would support the conservation of biodiversity and maintenance of ecosystem function on park by improving access for key park management activities and facilitating the Project. The Project seeks to improve the management and delivery of regulated and environmental flows across the floodplain. The Proposal would also improve the site environment water managers' ability to manage flows between the Murrumbidgee River and the floodplain for the purpose of conserving biodiversity and maintaining key ecosystem functions. If the Proposal did not occur, there would be an increased risk of future damage to trails and inability to access parts of the Yanga National Park. Over time this could result in degradation of the biodiversity and ecosystems of the floodplain and surrounds. The Proposal would not impact geological and geomorphological features of the Yanga National Park (refer to Section 6.1).
<i>(b) the conservation of places, objects, features and landscapes of cultural value,</i>	The Proposal would not impact places, objects features and landscapes of cultural value, as detailed in Section 6.6 and Section 6.7.
<i>(c) the protection of the ecological integrity of one or more ecosystems for present and future generations,</i>	The Proposal would support the protection of the ecological integrity of ecosystems of the Yanga National Park by improving access for key park management activities. If the Proposal did not occur, there would be an increased risk of future damage to trails and inability to access parts of the Yanga National Park. Over time this could result in degradation of the biodiversity and ecosystems of the floodplain and surrounds.
<i>(d) the promotion of public appreciation and understanding of the National Park's natural and cultural values,</i>	Improved access across the Yanga National Park would contribute to NPWS's ability to promote public appreciation and understanding of park's natural and cultural values.
<i>(e) provision for sustainable visitor or tourist use and enjoyment that is compatible with the conservation of the National Park's natural and cultural values,</i>	The Proposal would not impact on visitor and tourist use and enjoyment of the Yanga National Park as the Proposal is focussed on inaccessible areas of the Yanga National Park. There would be some temporary air quality, noise, traffic and visual impacts during the construction phase of the Proposal (refer to Section 6.8, Section 6.9, Section 6.10 and Section 6.11). These impacts would be minor with implementation of the safeguards in Section 9.3.

Management principle	Consistency of the Proposal
<i>(f) provision for the sustainable use (including adaptive reuse) of any buildings or structures or modified natural areas having regard to the conservation of the National Park's natural and cultural values,</i>	The Proposal would utilise existing park roads and trails throughout the Yanga National Park. The Proposal would not impact any buildings or structures or modified natural areas beyond the works to the existing pipe culvert, trails and waterway crossings. These assets have little to no natural, heritage and cultural value. The Proposal has sought to strategically utilise existing access tracks and waterway crossings to minimise impacts to the Yanga National Park's natural and cultural values,
<i>(fa) provision for the carrying out of development in any part of a special area (within the meaning of the Hunter Water Act 1991) in the National Park that is permitted under section 185A having regard to the conservation of the National Park's natural and cultural values,</i>	The Proposal is not within a special area as defined in the Hunter Water Act 1991.
<i>(g) provision for appropriate research and monitoring</i>	The Proposal would not impact the provision of research and monitoring associated with the Yanga National Park. The repaired and upgraded trails would improve access to key existing environmental watering monitoring sites within the Yanga National Park such as Twin Bridges Swamp.

Leases, licences and easements under the NPW Act

Part 12 of the NPW Act provides for the granting of a lease, or licence or easement for the use of land, buildings or structures on land reserved or acquired under the Act. No leases and licences (including access provisions) are currently anticipated to be required for the Proposal in accordance with Part 12 of the NPW Act.

Protection of Aboriginal objects and Aboriginal places

Part 6 of the NPW Act provides for the protection of Aboriginal objects and Aboriginal places. Sections 86 and 87 of the Act makes it an offence to harm or desecrate Aboriginal objects and Aboriginal places. The defences are unless the harm or desecration was authorised by an Aboriginal Heritage Impact Permit (AHIP under section 90 of the NPW Act) or due diligence was exercised to determine whether the subject act would harm an Aboriginal object, and it was reasonably determined that no Aboriginal object would be harmed. Section 90 of the NPW Act details the requirements for applying for and granting of AHIPs.

An Aboriginal Cultural Heritage Assessment report has been prepared in accordance with the *Code of Practice for the Investigation of Aboriginal Objects in NSW* (DECCW 2011) to inform this REF and is provided in Attachment B and summarised in Section 6.6. The assessment determined that the Proposal would not harm any Aboriginal objects (and no Aboriginal Places are identified), or adversely alter or impact any existing Aboriginal Cultural Heritage or values and, therefore, an AHIP is not required to proceed.

Assets of intergenerational significance

Part 12A of the NPW Act provides for the declaration of land as part of an environmental or cultural asset of intergenerational significance (AIS). It remains an offence to damage, harm or disturb land declared an AIS unless it was carried out in accordance with a conservation action plan, an Aboriginal cultural practice, a planning approval under the EP&A Act or an authorised action under the *Rural Fires Act 1997*.

The Proposal is not located on a declared AIS site.

4.1.2 National Parks and Wildlife Regulation 2019

The NPW Regulation regulates the use of parks. The NPW Regulation prohibits the following conduct within a park without the consent of a park authority:

- Sections 9 and 10 prohibit the entry and use of heavy and noisy machinery
- Section 14 prohibits interfering with animals or their nests, eggs, habitation or resting place or any beehive
- Section 20 prohibits the construction, operation or use of any structure, installation, engineering, plant or equipment
- Section 21 prohibits the cutting, felling, removal, damage or destruction of vegetation.

Construction of the Proposal will require consent under the NPW Regulation from NPWS before proceeding. The proposed works will need to be carried out in accordance with the conditions of that consent.

4.1.3 Crown Land Management Act 2016

The *Crown Land Management Act 2016* (CLM Act) provides for the ownership, use and management of Crown land in NSW. Ministerial approval is generally required to grant a lease, licence, permit, easement or right of way over a Crown reserve. The Act requires environmental, social, cultural heritage and economic considerations to be taken into account in decision-making about Crown land, in accordance with the objects of the Act and the principles of Crown land management.

There are a number of Crown roads declared under the *Roads Act 1993* which traverse the Yanga National Park. These roads are not gazetted as part of the Yanga National Park and are typically not physically formed but exist only as ‘paper roads.’ These Crown roads intersect with management trails which are subject to works proposed under this REF, namely Bronzewing Drive, River Trail, Hampton’s Bank Trail, Steves Bank Trail and Redbank East Trail. As the Crown roads are understood to exist only as ‘paper roads’ with no formed trail, they would not impact on Crown land access or existing usage. However, the portion of these roads which intersect with the proposed CAZ at Bronzewing Drive, Steves Bank Trail, River Trail, Hampton’s Bank Trail and Redbank East Trail would need to be leased from Crown Lands for the construction of the Proposal as shown in Figure 4-1.

A community engagement strategy (CES) is required under the CLM Act for any action affecting Crown Land use including licences and leases. The CES has to be approved by the Minister (lands and forestry) and exhibited for at least 28 days. A waiver may be granted if the land manager (Crown Lands) considers that the REF display and consultation strategy meets these requirements

adequately. Further discussion is to be carried out with Crown Lands prior to construction commencement.

4.1.4 Environmental Planning and Assessment Act 1979

This REF has been prepared in accordance with Part 5 Division 5.1 of the EP&A Act. The REF examines and takes into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of the activity, in accordance with section 5.5 of the EP&A Act.

Clause 171(1) of the EP&A Regulation requires that a determining authority must take into account the environmental factors specified in the environmental factors guidelines that apply to the activity. Accordingly, this REF has taken into account the environmental factors specified in the Guidelines for Division 5.1 Assessments (DPE, 2022a).

NPWS has developed guidelines for the preparation of REFs for activities proposed on NPWS managed lands. The *Guidelines for Preparing a Review of Environmental Factors: How to Assess the Environmental Impacts of Activities Within NSW National Parks* (DPE, 2022b) are designed to help proponents to develop the contents of an REF and also understand post-determination requirements on NPWS managed lands. The guidelines were considered during the development of the template and contents of this REF.

4.1.5 State Environmental Planning Policies

State Environmental Planning Policy (Transport and Infrastructure) 2021

4.14.14.1 As discussed in Section 4.1, the proposed works represent ‘*development permitted without consent*’ in accordance with clause 2.109(1) under Division 17 of the TISEPP, which permits development for the purpose of a road that is carried out by or on behalf of a public authority without consent on any land. For trails within the National Park on land zoned as C1 under the Wakool LEP, which are managed and owned by NPWS, clause 2.109(1)(a) applies, with the works authorised under the NPW Act as detailed in Section 4.1.1 and 4.1.2. The key exception to this is Bronzewing Drive – Eastern Section (Trail ID04a), which is on land privately owned by the Nari Nari Tribal Council and located on land zoned as RU1 (Primary Production). Clause 2.109(1)(a) does not apply to the proposed works on this trail.

It is noted that none of the trails subject to proposed works are understood to be ‘classified roads’ as defined under the Standard Instrument — Principal Local Environmental Plan (2006).

Accordingly, development consent is not required under Part 4, Division 4.1 of the EP&A Act. However, environmental assessment and approval is required under Part 5, Division 5.1 of the EP&A Act as discussed in Section 4.1.

State Environmental Planning Policy (Biodiversity and Conservation) 2021

The State Environmental Planning Policy (Biodiversity and Conservation) 2021 (BCSEPP) contains provisions to protect the biodiversity values and amenity of trees and other vegetation in non-rural areas of NSW (Chapter 2), encourage the proper conservation and management of areas of natural vegetation that provide habitat for koalas (Chapters 3 and 4), conserve and enhance the riverine

environment of the Murray River (Chapter 5), and control development in certain water catchments (Chapter 6).

None of these chapters of the BCSEPP are relevant to the Proposal.

4.1.6 Strategic Plans

Murray River Council Local Strategic Planning Statement 2020-2040

The Murray River Council's Local Strategic Planning Statement (LSPS) 2020-2040 sets out the 20-year vision for land use planning in Murray River Council. The LSPS sets out key economic, social and environmental priorities and identifies management plans to guide planning decisions and preparation of development controls. The statement outlines three themes to achieve Council's vision for the area, including Theme Three: Environment, heritage and climate change. This theme includes priorities which promote the identification/protection of environmental values, and directions which involve management/conservation of water resources for the environment and the protection/management of the region's many environmental assets. Further, the Murray River Council is committed to continuing to collaborate with the State and Commonwealth governments about the Murray Darling Basin Plan.

The Proposal's objective to support the broader Yanga National Park Supply Project is aligned with enabling smarter use of available water to sustain and improve environmental outcomes. This objective is consistent with the priorities and directions contained within the local strategic planning statement.

Riverina Murray Regional Plan 2041

The Riverina Murray Regional Plan 2041 centres on creating more jobs, strengthening the region's cities, town and villages, sustainably managing its agricultural, extractive and natural resources and protecting key waterways such as the Murray River. The key desired outcomes for the Regional Plan include a focus on rivers and riverine corridors as places for cultural connection, activation, recreation, conservation and economic activity.

The Proposal's objective to support the Project is considered to be consistent with these desired outcomes as the broader Project seeks to restore natural flow paths and improve native fish passage to improve conservation outcomes for the Yanga National Park, along with improved recreational fishing opportunities.

4.1.7 Local Environmental Planning Instruments

Wakool Local Environmental Plan 2013

The Proposal is located within the Murray River local government area (LGA) and subject to the provisions of the *Wakool Local Environmental Plan 2013* (Wakool LEP). Clause 1.9 of the Wakool LEP states that the plan is subject to the provisions of any state environmental planning policy that prevails over this plan. Development consent from Council for the Proposal is not required in accordance with clause 2.73(1) and clause 2.109(1) of the TISEPP.

The Wakool LEP considers land use objectives for land zones within the Murray River LGA. The Proposal is primarily located within lands that are zoned C1 (National Parks and Nature Reserves)

under the Wakool LEP. The key exception to this is Bronzewing Drive – Eastern Section (Trail ID04a), which is on land privately owned by the Nari Nari Tribal Council and located on land zoned as RU1 (Primary Production) under the Wakool LEP.

Consistency of the Proposal with each zone’s objectives is outlined below in Table 4-4. Land zoning relevant to the Proposal is shown in Figure 4-1.

Table 4-4 Consistency of the Proposal with the Wakool LEP zone objectives

Zone	Objectives	Consistency of the Proposal with the zone objectives
C1 (National Parks and Nature Reserves)	- To enable the management and appropriate use of land that is reserved under the <i>National Parks and Wildlife Act 1974</i> or that is acquired under Part 11 of that Act. - To enable uses authorised under the <i>National Parks and Wildlife Act 1974</i>. - To identify land that is to be reserved under the <i>National Parks and Wildlife Act 1974</i> and to protect the environmental significance of that land.	- The Proposal is authorised under the NPW Act. - The Proposal is considered compatible with this zone objective.
RU1 (Primary Production)	- To encourage sustainable primary industry production by maintaining and enhancing 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 promote the use of agricultural land for efficient and effective agricultural production without the encroachment of urban land uses. - To allow the development of processing, service and value-adding industries related to agriculture and primary industry production. - To allow the development of complementary non-agricultural land uses that are compatible with the character of the zone.	- The Proposal would provide increased means to restore, manage and maintain the Yanga National Park and adjacent areas through improved management access. This would minimise conflict between the adjoining land uses. - The Proposal is considered compatible with this zone objective.

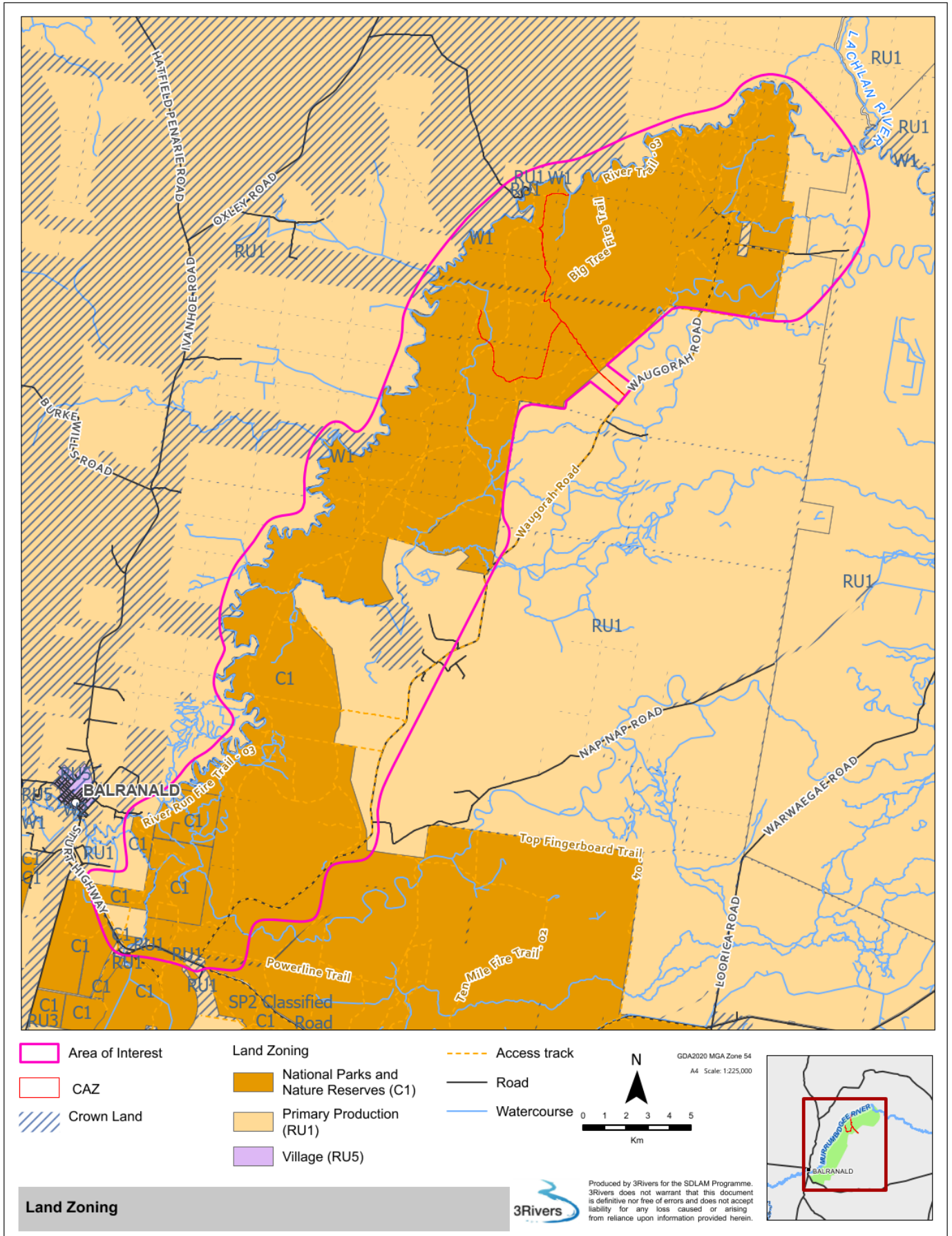


Figure 4-1 Land zoning of the Proposal

4.2 Other NSW legislation

4.2.1 Biodiversity Conservation Act 2016

The *Biodiversity Conservation Act 2016* (BC Act) applies in relation to animals and plants. The purpose of the BC Act is to maintain a healthy, productive and resilient environment for the greatest well-being of the community, now and into the future, consistent with the principles of ecologically sustainable development.

The BC Act establishes procedures and criteria for the recognition of areas of outstanding biodiversity value and species and ecological communities that are threatened. Schedules 1 and 2 of the Act list threatened species and ecological communities respectively. The Act also identifies processes that could adversely affect threatened species or ecological communities or cause species or ecological communities that are not threatened to become threatened. Key threatening processes are listed in Schedule 4 of the Act.

Part 7 of the BC Act identifies biodiversity assessment requirements for approvals under the EP&A Act. In accordance with section 7.2 of the BC Act, development that is an activity subject to environmental impact assessment under Part 5 of the EP&A Act is likely to significantly affect threatened species if it is likely to significantly affect threatened species or ecological communities, or their habitats, according to the test in section 7.3 of the BC Act or if it is carried out in a declared area of outstanding biodiversity value.

Section 7.8 of the BC Act requires that an environmental assessment under Part 5 of the EP&A Act of a Proposal likely to significantly affect threatened species is to include or be accompanied by a species impact statement or, if the proponent so elects, a biodiversity development assessment report.

A biodiversity assessment of the Proposal is provided in Attachment A and summarised in Section 6.4. The Proposal would not have significant impact on threatened species or ecological communities, or their habitats, and is not in a declared area of outstanding biodiversity value (refer to Section 6.4 and Attachment A). Accordingly, neither a species impact statement nor biodiversity development assessment report is required.

The relevant requirements of the BC Act are addressed in the biodiversity assessment through:

- Desktop review to determine the threatened species, populations or ecological communities that have been previously recorded within the locality
- Identification, assessment and mapping of listed threatened communities and threatened species (or their habitat)
- Assessment of potential impacts on listed threatened species, populations and ecological communities, including identification of key threatening processes relevant to the construction areas
- Test of significance for potential impacts to threatened species or ecological communities, or their habitats, in accordance with section 7.3 of the BC Act
- Identification of suitable impact mitigation and environmental management measures for listed threatened species, where required.

4.2.2 Rural Fires Act 1977

The *Rural Fires Act 1997* (RF Act) provides for the prevention, mitigation and suppression of bush fires, and aims to protect environmental, cultural and community assets from damage arising from fires. The RF Act establishes an organisational framework for bush fire management planning, with the creation of rural fire districts under section 6 of the RF Act and bush fire management committees for each of these districts under section 50 of the Act.

Section 52 of the RF Act requires each bush fire management committee is required to prepare a bush fire risk management plan for their district. The required contents of bush fire risk management plans are identified in section 54 of the RF Act and include schemes for the reduction of bush fire hazards and restrictions on the use of fire or other particular fire hazards reduction activities.

The Proposal is located within the Mid Murray Zone Bush Fire Risk Management Committee area, which includes the Conargo, Deniliquin, Jerilderie, Murray and Wakool local government areas. The committee prepared a bush fire risk management plan for the area in 2009. Information in the plan that is relevant to the Proposal is summarised in Section 6.12.

Under section 3(d) of the RF Act, the protection of the environment through bush fire prevention activities is required to be carried out having regard to the principles of ecologically sustainable development described in section 6(2) of the *Protection of the Environment Administration Act 1991*.

Section 63 of the RF Act provides that it is the duty of a public authority to prevent the occurrence of bush fires on any land under its ownership or occupancy and to take any steps that a bush fire coordinating committee advises it to take or which are included in an applicable bush fire risk management plan and any other practicable steps to prevent the occurrence of bush fires on, and to minimise the danger of the spread of a bush fire on or from:

- a) Any land vested in or under its control or management, or
- b) Any highway, road, street, land or thoroughfare, the maintenance of which is charged on the authority.

Part 3A of the RF Act provides for the designation of neighbourhood safer places, which may be suitable for people to shelter from a bush fire.

The Act declares the bush fire danger period to run from 1 October to 31 March in the following year (inclusive), which can be modified by the Commissioner of the NSW Rural Fire Service (NSW RFS). Total fire bans may be issued by the Minister in the interests of public safety.

The Proposal does not comprise development for which a bush fire safety authority under section 100B of RF Act would be required.

Fire Access and Fire Trail

Fire Access and Fire Trail (FAFT) Plans are required to be prepared by Bush Fire Management Committees under section 62(k) of the RF Act. Under section 54(a) of the RF Act, a FAFT plan is to:

‘(1)...to provide schemes for appropriate means of accessing land to prevent, fight, manage or contain bush fires, and in particular may do so by identifying or providing for the identification of suitable existing or proposed fire trails.

(2) A draft fire access and fire trail plan is to set out matters in conformity with the Fire Trail Standards.'

A draft FAFT plan (Mid-Murray FAFT Plan) is being prepared for the broader Mid Murray Zone including the Yanga National Park. The FAFT will outline trails to be upgraded and relevant Fire Trail Standards to be applied including fire trail categories for each trail requiring fire access (i.e. Category 1, Category 7 etc.).

The proposed works have been developed in consideration of the:

- NSW Fire Trail Standards (RFS, 2023) made under section 62(k) of the RF Act
- Draft Mid-Murray FAFT Plan.

The proposed works have also considered the fire trail transitional management standards provided in the *Murrumbidgee Valley National Park (Yanga Precinct) Fire Management Strategy 2014* (OEH, 2015), including fire trail categories for each relevant trail as detailed below:

- Bronzewing Drive – Essential Trail (Category 1)
- Redbank East trail – Essential Trail (Category 7)
- River Trail – Essential Trail (Category 7)
- Steves Bank trail – Essential Trail (Category 7)
- Hamptons Bank trail – Important Trail (Category 7)
- Snakes Bank trail – Important Trail (Category 7).

These categories correspond to enabling access for varying firefighting vehicles, with Category 1 providing the highest level of access and Category 9 the most restricted.

Where feasible, fire trail standards including trail corridor widths, turnaround and passing bay requirements have been considered and applied for the proposed works in accordance with the above as detailed in Section 3. However, additional works may be required in the future to ensure the management trails fully comply with the final Mid-Murray FAFT and NSW Fire Trail Standards.

4.2.3 Fisheries Management Act 1994

The *Fisheries Management Act 1994* (FM Act) applies in relation to fish and marine vegetation. The FM Act provides for the conservation, protection and management of fisheries, aquatic systems and habitats in NSW. The Act is relevant as the Proposal would directly and indirectly impact aquatic habitats and species.

The FM Act establishes mechanisms for:

- The listing of threatened species, populations and ecological communities or key threatening processes
- The declaration of critical habitat
- Issuing permits for certain works on 'water land'
- Consideration and assessment of threatened species impacts in the development assessment process.

Part 7 of the FM Act relates to the protection of aquatic habitats, including providing management of dredging and reclamation works within permanently or intermittently flowing watercourses, as well as the temporary or permanent blockage of fish passage within a watercourse.

As detailed in Section 6.5, several EPBC and/or FM Act listed threatened fish species may be present within the Yanga National Park including Murray Cod and Trout Cod. The Proposal is also situated wholly within the FM listed endangered ecological community (EEC) known as the 'Lowland Murray River Drainage System' (Lowland Murray River EEC). However, impacts to aquatic ecosystem values are anticipated to be negligible given the minimal instream footprint and completion of works under dry conditions. Refer to Section 6.5 for further details.

Construction of the proposed replacement culvert may cause a temporary blockage of fish passage within watercourses. This has the potential to trigger the requirement for a permit to obstruct the free passage of fish under section 219 of the FM Act. However, it is considered unlikely the proposed works would impact on fish passage within the CAZ during construction, given the works would occur on an ephemeral flood runner in dry conditions and the poor condition of the existing failed pipe culvert is considered likely to obstruct fish passage at present.

The proposed Twin Bridges Bank (Redbank East Trail), temporary filling of depressions in trails, replacement culvert and Bronzewing Drive rock causeway works would also require minor instream earthworks. This would include placement of small quantities of rock armouring within natural flood runners at existing crossings and/or on riparian land in wetlands such as Twin Bridges Swamp. All proposed works would avoid adverse water quality impacts and result in minimal material changes to local hydrology. The Department of Primary Industries (DPI) (Fisheries) confirmed that notification under section 199 of FM Act would not be required as these works require minimal instream disturbance in minor ephemeral waterways.

4.2.4 Water Management Act 2000

The *Water Management Act 2000* (WM Act) provides for the sustainable and integrated management of the water sources of the State for the benefit of both present and future generations.

Section 91 of the WM Act requires an 'activity approval' to carry out a 'controlled activity' in, on or under waterfront land or to carry out an aquifer interference activity. The definition of a controlled activity includes the carrying out of work, the removal of material or vegetation from land, the deposition of material on land and the carrying out of any other activity that affects the quality or flow of water in a water source. Waterfront land is defined as including the bed and banks of rivers as well as land that is 40 metres inland of the highest bank of the river. A river is defined river to include any watercourse, whether perennial or intermittent and whether comprising a natural channel or a natural channel artificially improved. Sections of the Proposal would be a controlled activity under the WM Act. However, clause 41 of the *Water Management (General) Regulation 2018* provides that a public authority is exempt from requiring a controlled activity approval to carry out a controlled activity in, on or under waterfront land. Therefore, as the Department is the proponent of the Proposal, a controlled activity approval is not required.

4.2.5 Heritage Act 1977

The *Heritage Act 1977* provides for the conservation of buildings, works, relics and places that are of historic, scientific, cultural, social, archaeological, architectural, natural or aesthetic significance to the State. Matters protected under the Act include items listed on the State Heritage Register, the heritage schedules of local environmental plans, and/or the conservation registers (or section 170 registers) of NSW government agencies, as well as items subject to an interim heritage order.

Under section 60 of the *Heritage Act 1977*, approval from the Heritage Council of NSW is required before carrying out any work or activities on items listed in the State Heritage Register. The Proposal would not impact on any items listed on the State Heritage Register.

Section 139 of the *Heritage Act 1977* prohibits a person from disturbing or excavating any land on which the person has discovered or exposed a relic, except in accordance with an excavation permit or a notification granting exception for the permit.

Section 146 of the *Heritage Act 1977* requires that if a relic is discovered or located, the Heritage Council of NSW must be notified of the location of the relic.

Section 170 of the *Heritage Act 1977* establishes a register of heritage items owned by NSW Government agencies.

Potential impacts to historical heritage are discussed in Section 6.7. The Proposal would not impact on any items listed on NPWS's section 170 Heritage Act Agency Conservation Register, as per The Department's Historic Heritage Information Management System.

4.2.6 Protection of the Environment Operations Act 1997

The *Protection of the Environment Operations Act 1997* (POEO Act) requires that an environment protection licence be held to undertake a scheduled activity or scheduled development work. The Proposal is not of a kind listed in Schedule 1 of the POEO Act and would not require an environment protection licence under this Act.

Section 43(d) of the POEO Act permits (but does not require) the issue of an environment protection licence for non-scheduled activities. However, compliance with the conditions of such a licence provides a defence to the offence of polluting waters under section 120 of the POEO Act.

Construction activities must comply with the requirements of the POEO Act. Section 139 of the POEO Act relates to the operation of plant and noise pollution and requires that plant be operated in a proper and efficient manner and maintained in an efficient condition.

4.3 Commonwealth legislation

4.3.1 Environment Protection Biodiversity Conservation Act 1999

The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) prescribes the Commonwealth's role in environmental assessment, biodiversity conservation and the management of protected areas and species, populations and communities and heritage items.

The approval of the Commonwealth Minister for the Environment and Water is required for an action which has, would have, or is likely to have, a significant impact on matters of national environmental significance.

Any potential to significantly impact on matters of national environmental significance is likely to require a referral to the DCCEEW for a decision as to whether it is a controlled action requiring approval under the EPBC Act.

NSW DCCEEW has undertaken a detailed self-assessment of the potential for significant impacts on matters of national environmental significance. Given the Proposal is comprised of minor upgrades and maintenance works to trails with minimal vegetation clearing required, the Proposal is not expected to have the potential for a significant impact on matters of national environmental significance. As a result, the Department has determined that no referral under the EPBC Act is required. Further details regarding potential impacts on matters of national environmental significance is discussed in Chapter 7.

4.3.2 Native Title Act 1993

Native title is the recognition that Aboriginal and Torres Strait Islander people have rights and interests to land and waters according to their traditional law and customs as set out in Australian Law. Native title is governed by the *Native Title Act 1993* (NT Act).

An indigenous land use agreement, established under the NT Act, is a voluntary agreement between native title parties and other people or bodies about the use and management of areas of land and/or waters. It can be made over areas where native title has been determined to exist in at least part of the area, where a native title claim has been made or no native title claim has been made.

A search of the National Native Title Tribunal registers carried out on 5 June 2024 did not reveal any current native title applications or determinations, or Indigenous Land Use Agreements applicable to the Proposal. Although there are currently no native title claims within the CAZ or broader Yanga National Park, it is uncertain whether native title has been extinguished under the NT Act at the Crown Roads which intersect with discrete segments of Bronzewing Drive, Redbank East Trail, Hamptons Bank Trail, River Trail and Stevesbank Trail.

Given the proposed works are limited to minor maintenance works to existing management trails, impacts to unextinguished native title rights would be limited to temporary access impacts during construction, along with a minor increase in the permanent infrastructure footprint following construction as detailed in Section 3.6. Where appropriate, and depending upon the agreed access requirements with Crown Lands, a native title strategy would be developed to manage potential impacts to unextinguished native title rights. This may include notification and negotiation with native title parties in accordance with the Future Acts Regime, which establishes procedures under the NT Act to be followed so that future acts which may impact native title rights as detailed under Part 2 Division 3 of the NT Act.

4.4 Consistency with relevant NSW Government policy

Table 4-5 Consistency of the Proposal with NSW Government policy

Policy name	How Proposal is consistent
NPWS – People and Wildlife Policy	As per section 47 of the NPWS <i>People and Wildlife Policy</i> , the protection of wildlife is considered in Section 6.4 and Section 6.5 of this REF. Safeguards that will be implemented to avoid, minimise or manage potential terrestrial and aquatic biodiversity impacts as a result of the Proposal are outlined in Section 6.4.3 and Section 6.5.3 respectively. The Proposal is consistent with this policy.
NPWS – Vehicle Access Policy	The Proposal would repair and maintain existing trails. No new park roads or management trails are proposed as part of the Proposal. Vehicle access would be undertaken in accordance with the <i>Vehicle Access Policy</i> . As discussed in Section 3.4, construction vehicles would access the CAZ from Waugorah Road via the Sturt Highway and onto NPWS managed trails. A construction traffic management plan will be prepared to manage the movement of construction vehicles to and from the proposed CAZ. The Proposal is consistent with this policy. Refer to Section 6.10 for further details on vehicle access and potential traffic impacts.
NSW Department of Planning & Environment – Cultural Heritage Community Consultation Policy	Consultation for the Aboriginal cultural heritage assessment component of the Proposal has been undertaken in line with the <i>Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010</i> , which is understood to supersede this policy.

4.5 Summary of licences and approvals

Licences and approvals required for the Proposal are summarised in Table 4-6.

Table 4-6 Licences and approvals required by the Proposal

Legislation	Licence/approval required
EP&A Act	Planning approval under Part 5 Division 5.1 of the EP&A Act is required. This REF has been prepared to fulfil the requirements of section 5.5 of the EP&A Act.
NPW Act	The Department will seek consent from NPWS to carry out the proposed construction works
NPW Regulation	Consent is required from NPWS to construct the Proposal. Specifically, consent is required for construction plant and equipment to enter, drive through, and operate within Yanga National Park, and to carry out the construction works.

Legislation	Licence/approval required
Roads Act	Section 138 of the Roads Act provides that consent from the relevant road authority is required to disturb, erect a structure, or carry out a work in, on or over a public road. Clause 5(1) of Schedule 2 exempts public authorities from this requirement, except in relation to works on or over classified and Crown roads. As the Proposal includes proposed works to management trails which intersect with declared Crown roads, approval would be sought under Section 138 of the Roads Act.

4.5.1 Publication triggers

An REF must be published following determination of the Proposal if it requires an approval or permit identified in clause 171(4) of the EP&A Regulation before it may be carried out. These triggers are summarised in Table 4-7 in relation to the Proposal and demonstrate that there is no obligation for the REF published.

Table 4-7 Triggers for publication of the REF

Permit or approval	Applicability
FM Act, sections 144, 201, 205 or 219	Not Applicable – The Proposal would not involve aquaculture or harm marine vegetation. As noted in Section 4.2.3, the Department does not consider that a permit under section 219 of the FM Act is required.
Heritage Act 1977, section 57 (commonly known as a section 60)	Not applicable – The Proposal would not disturb any items on the State Heritage Register (refer to Section 6.7).
NPW Act, section 90 (Aboriginal heritage impact permit)	Not applicable – The Proposal would not harm any known Aboriginal heritage items (refer to Section 6.6).
POEO Act, sections 47–49 or 122	Not applicable – The Proposal is not a scheduled development work or a scheduled activity and, therefore, does not require an environment protection licence.
EP&A Regulations – section 171(4) (a) (Capital Investment Value)	Not applicable – The estimated capital investment value of the Proposal is under the \$5 million threshold (refer to Section 3.8).

5 Consultation

5.1 Community and stakeholder consultation

The Department is committed to building and maintaining respectful, trusted and collaborative relationships with the local community and relevant stakeholders to ensure the Project achieves the best possible outcomes. The engagement process undertaken to date recognises that communities have the local knowledge help guide the best investment decisions. This process has provided ample opportunities for the local community and relevant stakeholders to have their say and work collaboratively throughout development and delivery of the Proposal. The approved stakeholder groups for the broader Project include:

- Stakeholder Advisory Group – Yanga National Park Supply Project
- Technical Scientific and Environmental Advisory Group - Yanga National Park Supply Project
- Operations Working Group.

The Stakeholder Advisory Group comprises representatives of relevant local organisations including representative from Murray River Council, Balranald Shire Council, First Nations, recreational fishers, NPWS, Murray-Darling Wetland Working Group and the Murray Regional Strategy Group. Consultation for the Proposal has been carried out in accordance with the Community and Stakeholder Engagement Plan (CSE) and First Nations CSE Plan developed by the Department for the Yanga National Park Supply Project, the Department procedures and legislated consultation requirements in NSW. The following key stakeholders have been identified to provide feedback on the Proposal:

- Local landholders
- Nari Nari Tribal Council
- Muthi Muthi
- Murray River Council
- NPWS West Branch Regional Advisory Committee.

Consultation with NPWS, commenced with a site visit held in March 2021 and is ongoing. This direct approach to engagement has helped capture the views and local knowledge of key stakeholders and community members to directly integrate these perspectives into the early designs, resulting in avoided or minimised impacts to private property, local communities and park operations.

Specific to this Proposal, the Department is consulting with Murray River Council, Crown Lands, Nari Nari Tribal Council and NPWS. The Department will continue to consult with these stakeholders during the ongoing design and construction phases of the Proposal.

5.2 Statutory consultation – NSW legislation

5.2.1 Transport and Infrastructure SEPP consultation

Part 2.2, Division 1 of the TISEPP contains provisions for consultation with public authorities prior to the commencement of certain types of development. Table 5-1 lists the consultation requirements under the TISEPP and identifies whether they apply to the Proposal. It is noted that clause 2.17(1)(a) provides an exemption to consulting with a public authority where the consent of that public authority is required to carry out the development.

As discussed in Section 4.1, consent to carry out the Proposal is required from NPWS under the NPW Act and, therefore, the requirement to consult with NPWS under clause 2.15(2)(a)(b) of the TISEPP does not apply.

Table 5-1 Transport and Infrastructure SEPP Consultation

Is consultation required under the Transport and Infrastructure SEPP?	Yes	No
Will the Proposal have a substantial impact on stormwater management services provided by a council?	☐	☒
Is the Proposal likely to generate traffic to an extent that will strain the capacity of the road system in a local government area?	☐	☒
Will the Proposal involve connection to, and a substantial impact on the capacity of, any part of a sewerage system owned by a council?	☐	☒
Will the Proposal involve connection to, and use of a substantial volume of water from, any part of a water supply system owned by a council?	☐	☒
Will the Proposal involve the installation of a temporary structure on, or the enclosing of, a public place that is under a council's management or control that is likely to cause a disruption to pedestrian or vehicular traffic that is not minor or inconsequential?	☐	☒
Will the Proposal involve excavation that is not minor or inconsequential of the surface of, or a footpath adjacent to, a road for which a council is the roads authority under the <i>Roads Act 1993</i> (if the public authority that is carrying out the development, or on whose behalf it is being carried out, is not responsible for the maintenance of the road or footpath)?	☐	☒
Is the Proposal likely to affect the heritage significance of a local heritage item, or of a heritage conservation area, that is not also a State heritage item, in a way that is more than minor or inconsequential?	☐	☒
Is the Proposal located on flood liable land? If so, will the works change flooding patterns to more than a minor extent?	☐	☒
Is the Proposal land that is within a coastal vulnerability area and is inconsistent with a certified coastal management program that applies to that land?	☐	☒

Is consultation required under the Transport and Infrastructure SEPP?	Yes	No
Is the Proposal located on flood liable land and permissible without development consent under the following provision of Part 2.3 of the Transport and Infrastructure SEPP: (a) Division 1 (Air transport facilities), (b) Division 2 (Correctional centres and correctional complexes), (c) Division 6 (Emergency services facilities and bush fire hazard reduction), (d) Division 10 (Health services facilities), (e) Division 14 (Public administration buildings and buildings of the Crown), (f) Division 15 (Railways), (g) Division 16 (Research and monitoring stations), (h) Division 17 (Roads and traffic), (i) Division 20 (Stormwater management systems).	☐	☒
Is the Proposal located adjacent to a National Park, nature reserve or other area reserved under the <i>National Parks and Wildlife Act 1974</i> , or on land acquired under that Act?	☒	☐
Is the Proposal located on land in Zone C1 National Parks and Nature Reserves?	☒	☐
Does the Proposal include a fixed or floating structure in or over navigable waters?	☐	☒
Will the Proposal increase the amount of artificial light in the night sky within the dark sky region as identified on the dark sky region map?	☐	☒
Is the Proposal located on defence communications facility buffer land within the meaning of clause 5.15 of the Standard Instrument?	☐	☒
Is the Proposal within a mine subsidence district within the meaning of the Coal Mine Subsidence Compensation Act 2017?	☐	☒
Is the Proposal traffic-generating development as listed in Schedule 3 of the SEPP? If 'yes', notification to Traffic for NSW is required.	☐	☒

5.2.2 Fisheries Management Act 1994

Ongoing consultation with DPI Fisheries regarding the broader Project has occurred in accordance with the requirements of the FM Act (refer to Section 4.2.3).

The Department of Primary Industries (DPI) (Fisheries) confirmed that notification under section 199 of FM Act would not be required as these works only require minor instream disturbance in small ephemeral waterways.

5.3 Consultation with Aboriginal communities

The Proposal is located within the traditional lands of the Wathi Wathi, Daddi Daddi, Muthi Muthi and Nari Nari Aboriginal peoples (Tindale, 1974). The land, water, plants and animals within a landscape are central to Aboriginal spirituality and contribute to Aboriginal identity.

Stakeholder and community engagement amongst Aboriginal traditional owners and communities for the broader Yanga National Park Supply Project to date has been guided by the First Nations community and stakeholder engagement plan prepared for the project. The Department is committed to supporting close involvement and participation of Aboriginal people in water infrastructure, research, and management. To date, consultations with the First Nations communities have shown positive outcomes for Aboriginal and Torres Strait Islander communities, who have been provided opportunities for input during the development of the Proposal.

In order to facilitate ongoing community consultation and communication in the plan's delivery, Aboriginal community representatives are invited to participate in the project's stakeholder advisory group, including representatives from the Balranald Local Aboriginal Land Council. This group supports the Proposal regarding consultation and communication with various community stakeholders.

The Department also has a dedicated First Nations engagement team who have engaged with the Project's Aboriginal stakeholders through 'one-on-one' conversations, in-person meetings and site visits to provide more comprehensive engagement than is possible through the more formal stakeholder advisory group meetings. Engagement with Aboriginal stakeholders regarding potential Aboriginal heritage impacts of the Proposal has also followed the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW, 2010) required as part of the Aboriginal cultural heritage assessment process in NSW.

A search of the National Native Title Tribunal online register was undertaken in June 2024 and indicated:

- There are no native title claims lodged under the *Native Title Act 1993* in relation to land within or adjacent to the Yanga National Park
- No Indigenous Land Use Agreements cover the Yanga National Park.

As a result, notification requirements under the *Native Title Act 1993* do not apply to the Proposal or the broader Yanga National Park Supply Project. However, as detailed in Section 4.3.2, where appropriate a native title strategy would be developed by NSW DCCEEW to manage potential impacts to unextinguished native title rights. This may include notification and negotiation with native title parties in accordance with the Future Acts Regime.

Ongoing consultation with relevant Aboriginal communities will be undertaken to assist with the identification of Aboriginal cultural values, improve outcomes and to inform the assessment of impacts on Aboriginal cultural heritage for the Proposal.

5.4 Ongoing stakeholder and community consultation

The Department will continue to consult with stakeholders during the detailed design and construction phases of the Proposal as required. Stakeholders including the local community will be kept informed of any changes to the Proposal resulting from future consultation process or detailed design. Once determined, this REF will be placed on public display for information via the Department's website.

NPWS, Murray River Council, Crown Lands, the Nari Nari Tribal Council and other key stakeholders will be notified at least three weeks before construction work begins. The notification will outline the proposed duration of the work and any access changes. Contact details to request further information or ask questions will be included in the notification.

The Department intend on entering into an agreement with NPWS and where relevant Crown Lands, for management of and access to the proposed CAZ prior to, during and after the construction works at each trail.

6 Environmental assessment

6.1 Topography, geology and soils

6.1.1 Existing environment

Topography

Topography of the Proposal area is relatively flat and characterised by natural and modified creeks surrounded by floodplains and bushland areas, with depressions in the topography comprising the wetland complex on the floodplain. Elevations across the Yanga Precinct range between 65 m and 79 m above sea level (refer to Figure 6-1).

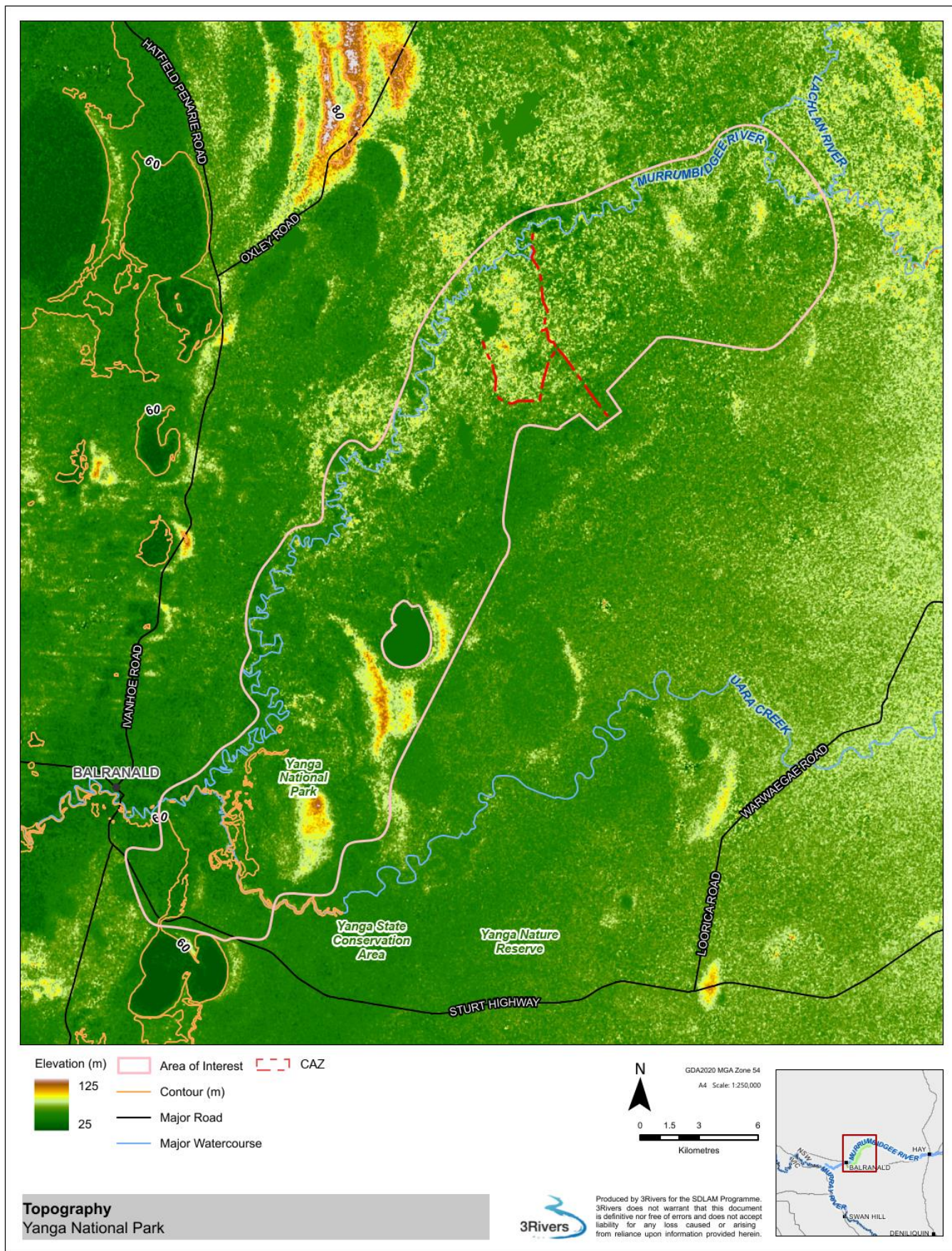


Figure 6-1 Topography surrounding the Proposal

Geology

The Proposal is underlain by the Murray Geological Basin, a shallow crustal depression which was formed during the Cenozoic era approximately 60 million years ago (NPWS, 2020). These deposits reach a maximum thickness of about 500 m in the vicinity of the Yanga Precinct and occur in three main layers:

- Shepparton Formation consists mainly of unconsolidated to poorly consolidated yellow and brown sands and clays from the surface to depths of 50–70 m. These are often referred to as shallow aquifers
- Calivil Formation underlays the Shepparton Formation and mainly consists of poorly consolidated, pale grey, poorly sorted, coarse to granular quartz and conglomerate within a white kaolinitic matrix
- Renmark Group Formation is the oldest and deepest deposit in the profile, comprising shale, siltstone, sandstone and diamictite with occasional conglomeratic and carbonaceous intervals.

No areas in proximity to the Proposal are susceptible landslide or rockfall hazards. Geotechnical investigations including boreholes and test pits at several trails and a number of water management structures proposed under the broader Project were undertaken in May 2023 to inform the detailed design for these sites. The results of the geotechnical investigations as relevant to this Proposal are summarised in Table 6-1 below.

Table 6-1 Summary of geotechnical investigations as relevant to this Proposal

Trail ID	Borehole details	Soil description
Steves Bank Trail (Trail ID03)	Borehole BH41-TWS, on the existing Steves Bank Trail levee bank crossing Narkungerie Creek, drilled to a depth of 1.9 metres below ground level (m BGL).	Very stiff dark brown clays encountered from the surface to the end of the bore. No groundwater was encountered.
Bronzewing Drive (Trail ID04b)	Borehole BH40-CY, on the existing trail adjoining the existing Cattleyard culvert, drilled to a depth of 5.0 m BGL.	Stiff dark clays encountered from the surface to the end of the bore. No groundwater was encountered.
Redbank East Trail (Trail ID05b)	Test Pits TP30-WBB, TP31-WBB, TP32-WBB, TP33-WBB on the existing Redbank East Trail near the existing Twin Bridges South and North regulators, drilled to a depth of 2.0 m BGL.	Stiff dark grey clays encountered from the surface to the end of the test pits. No groundwater was encountered.
River Trail (Trail ID06)	BH20-1AS and BH23-1AS nearby the River Trail adjoining the 1AS Regulator, to a depth of 12.0 m BGL.	Stiff clay soils interspersed by thin layers of alluvial sands encountered to depth at both sites. Groundwater was encountered from around 8.0 m BGL at both sites on the western bank.

Soils

Soils applicable to the Proposal are typically red brown earths, grey and brown clays and deep siliceous sands on dunes. The existing trails are anticipated to be within compacted alluvial soils (clays and sands) and general fill on flat to gently sloping terrain. An overview of the soil land systems and soils is shown in Figure 6-2 below.

In dry conditions, these soils are friable (crumbly) and prone to slumping and erosion, particularly on riverbanks and are poorly drained which can cause waterlogging and swampy conditions for extended periods.

A search of the Australian Soil Resource Information System database carried out on 15 August 2023 did not identify any known areas of Acid Sulfate Soils (ASS) in the CAZ. Additionally, the search identified that ASS has a low probability of occurring in the areas impacted by the Proposal. No saline soils have been identified from the publicly available data. Additionally, geotechnical investigations undertaken for the Proposal showed low levels of electrical conductivity and chloride and low to moderate aggressivity soils.

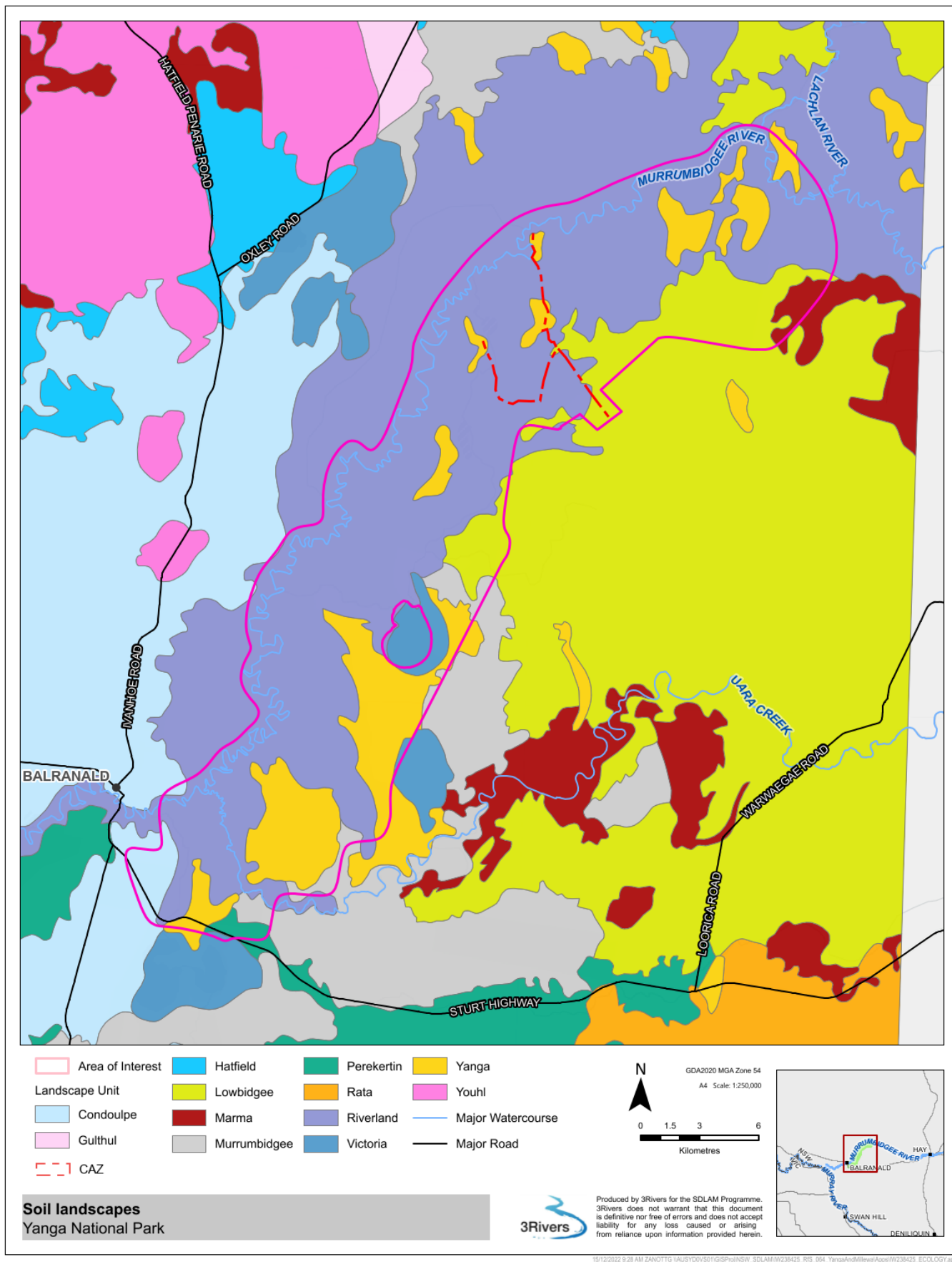


Figure 6-2 Soil landscapes surrounding the Proposal

6.1.2 Impacts

Construction

The construction of the Proposal would result in localised ground disturbance and the excavation of surface and subsurface soils. The trail works, rock causeways and trail levee bank would require ground disturbance to a maximum depth of approximately 200 mm. The proposed replacement culvert would require excavation of the trail levee to a depth of up to approximately 2 m. All works locations are expected to be within compacted alluvial soils (clays and sands) and general fill on flat to gently sloping terrain with minimal to no risk of rockfall.

The main risks to geology and soils would be increased erosion and sedimentation from ground disturbance activities including:

- Trail grading and compaction within existing trail footprint
- Topsoil stripping and minor vegetation clearance removal adjoining existing trail (i.e., Rock causeways, replacement culvert and trail levee works)
- Minor vegetation clearance within existing trail footprint
- Movement of construction vehicles and plant over exposed surfaces.

The risk of soil erosion and sedimentation impacts is expected to increase during high wind, rainfall events and areas on steeper slopes. The cessation of activities during and following rainfall events in accordance with NPWS access consent conditions is anticipated to minimise potential sediment and erosion impacts on trails. Furthermore, erosion generated from the movement of vehicles along existing trails and exposed surfaces is not expected to be significant given the low volume of vehicles required to service the Proposal.

The grading works for the trails and earthworks for the culvert, stretches of Steves Bank Trail (ID03) with no formed trail, rock causeway and trail levee works are expected to generate minor amounts of residual spoil, limited to very small quantities of fill, soils or existing road base that may be deemed unsuitable for re-use, although the likelihood of this occurring is considered low. Any residual spoil not suitable for re-use would be classified in accordance with the *Waste Classification Guidelines, Part 1: Classifying Waste* (Environment Protection Authority, 2014). Surplus spoil would be transported outside of the Yanga National Park for either reuse (if classified as virgin excavated natural material or excavated natural material) or disposal at a suitably licenced waste facility.

Upon completion of the works, the use of crushed rock/gravel on the trafficable surface and improved cross drainage is anticipated to reduce the erosion potential of the trails from traffic, wind and water erosion. Prior to demobilisation, any stockpile areas will be reinstated to their prior condition with any loose soil tamped down. Due to the short-term and temporary nature of the works, cessation of activities during and following rainfall events, and the mitigation measures detailed in Section 6.1.3, the risk of sediment and erosion impacts would be significantly reduced.

Operation

Operation of the Proposal would not impact topography, geology or soils, outside of any potential hydrology and erosion impacts assessed in Section 6.2.

6.1.3 Safeguards

Measures proposed to avoid, minimise or manage potential topography, geology and soils impacts as a result of the Proposal are detailed in Table 6-2.

Table 6-2 Safeguards for topography, geology and soil impacts

Impact	Safeguard	Responsibility	Timing
Erosion and sediment	An erosion and sediment control plan will be prepared as part of the Contractor's CEMP. Site specific erosion and sediment control measures will be designed, implemented and maintained in accordance with relevant sections of <i>Managing Urban Stormwater: Soil and Construction Volume 1</i> (Landcom, 2004) (the Blue Book). The erosion and sediment control plan will provide details on the requirement for daily weather checks, stockpiling of materials and strategies that will be implemented to stabilise soils during the construction phase.	Contractor	Construction
Erosion and sediment	Work operations will cease during and immediately following rainfall events of more than 50 mm in 24 hours, or otherwise in accordance with NPWS access consent conditions requirements.	Contractor	Construction

6.1.4 Residual impacts

The potential temporary and short-term erosion and sedimentation impacts of the ground disturbance and vegetation clearance during construction would be significantly reduced with the adoption of appropriate erosion and sediment controls in accordance with the Blue Book as detailed in Section 6.1.3. The typically flat terrain would further reduce the risk of soil instability and the subsequent dispersal of sediment during construction.

Therefore, potential soil impacts associated with the construction of the Proposal are considered likely to have a low impact due to the localised nature of the proposed works and safeguards detailed above.

6.2 Surface water and drainage

6.2.1 Existing environment

The Proposal is located within the Murrumbidgee River Catchment in southern NSW. The catchment drains a total area of around 84,000 km² and represents eight percent of the Murray-Darling Basin (DPI, 2017). The catchment is bordered by the Great Dividing Range to the east, the Lachlan catchment to the north, and the Murray catchment to the south. The Murrumbidgee River is a major tributary of the Murray-Darling River system and runs parallel to the Yanga National Park. The system drains much of southern NSW and most of the Australian Capital Territory. It extends 1,485 km from its headwaters in the Australian Alps to the alluvial floodplains at the western end of the valley, where it flows into the Murray River west of Balranald.

A number of rivers, creeks and other water bodies flow through the Yanga National Park. Aquatic environments applicable to the Proposal include major perennial waterways, semi-permanent/permanent swamps, wetlands and lakes, minor tributaries and lagoons which are associated with the Murrumbidgee River and the Lowbidgee floodplain. Water movement throughout the Yanga National Park is heavily regulated by a series of existing water management structures (e.g., regulators) and levees. Many of these existing structures are remnants of Yanga's history as a pastoral property, where the lower lying areas were managed for river red gum forestry.

A number of waterways, including several minor, unnamed streams and drainage channels are present within the Yanga National Park. These waterways form a highly complex interconnected network of braided creeks on the Lower Murrumbidgee floodplain. Most of these creeks convey water to the major waterways in the National Park and are associated with or provide connections between wetland environments on the floodplain. In general, these waterways and swamp complexes are ephemeral or semi-permanent. The key waterways across the Yanga National Park and surrounding area in proximity to the Proposal are shown in Figure 6-3 and detailed in Table 6-3 below.

Table 6-3 Key waterways and waterbodies relevant to the Proposal

Waterway/ Waterbody	Waterway type	Relevant trails
Duck Nest Creek	Non-perennial	Bronzewing Drive
Mercedes Swamp	Semi-permanent wetland	Redbank East Trail
Murrumbidgee River	Perennial	River Trail
Narkungerie Swamp	Semi-permanent wetland	Steves Bank Trail
Narkungerie Creek	Non-perennial	Steves Bank Trail
Tarwillie Swamp	Semi-permanent wetland	Steves Bank Trail, Snake Bank Trail and Hamptons Bank trail
Twin Bridges Swamp	Semi-permanent wetland	Redbank East Trail
Topnarrockwell Swamp	Semi-permanent wetland	Bronzewing Drive

Waterway/ Waterbody	Waterway type	Relevant trails
Unnamed supply channel	Non-perennial	Bronzewing Drive

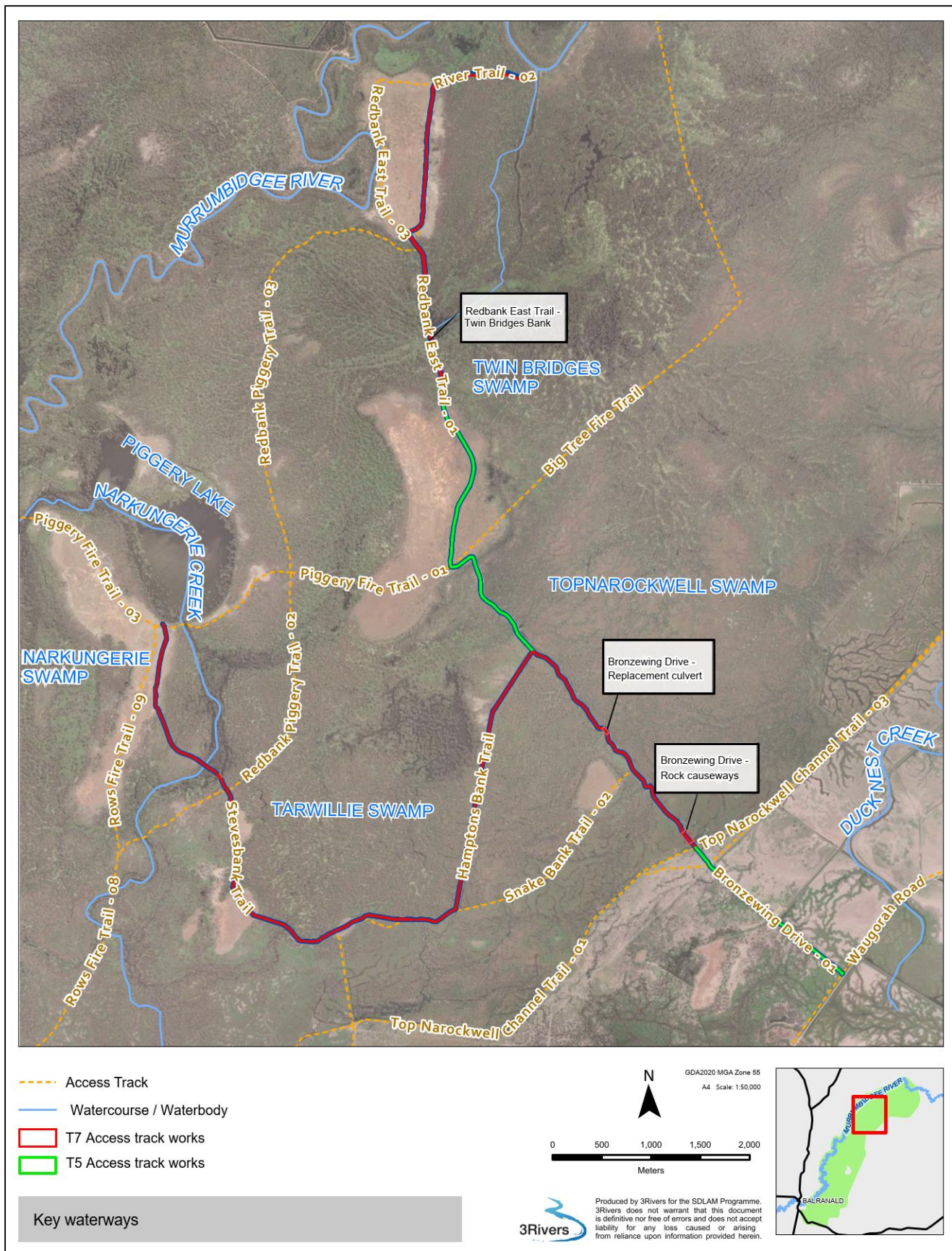


Figure 6-3 Key waterways in the Yanga National Park as relevant to the Proposal

The network of unsealed management trails and trail levee banks support access for park operations and facilitates water management across the floodplain. The management trail network incorporates a number of causeways, culverts and bridges. This arrangement of artificial and natural levees and block banks form discrete inundation areas referred to as water management areas (WMAs), which along with regulators and culverts are used to slow water movement and maximise inundation while directing water through key wetlands areas.

During regulated flows (such as environmental watering), water is generally managed to maintain access along key park roads or trails, limit flooding impacts to existing park infrastructure and adjoining properties. However, during unregulated high flows, pinch points where flows are confined near levees, regulators and block banks can result in damage to water regulators, trails and levees as shown in Figure 6-4.



Figure 6-4 Recent (2023) breach in the levee bank on Steves Bank Trail (Buster's bank) on Narkungerie Creek

The WMAs relevant to the Proposal include:

- Bronzewing Drive bounds flows travelling south from Topnarockwell WMA into Tarwillie WMA
- Redbank East Trail bounds flows travelling southwest from Topnarockwell WMA into Piggery WMA
- Steves Bank Trail bounds flows travelling southwest from Tarwillie WMA into Piggery WMA.

An overview of the WMAs and proposed works is shown in Figure 6-5 below.

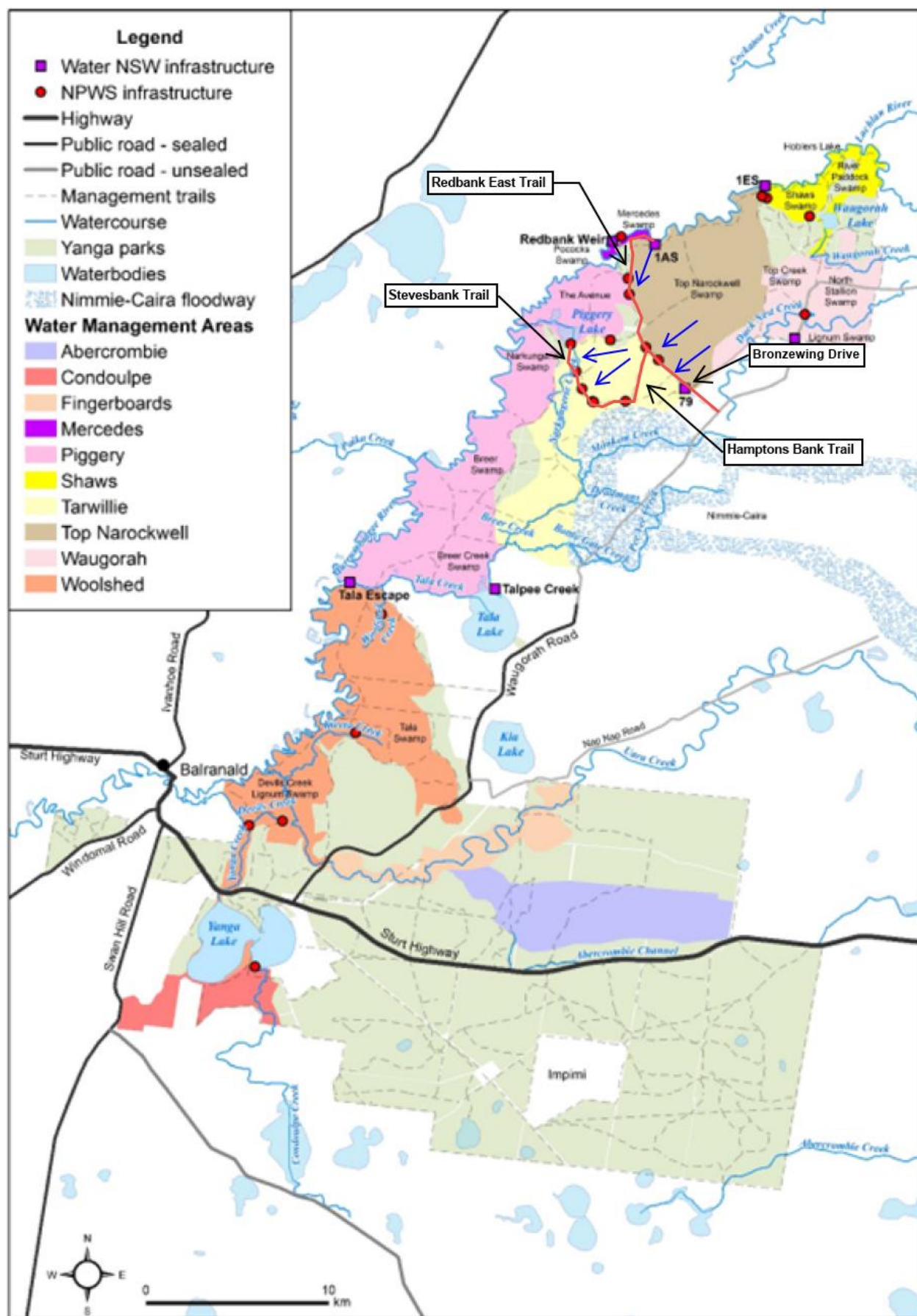


Figure 6-5 WMAs and flow paths in the Yanga National Park (NPWS, 2020)

6.2.2 Impacts

Construction

The proposed works are generally located away from key waterways, in disturbed land within the footprint of the existing trails.

Where feasible, the construction works would be carried out during a dry period and/or low flow conditions to minimise the potential for in-stream CAZs to be flooded, potential risks to water quality from construction activities and to avoid interruption to environmental water deliveries. The main river regulators of 1AS and 1ES would be operated in the closed position to limit inflows into the National Park and further minimise the potential for in-stream CAZs to be flooded. However, the 1AS Regulator leaks through the gates and underneath the structure causing water to pool along Twin Bridges Bank. As a result, installation of an earthen coffer dam in the 1AS supply channel upstream of the existing regulator may be required to provide safe construction access to the Twin Bridges bank.

Given the sensitivity of the surrounding environment and receiving waters it is important that surface runoff is not affected by the following:

- **Erosion and sedimentation** – As described in Section 6.1, vegetation removal and grading of the existing trafficable trail surface could increase the erosion potential of the site due to loss of topsoil, exposed soils or stockpiled spoil during periods of strong winds and/or rainfall. The placement of fill material on the trails may also result in increased sedimentation and surface run-off without appropriate management. Increased erosion of the site may result in increased sediment loads in any surface runoff and increased turbidity and suspended sediment in receiving waters. However, the Proposal would present minimal risks to waterways with the adoption of appropriate sedimentation and erosion controls described in Section 6.1.3 and Section 6.2.3.
- **Increased run-off** – Ground compaction and loss of soil structure from vegetation removal and construction plant and vehicles traversing over the CAZ resulting in lower infiltration rates and incremental increase in run-off. The Proposal has low potential for negative ground compaction impacts due to the small number of plant and vehicles required and extensive disturbance within the CAZ including existing prior ground compaction due to the current trail surface.
- **Contamination** – Localised contamination from accidental spills or leaks of fuels, oils and chemicals (such as hydraulic oils) from plant (i.e., grader and/or roller) and construction support vehicles during construction. The risk of contamination is considered unlikely but possible and the risk would be managed by suitable safeguards. Contamination risk is discussed further in Section 6.14.
- **Streambed/Bank disturbance** – Minor bank disturbance and removal of riparian vegetation (primarily small patches of River red gum saplings) may be required at the edges of Redbank East Trail (Twin Bridges bank) in Twin Bridges Swamp (trail ID05b) and for the replacement culvert (Trail ID04c) and rock causeways (Trail ID04b) on Bronzewing Drive. Minor streambed disturbance would also be required for the replacement culvert. As a result, there is potential for soil erosion and sedimentation downstream if a significant flow event occurred during construction. The removal of riparian vegetation would also increase the potential for erosion

of the banks. However, the likelihood of increased erosion and bank instability is considered low as the Proposal would be scheduled for dry and/or low flow conditions. Due to the short duration and nature of the works, flat topography, cessation of activities during and following rainfall events and mitigation measures detailed below, minimal water quality impacts are considered likely to occur.

Operation

During operation, no adverse impacts are anticipated with no flow regulating works or material changes to the Yanga National Park's hydrological regime proposed.

At Twin Bridges Swamp (trail ID05b), the reinstated top of bank/trail level (maximum increase of up to approximately 0.5 m) along discrete stretches of Redbank East Trail around the Twin Bridges regulators has the potential to result in minor localised hydrological changes during high and/or unregulated flows. The proposed works are considered likely to provide beneficial impacts during operation. In particular, a minor localised reduction in the frequency of overtopping of the levee bank during unregulated flows. The trail raising would reduce flood damage, improve bank stability and allow for improved management of water levels in a key wetland areas. Similar beneficial impacts are anticipated during operation of the replacement culvert. The upgraded trails and rock causeways are anticipated to reduce sedimentation and erosion through the placement and compaction of crushed gravel on the finished trail surface.

The proposed culvert and rock causeways would be hydraulically similar to the existing structures (prior to deterioration), with only minor localised increases in inundation levels anticipated in Twin Bridges Swamp during unregulated flows due to the restoring of the levels at Redbank East Trail. Under regulated flows conditions, inundation of the Twin Bridges Swamp is primarily controlled via the WaterNSW owned and operated 1AS regulator, located on the eastern bank of the Redbank weir pool on the Murrumbidgee River. The flow rate and availability of water into Yanga from the main river regulators (including 1AS and the 1ES regulator in upper Yanga) and through the downstream floodplain structures is largely driven by the height of the weir pool as controlled by WaterNSW river operational requirements.

Hydraulic modelling has been undertaken as part of the detailed design process for the broader Project. Modelling results indicate that under regulated flow conditions (i.e., at normal full operating level at Redbank weir of 66.95 m AHD) flows in Twin Bridges Swamp would reach equilibrium with the Redbank weir pool operating height without overtopping at Redbank East Trail with the proposed replacement 1AS regulator fully open and the Twin Bridges regulators fully closed under both existing conditions and following the proposed reinstatement works. Under large unregulated flow events, waterway infrastructure in central Yanga including the Redbank East Trail bank would likely be overtopped under both existing and following the proposed trail reinstatement works. As a result, changes to inundation patterns would be limited to minor temporary increases in inundation levels at Twin Bridges Swamp during unregulated flows prior to overtopping.

Overall, the height of weir pool and flow through the main river regulator largely controls the inundation (extent, frequency, duration and timing) of the Yanga National Park. Given the marginal and highly localised nature of the works along Redbank East Trail, material impacts are considered unlikely with the proposed works anticipated to facilitate a similar level of overall inundation extent, frequency and depth within the Yanga National Park to existing conditions.

6.2.3 Safeguards

Measures proposed to avoid, minimise or manage potential topography, geology and soils impacts as a result of the Proposal are detailed in Table 6-4.

Table 6-4 Safeguards for surface water and drainage impacts

Impact	Safeguard	Responsibility	Timing
Instream works	Control measures to manage potential pollution or sedimentation impacts from instream works will include but not be limited to: • Undertake work when flows are low/dry for a suitable duration to complete work • Control measures will be in place prior to commencement of any instream works.	Contractor	Detailed design Construction
Spills and leaks	• An emergency spill response procedure will be prepared in accordance with the Department's incident management protocols to minimise the impact of accidental spillages of fuels, chemicals and fluids during construction • Hazardous materials such as oils, chemicals and refuelling activities will occur in bunded areas and as far from waterways as feasible.	Contractor	Detailed design Construction

6.2.4 Residual impacts

Implementation of the safeguards identified in Section 6.2.3 would significantly reduce the potential for mobilisation of sediments and other contaminants during construction. Implementation of the safeguards, together with the small CAZ and short duration of the works, means there is a low potential for adverse impacts to water quality during the construction phase of the Proposal.

6.3 Groundwater

6.3.1 Existing environment

The Lowbidgee floodplain contains extensive alluvial groundwater systems throughout. Groundwater systems are highly connected to surface water, and the Murrumbidgee River tends to gain water from the groundwater system in this catchment. Due to the proximity of the Proposal to the Murrumbidgee River and associated waterways, groundwater is expected to be strongly influenced by seasonal fluctuations due to the proximity of the sites to the Murrumbidgee River and associated waterways.

As discussed in Section 6.1.1, geotechnical investigations were carried out near the Proposal. Groundwater was only encountered at single site (nearby River Trail adjoining the existing 1AS regulator) with the approximate depth of 8.0 m BGL, well below the maximum depth of excavation required for the proposed works.

6.3.2 Impacts

As described in Section 6.1, construction of the Proposal would result in localised ground disturbance and the excavation of surface and subsurface soils to a maximum depth of approximately 200 mm, with the exception of the replacement culvert where excavation would be required to a depth of approximately up to 2 m. All works locations are expected to be within alluvial soils (clays and sands).

Based on the shallow nature of the proposed earthworks and groundwater levels recorded during geotechnical investigations at existing trails (no groundwater levels recorded above 8.0 m BGL), it is not anticipated that groundwater would be encountered. No impacts are anticipated during operation, with no flow regulating works or material changes to hydrological regimes proposed.

6.3.3 Safeguards

No specific groundwater safeguards are proposed due to minor nature of the proposed ground disturbance and negligible potential impacts to groundwater during construction and operation.

6.3.4 Residual impacts

As detailed above, given the minimal potential for interaction with groundwater during construction and absence of impacts associated with operation of the Proposal, no groundwater impacts are anticipated.

6.4 Terrestrial biodiversity

The *Yanga National Park Supply Project - Trail Works: Biodiversity Assessment Report* (3Rivers, 2024) assesses the potential ecological constraints within the CAZ. The assessment is provided in Attachment A and is summarised below.

6.4.1 Existing environment

The broader Yanga National Park is located within the arid and semi-arid Lowbidgee floodplain of south-eastern Australia, and the reserve area provides a mosaic of habitats made up of lowland floodplain forests, woodlands, large lakes and temporary wetlands. The Yanga National Park comprises a number of largely flood-dependent vegetation communities including river red gum forest, black box woodland and lignum shrubland distributed across a complex floodplain system of interconnected wetlands, creeks and braided channels. It also contains one of the largest River red gum forests in the Murray-Darling Basin, comprising around 22,000 ha and providing a unique opportunity to maintain a connected and functioning ecosystem within the NSW Riverina, a bioregion where fragmentation and isolation are the major stressors for biological conservation (NPWS, 2020). The Yanga National Park, Nature Reserve and State Conservation Area contain almost 14% of the Lowbidgee Floodplain which is listed as a Nationally Important Wetland and supports some of the largest waterbird breeding colonies in Australia (NPWS, 2020). There are a number of threatened species supported by the wetlands and vegetation communities within the Yanga National Park.

Over the past 140 years, significant alterations to flood regimes in the Lowbidgee floodplain due to extensive regulation and irrigation diversions have resulted in a substantial decline in biodiversity and floodplain health. This long-term alteration and loss of flow connectivity between the Murrumbidgee River and its floodplain from declining flows has changed the composition, structure and distribution of vegetation communities within Yanga, resulting in a decline in suitable habitat for flood-dependent flora and fauna along with severely stressed plant communities across the Yanga National Park (McCosker, 2008).

In addition, the Yanga National Park's historical agricultural uses such as sheep grazing, dryland cropping and logging (NPWS, 2020), supported by the construction of an extensive array of road and waterway infrastructure (NPWS, 2020) has contributed to this general decline.

Native vegetation

Field surveys of the CAZ and surrounding areas were undertaken over two survey events, one in autumn (28 March – 1 April 2022), and one in late winter (23 – 28 July 2023). The surveys identified five Plant Community Types (PCTs) within the CAZ:

- River red gum-sedge dominated very tall open forest in frequently flooded forest wetland along major rivers and floodplains in south-western NSW (PCT 2)
- River red gum - wallaby grass tall woodland wetland on the outer River red gum zone mainly in the Riverina Bioregion (PCT 9)
- River red gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) (PCT 11)
- Prickly Wattle tall open shrubland of dunes and sandplains of semi-arid and arid regions (PCT 139)
- Black Bluebush low open shrubland of the alluvial plains and sandplains of the arid and semi-arid zones (PCT 153).

Linear works can typically be completed with some flexibility to avoid /minimise impacts on specific trees or sensitive sites with on-site guidance. As a conservative worst-case scenario, all identified vegetation, with the exception of identified hollow bearing trees and cultural heritage sites (i.e., modified trees), within the CAZ are assumed to be removed to carry out the proposed works. Table 6-5 summarises each PCT identified within the CAZ, as well as the broad condition class and the area of each PCT within the CAZ. The distribution of PCTs and key biodiversity constraints across the CAZ is illustrated in Figure 6-6 to Figure 6-18.

Table 6-5 Plant community types within the CAZ

Plant Community Type / Condition class		CAZ area where PCT is present	Area within CAZ (ha)
River red gum-sedge dominated very tall open forest in frequently flooded forest wetland along major rivers and	PCT 2 – High	Redbank East Trail	0.5
	PCT 2 – Moderate	Steves Bank Trail	<0.1
	PCT 2 – Low	Steves Bank Trail	<0.1

Plant Community Type / Condition class	CAZ area where PCT is present		Area within CAZ (ha)
floodplains in south-western NSW	Total PCT 2		0.6
River red gum - wallaby grass tall woodland wetland on the outer River red gum zone mainly in the Riverina Bioregion	PCT 9 – Low	Steves Bank Trail	0.3
	Total PCT 9		0.3
River red gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	PCT 11 – High	Redbank East Trail (Twin Bridges Bank) Bronzewing Drive (replacement culvert)	0.2
	PCT 11 – Moderate - High	Steves Bank Trail Bronzewing Drive (rock causeway)	0.3
	PCT 11 – Moderate	Steves Bank Trail Bronzewing Drive (rock causeway)	0.2
	PCT 11 – Low	Bronzewing Drive	0.8
	Total PCT 11		1.5
Prickly Wattle tall open shrubland of dunes and sandplains of semi-arid and arid regions	PCT 139 – Moderate	Bronzewing Drive Redbank East Trail	0.1
	PCT 139 – Low	Redbank East Trail	0.1
	Total PCT 139		0.2
Black Bluebush low open shrubland of the alluvial plains and sandplains of the arid and semi-arid zones	PCT 153 – High	Steves Bank Trail	0.2
	PCT 153 – Low - Moderate	Steves Bank Trail	0.1
	Total PCT 153		0.3
	Total (all PCTs)		2.9

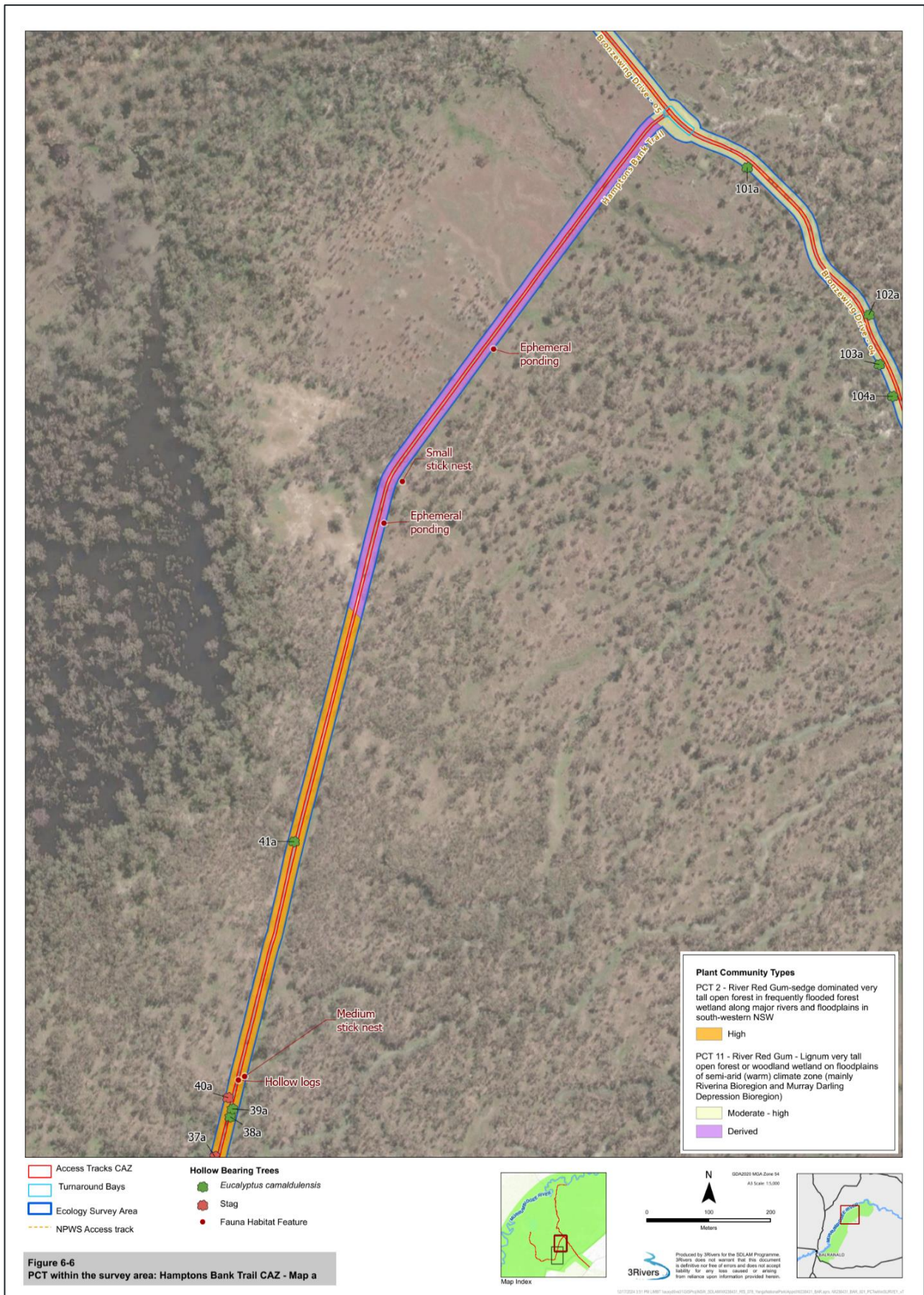


Figure 6-6 PCT within the survey area: Hamptons Bank Trail CAZ - Map a

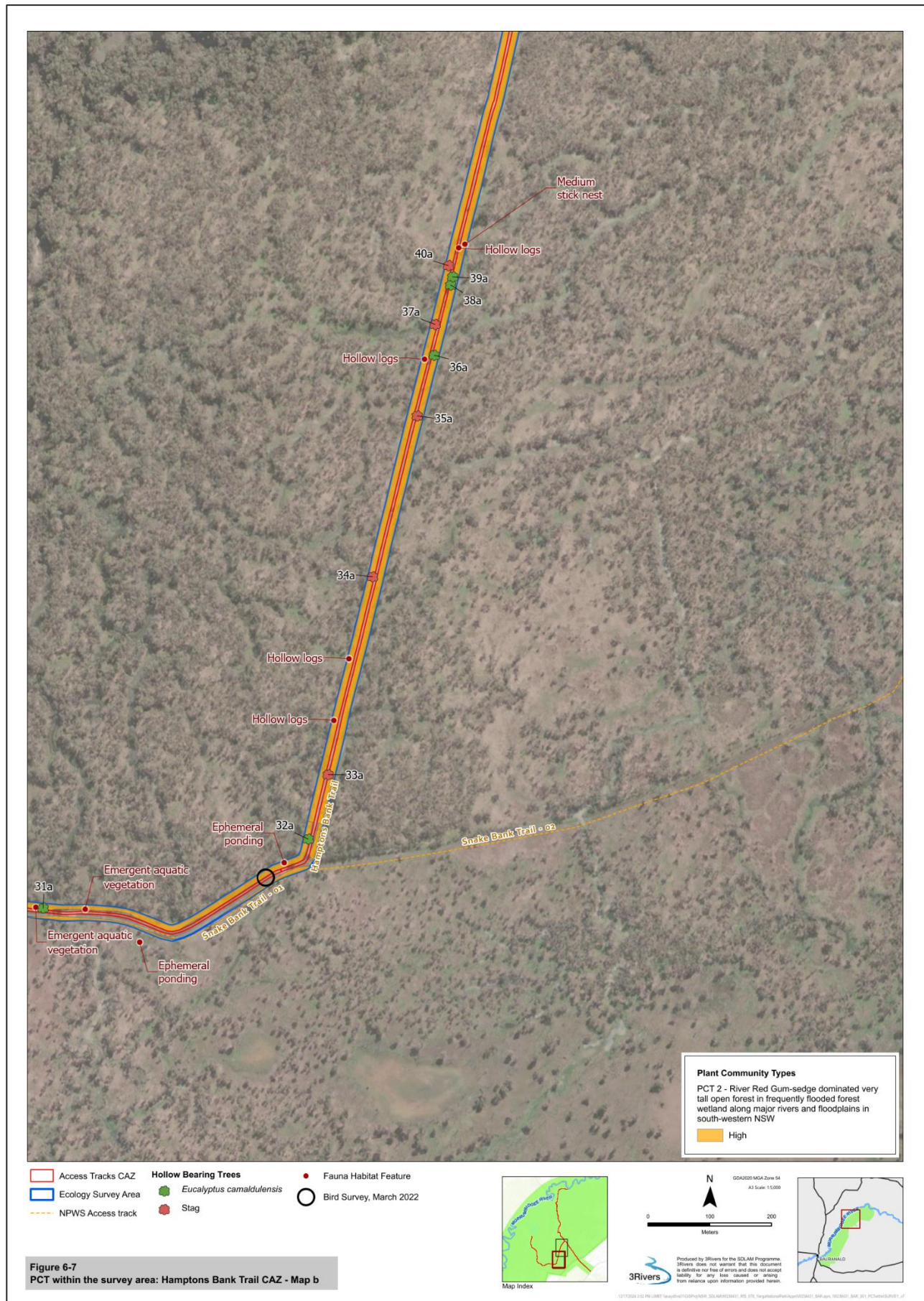


Figure 6-7 PCT within the survey area: Hamptons Bank Trail CAZ - Map b

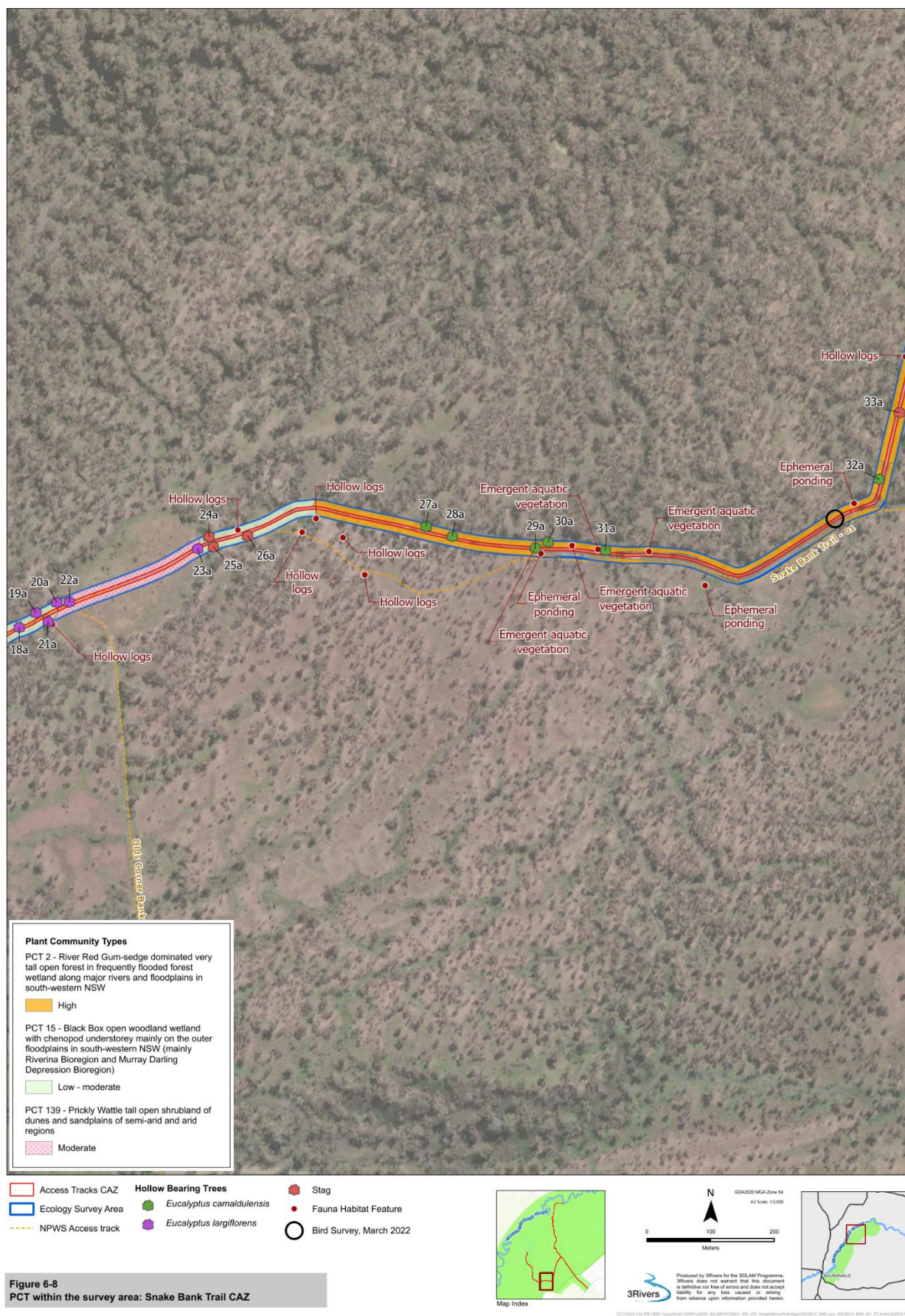


Figure 6-8 PCT within the survey area: Snake Bank Trail CAZ

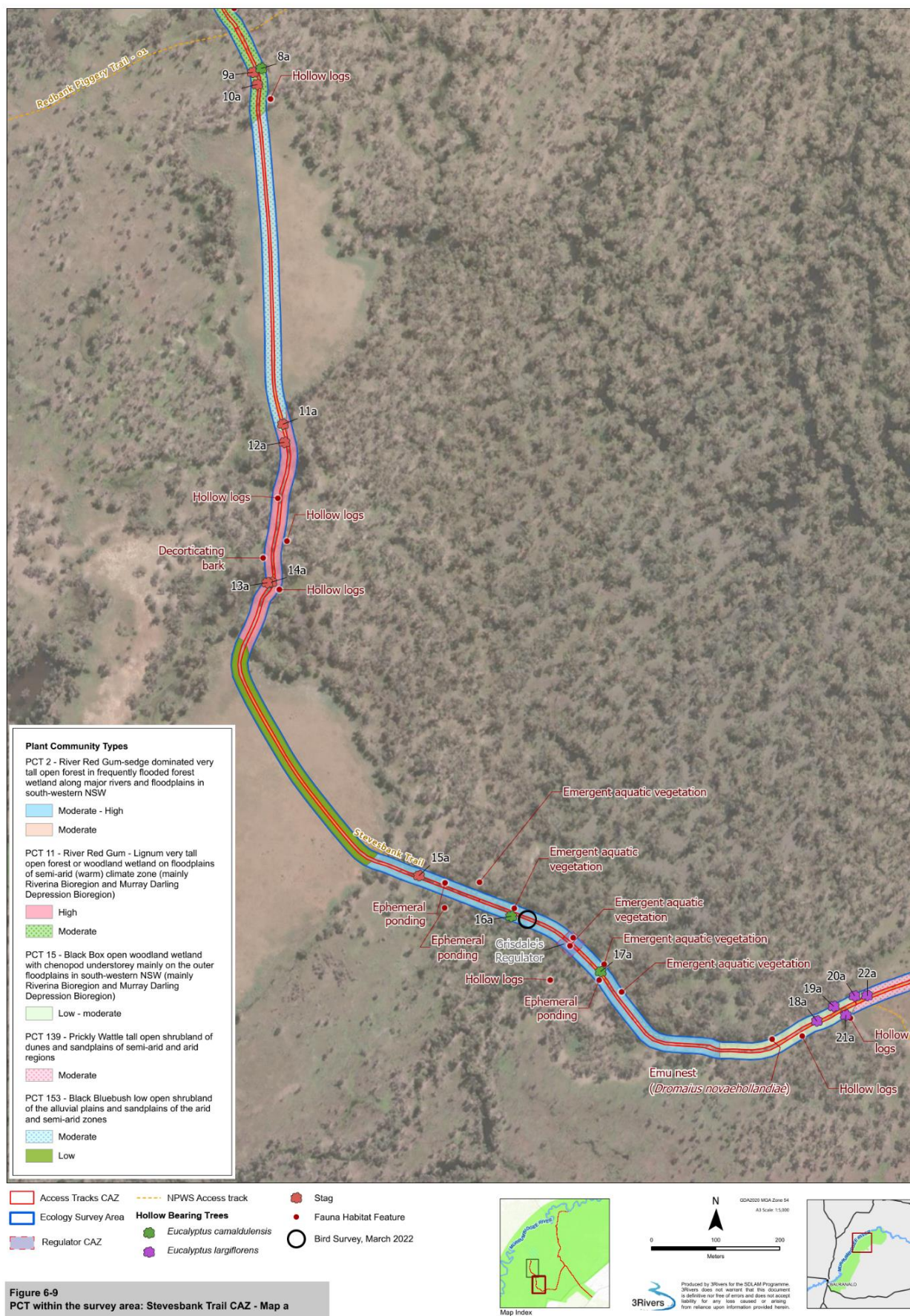


Figure 6-9
PCT within the survey area: Stevesbank Trail CAZ - Map a

Figure 6-9 PCT within the survey area: Stevesbank Trail CAZ - Map a

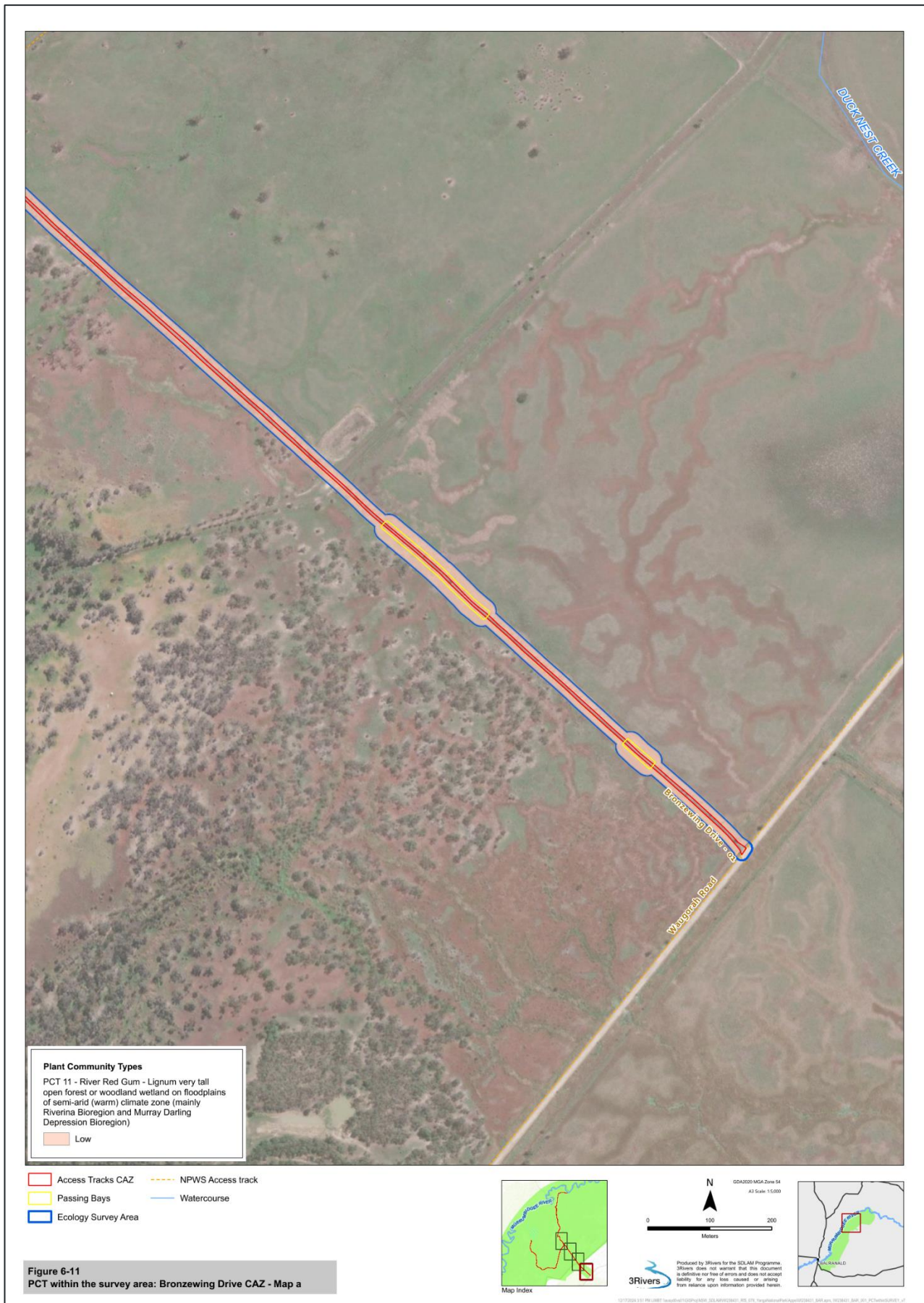


Figure 6-11 PCT within the survey area: Bronzewing Drive CAZ - Map a

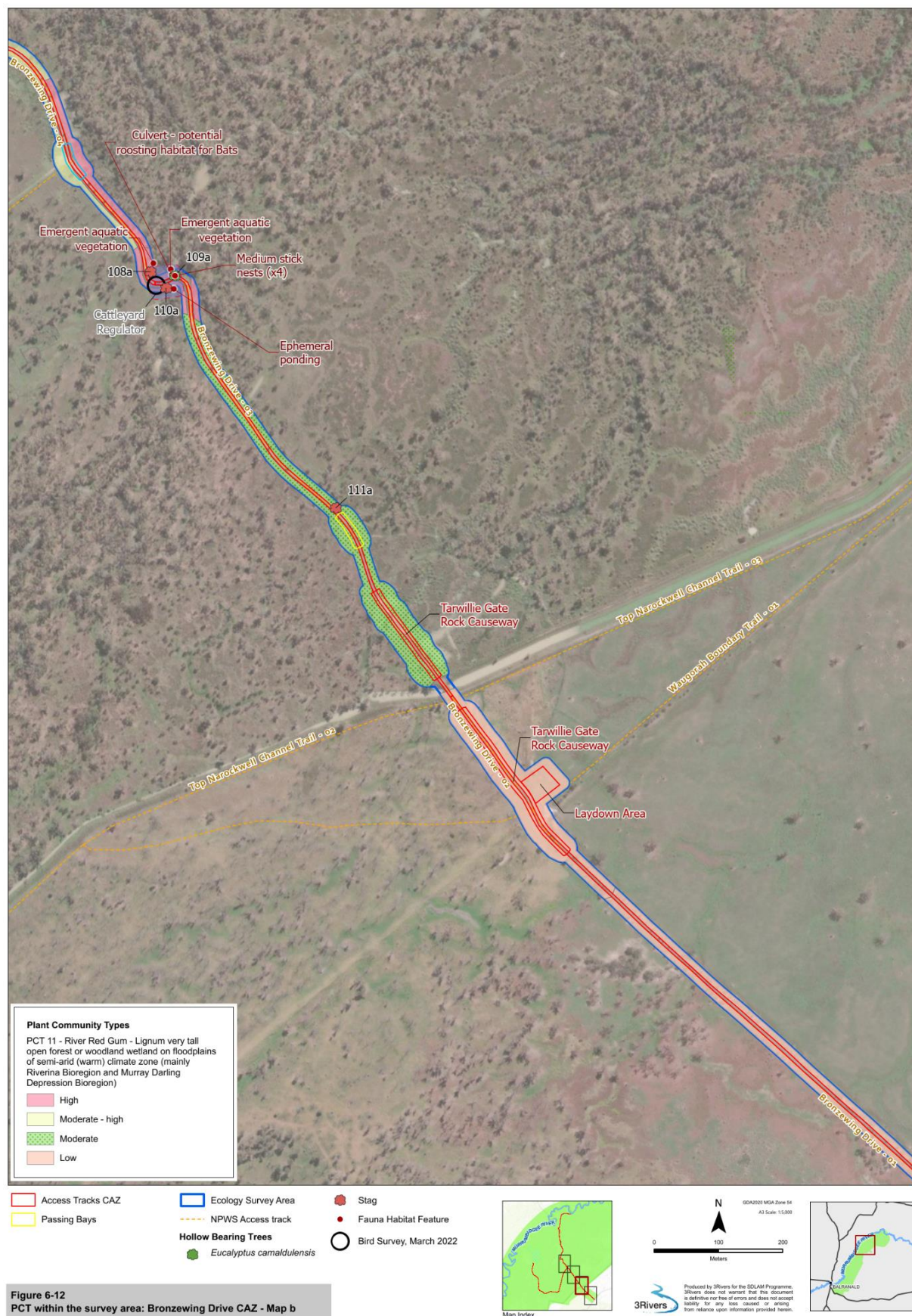


Figure 6-12
PCT within the survey area: Bronzewing Drive CAZ - Map b

Figure 6-12 PCT within the survey area: Bronzewing Drive CAZ - Map b

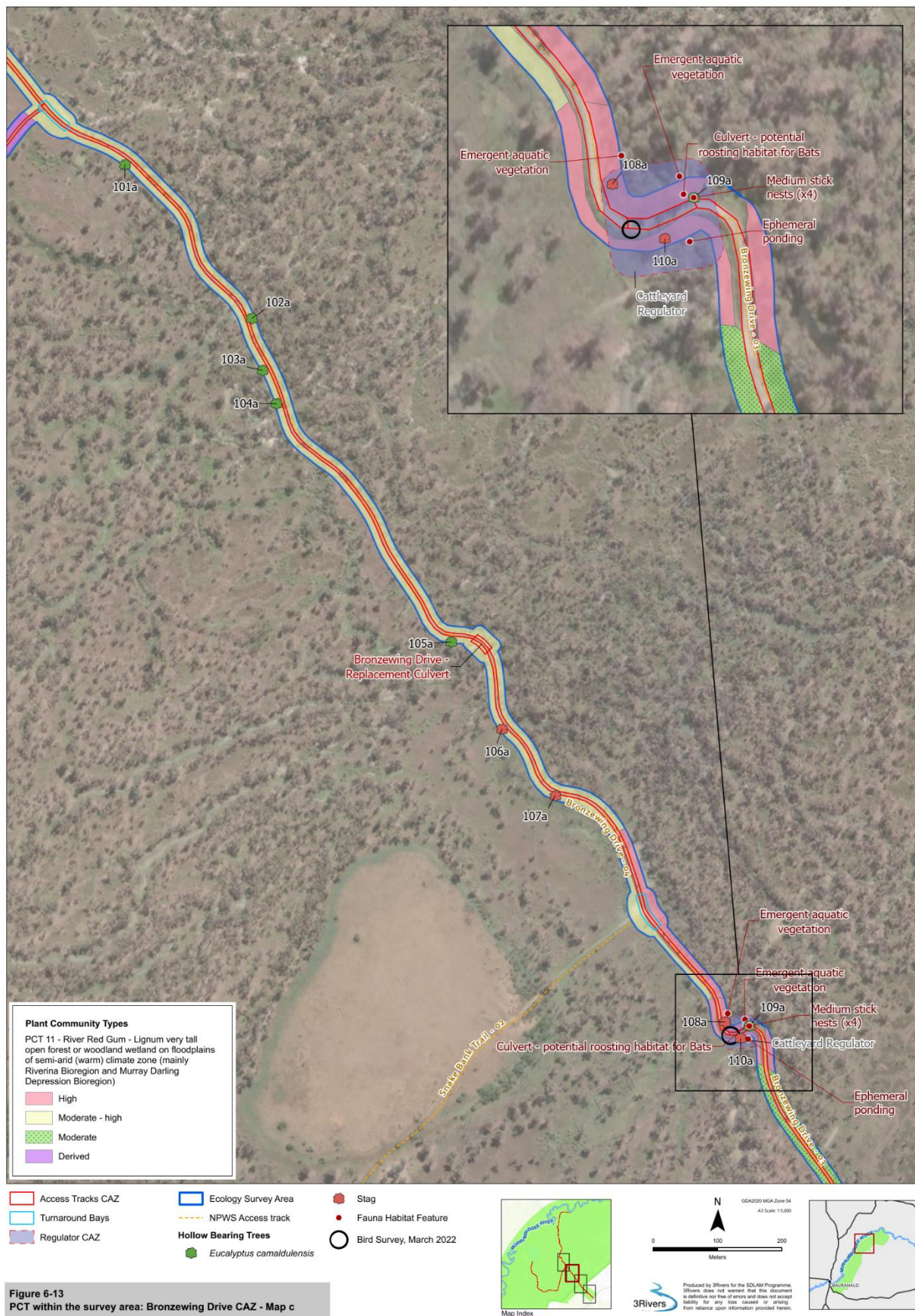


Figure 6-13 PCT within the survey area: Bronzewing Drive CAZ - Map c

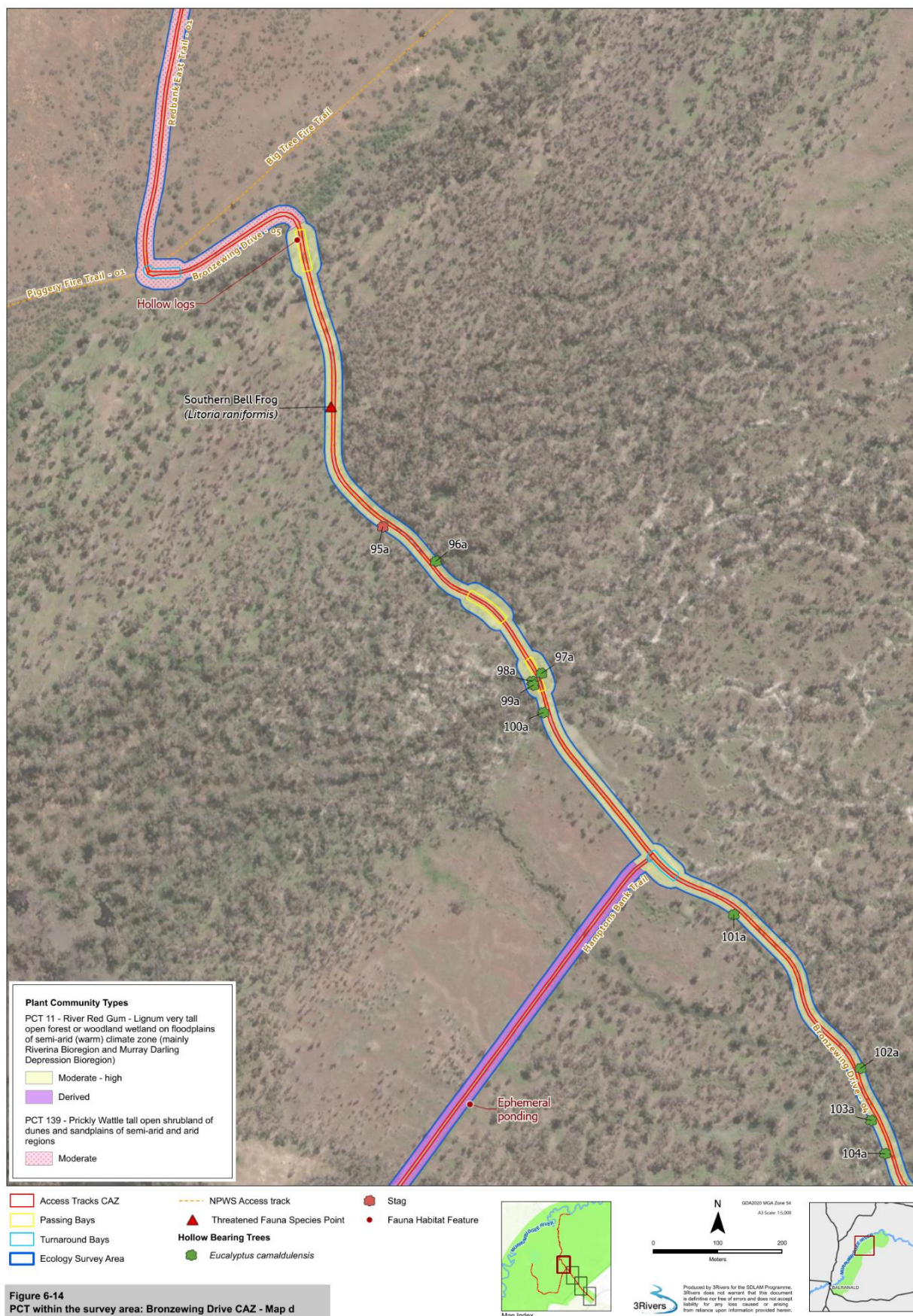


Figure 6-14 PCT within the survey area: Bronzewing Drive CAZ - Map d

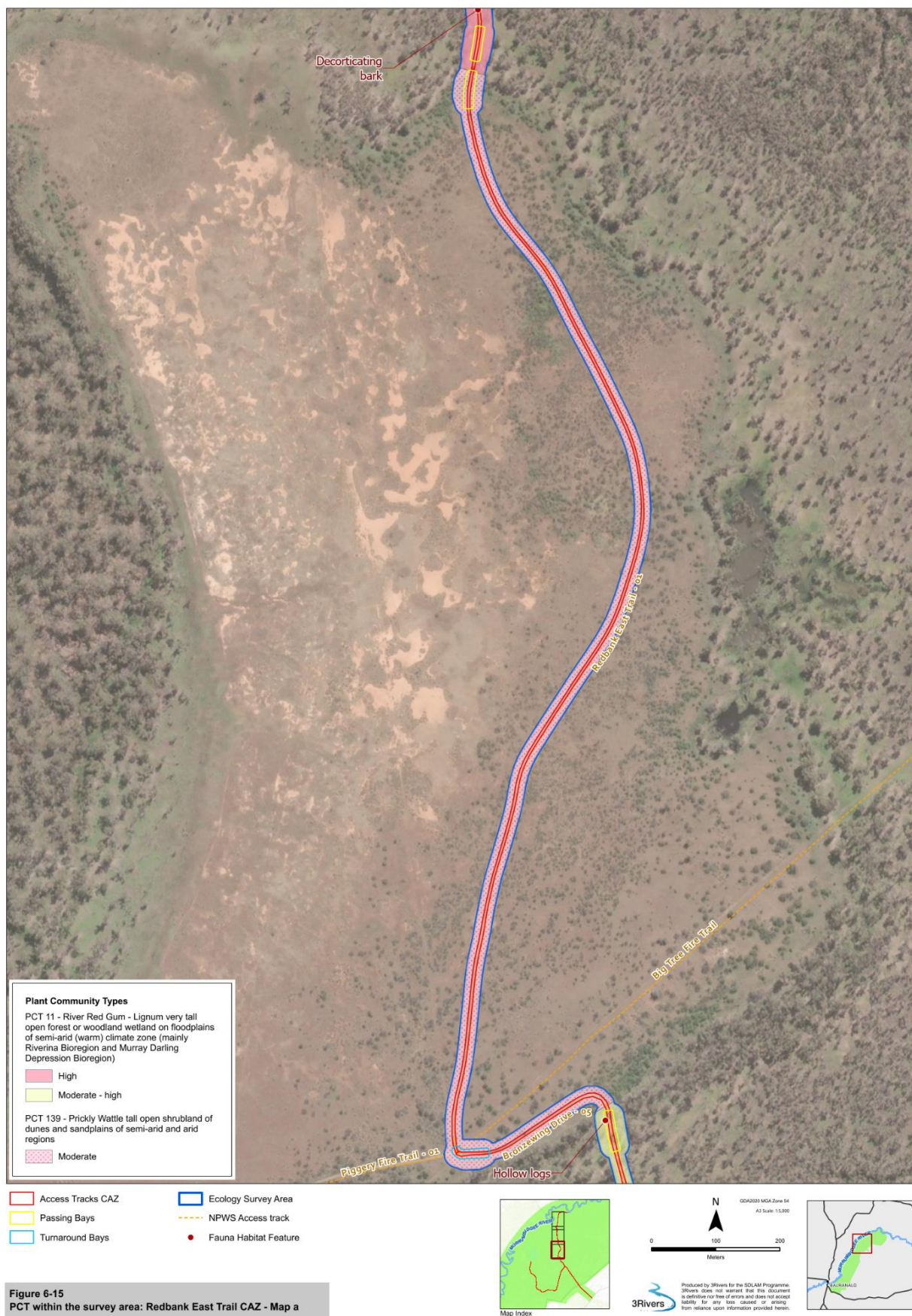
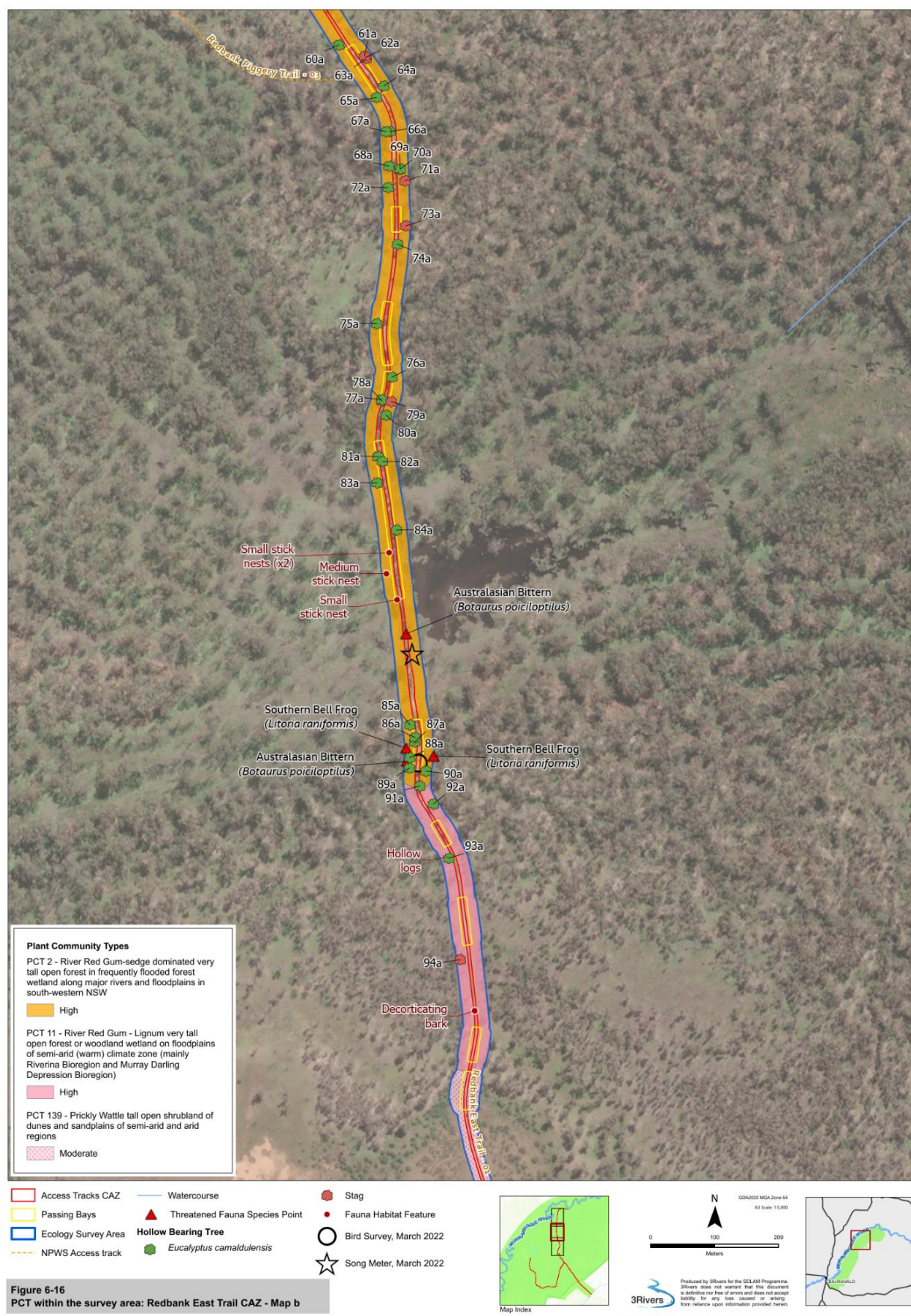


Figure 6-15
PCT within the survey area: Redbank East Trail CAZ - Map a

Figure 6-15 PCT within the survey area: Redbank East Trail CAZ - Map a



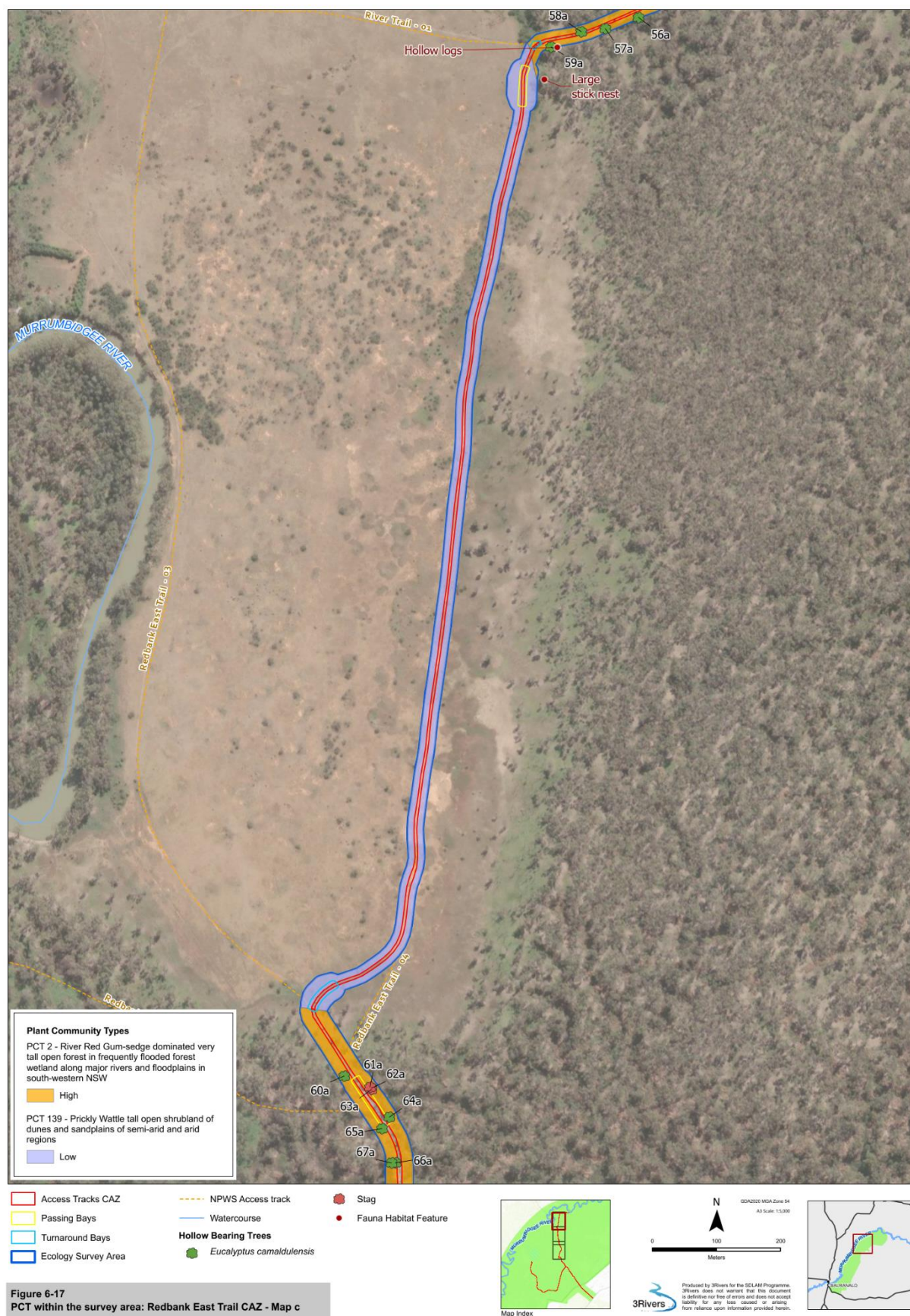


Figure 6-17 PCT within the survey area: Redbank East Trail CAZ - Map c

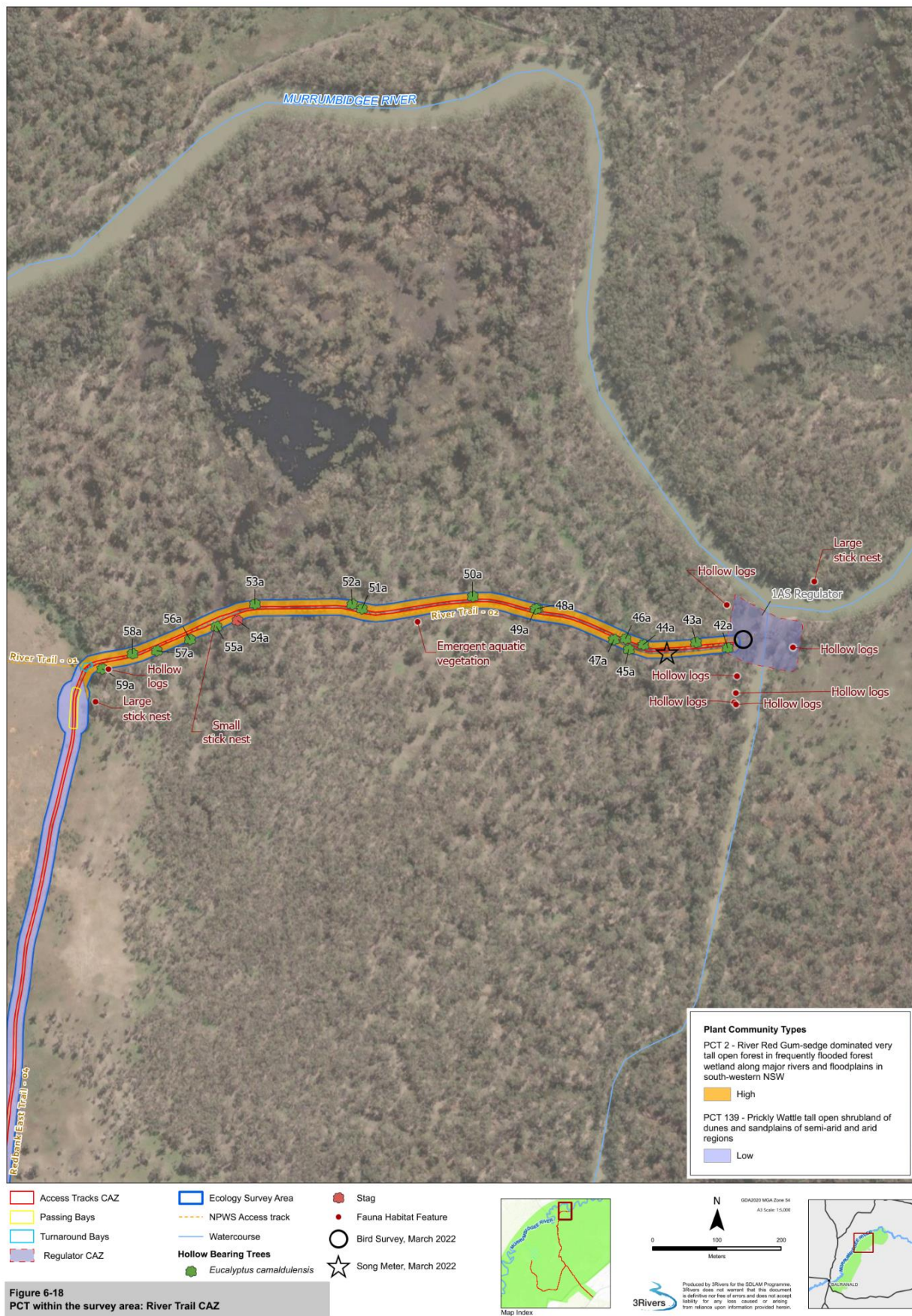


Figure 6-18 PCT within the survey area: River Trail CAZ

Threatened ecological communities

Based on field surveys, no threatened ecological communities (TECs) are present within the CAZ.

Threatened species

Based on the desktop review and field surveys, 42 threatened species (including seven threatened flora and 35 threatened fauna, listed as threatened under the EPBC Act and/or the BC Act) are considered to have a moderate or higher likelihood of occurrence within the general vicinity of the CAZ. This includes threatened species which have been confirmed within and adjacent to the CAZ.

Threatened Flora

Seven threatened flora species including Mossgiel daisy (*Brachyscome papillosa*), Lanky buttons (*Leptorhynchos orientalis*) and Bindweed (*Convolvulus tedmoorei*) have been identified as having moderate likelihood to occur within the broader locality. However, given these species typically favour drier habitats such as chenopod shrublands and woodlands and have not been recorded within the CAZ, they are considered unlikely to be impacted by the Proposal, given the small discrete footprints of the generally disturbed riparian land and cleared existing trails associated with the CAZ. None of these species were identified within the CAZ during field surveys.

The Winged Pepper-cress (*Lepidium monoplacoides*), Slender Darling-Pea (*Swainsona murrayana*), Menindee Nightshade (*Solanum karsense*) and Claypan daisy (*Brachyscome muelleroides*) may occur in seasonally inundated areas of native vegetation in the vicinity of all the trails, with the exception of stretches of trail running through sandhill areas on higher ground (i.e. stretches of Redbank East Trail (Trail ID05a and ID06). These species were not identified within the CAZ during field surveys and have not been recorded within the Yanga National Park they are considered unlikely to be present and impacted within the footprint of the CAZ.

It is considered unlikely that threatened flora species would be impacted by the Proposal, given the CAZ are centred on previously cleared areas subject to disturbance from construction and maintenance of trails and waterway infrastructure. Threatened flora with a moderate or higher likelihood of occurrence are detailed in Table 6-6 below.

Table 6-6 Threatened flora with a moderate or higher likelihood of occurrence

Species	Conservation Status		Likelihood of occurrence and habitat utilisation
	EPBC Act	BC Act	
<i>Brachyscome muelleroides</i> (Claypan Daisy)	V	V	Moderate: Suitable habitat associated with PCTs 2, 9 and 11 within the CAZ (Up to 2.3 ha). Suitable River red gum forest wetland habitat occurs within the CAZ. The species is unlikely to occur elsewhere within the CAZ where River red gum forest wetland habitat is not present.
<i>Brachyscome papillosa</i> (Mossgiel Daisy)	V	V	Moderate: Suitable habitat associated with all PCTs within the CAZ (Up to 2.9 ha). Although this species is considered to occur in drier habitats such as chenopod shrublands, a number of records of this species within the Yanga National Park are placed within wetland margin situations, and

Species	Conservation Status		Likelihood of occurrence and habitat utilisation
	EPBC Act	BC Act	
			thus this species may occur in a variety of vegetation types across all sites.
<i>Lepidium monoplacoides</i> (Winged Peppergrass)	E	E	Moderate: Suitable habitat associated with all PCTs within the CAZ (up to 2.9 ha). Although this species is considered to favour drier habitats such as chenopod shrublands, the species is known to also occur in River red gum wetland at Gunbower, Victoria, and thus this species may occur in a variety of vegetation types across all CAZ.
<i>Solanum karsense</i> (Menindee Nightshade)	V	V	Moderate: Suitable habitat associated with PCTs 9, 11 and 153 within the CAZ (up to 2.1 ha). Suitable habitat within the CAZ occurs as occasional flooded depressions with heavy soil, floodplains, heavy clay soils, sandy floodplains, ridges and calcareous soils. The species is unlikely to occur at any of the sites which are dominated exclusively by wetland vegetation.
<i>Swainsona murrayana</i> (Slender Darling-pea)	V	V	Moderate: Suitable habitat associated with PCTs 9, 11 and 153 within the CAZ (up to 2.1 ha). Suitable clay-based soils occur within the CAZ. Species grows in a variety of vegetation types including Black Box communities on level plains, floodplains and depressions, and is often found with Maireana species, which are present within the CAZ. The species is unlikely to occur at any of the other sites which are dominated exclusively by wetland vegetation.
<i>Convolvulus tedmoorei</i> (Bindweed)	-	E	Moderate: Suitable habitat associated with all PCTs within the CAZ (up to 2.9 ha). Suitable habitat (self-mulching clay soils) for this species occurs across all of the CAZ.
<i>Leptorhynchos orientalis</i> (Lanky buttons)	-	E	Moderate: Suitable habitat associated with PCTs 11 and 153 within the CAZ (up to 1.8 ha). Suitable woodland and shrubland habitat with herbaceous understorey present within the CAZ.

Threatened Fauna

35 EPBC and/or BC listed fauna species are considered to have a moderate or higher likelihood of occurrence including 28 birds, five mammals, one reptile and one frog species.

While the CAZ and surrounding area may provide small patches of suitable marginal habitat for a number of these threatened fauna, the negligible area of vegetation to be removed is not considered important to the survival or recovery of any identified species. Minimal to no threatened fauna species are anticipated to be present within the CAZ during construction, given the works are generally confined to highly disturbed areas within the existing trail corridor.

The Southern Bell Frog (*Litoria raniformis*) has been recorded throughout the Yanga National Park including at Twin Bridges Swamp during site surveys and is considered likely to utilise seasonally inundated native vegetation surrounding the Redbank East Trail CAZ (Trail ID05b) for dispersal, foraging and potentially breeding. The remainder of the CAZ is considered to offer potential foraging and dispersal opportunities for Southern Bell Frogs.

The Australasian Bittern (*Botaurus poiciloptilus*) has also been recorded in the Twin Bridges Swamp, surrounding the Redbank East Trail CAZ (Trail ID05b). This CAZ provides suitable foraging, dispersal habitat along with potential breeding habitat in the adjoining wetland. The Australasian Bittern's preferred habitat is comprised of wetlands with tall dense vegetation dominated by sedges, rushes and reeds, where it forages in still, shallow water up to 0.3 m deep, often at the edges of pools or waterways, or from platforms or mats of vegetation over deep water. However, given the minor extent of vegetation disturbance in this CAZ (up to 2.9 ha), centred on the existing trails, this species is considered unlikely to be significantly impacted by the Proposal. The remaining CAZ also present potential occasional and transient feeding and dispersal habitat only, as they are absent of important habitat for this species.

Given the negligible amount of vegetation disturbance (up to approximately 3 ha in total), avoidance of impacts to all identified hollow-bearing trees and retention of large mature trees where possible, minimal to no impacts to EPBC and/or BC listed raptors and woodland bird species such as the Barking Owl (*Ninox connivens*), Major Mitchell's Cockatoo (*Lophochroa leadbeateri*), Grey Falcon (*Falco hypoleucos*), Regent Parrot (*Polytelis anthopeplus monarchoides*), Blue-winged Parrot (*Neophema chrysostoma*) and Superb Parrot (*Polytelis swainsonii*) are anticipated.

Stretches of unsealed clay trails along the margins of ephemeral wetlands such as Redbank East Trail may provide potentially suitable habitat for the EPBC listed Grey Snake (*Hemiaspis damelii*). This species often shelters under rocks and logs as well as the cracks of cracking clay soils on the margins of wetlands and swamps. However, the area of habitat intersected by the CAZ where the species may be present (up to 12 ha) is relatively small compared to the broader park, where it is well-represented. Potential impacts would primarily be limited to direct strike from plant and vehicles during construction, with minimal removal of vegetation and/or suitable habitat required. Overall, the potential for significant impacts to the Grey Snake is considered low given the short-term and nature temporary of impacts within a negligible construction footprint.

Threatened fauna with a moderate or higher likelihood of occurrence are detailed in Table 6-7 below.

Table 6-7 Threatened fauna with a moderate or higher likelihood of occurrence

Table 6-7: Threatened fauna with a moderate or higher likelihood of occurrence			
Species	Conservation Status		Likelihood of occurrence and habitat utilisation
	EPBC Act	BC Act	
Birds			
<i>Aphelocephala leucopsis</i> (Southern Whiteface)	V	-	Recorded: Recorded at Waugorah Lake to the north of the Proposal works within the National Park. Suitable habitat associated with all PCTs within the CAZ (up to 2.9 ha).

Species	Conservation Status		Likelihood of occurrence and habitat utilisation
	EPBC Act	BC Act	
			Suitable habitat within the CAZ occurs as open woodlands and shrublands where there is an understorey of grasses and/or shrubs. Habitats within the CAZ contain Acacia and Eucalyptus species, suitable for this species, with herbaceous understorey and litter cover.
<i>Botaurus poiciloptilus</i> (Australasian Bittern)	E	E	Recorded: Recorded at 1ES Regulator to the north of the Proposal works within the Yanga National Park. Redbank East Trail at Twin Bridges Swamp (ID05b) (heard calling, high quality breeding habitat within the CAZ). Observation at Twin Bridges is consistent with recent targeted surveys for the species at that location by Herring (2021), however, that study did not record the species in association with Shaw's Swamp. Suitable habitat associated with PCTs 2 and 11 within the CAZ (wetland habitat). Wetlands consisting of tall dense aquatic vegetation is present within the CAZ, suitable for this species. Additionally, the species was detected at Piggery Bridge, within Yanga National Park (Herring 2021). Piggery Bridge has a strong connectivity with the Spikerush habitat present on the northern side of the weir, and therefore it is considered likely that the species may utilise habitat in this location.
<i>Calidris ferruginea</i> (Curlew Sandpiper)	CE, M	E	Moderate: Suitable habitat associated with PCTs 2 and 11 within the CAZ (wetland habitat) (up to 2.1 ha). Although not previously observed within the CAZ, suitable wetland habitat occurs across the CAZ. The species may utilise habitat within the CAZ sporadically for foraging and dispersal likely only pausing for a few days on the course of its migration.
<i>Falco hypoleucos</i> (Grey Falcon)	V	V	High: Suitable habitat associated with all PCTs within the CAZ (suitable foraging and dispersal habitat with nesting habitat in large trees) (up to 2.9 ha). There are a number of recent records of the species in the vicinity of the CAZ.
<i>Grantiella picta</i> (Painted Honeyeater)	V	V	Moderate: Suitable habitat associated with all PCTs within the CAZ (suitable eucalypt woodland and forest habitat) (up to 2.9 ha). Recorded only once previously in the vicinity of the CAZ (EESG, 2023). Habitat within the CAZ is generally dominated by riparian, swampy gum Eucalypt Woodland which is not the preferred box-gum, box-ironbark woodland that is the preferred core habitat for this species. Therefore, this species is considered likely to utilise the CAZ for sporadic foraging and dispersal.
<i>Limosa limosa</i> (Black-tailed Godwit)	M	V	Moderate: Suitable habitat associated with PCTs 2 and 11 within the CAZ (wetland habitat) (up to 2.1 ha). Although not recently observed within the CAZ, suitable wetland habitat occurs across the CAZ. The species may utilise habitat within the CAZ

Species	Conservation Status		Likelihood of occurrence and habitat utilisation
	EPBC Act	BC Act	
			sporadically for foraging and dispersal likely only pausing for a few days on the course of its migration.
<i>Lophochroa leadbeateri</i> (Major Mitchell's Cockatoo)	E	V	High: Suitable habitat associated with all PCTs within the CAZ (suitable foraging and dispersal habitat with nesting habitat in hollow-bearing trees) (up to 2.9 ha). There are a number of recent records of the species in the vicinity of the CAZ.
<i>Melanodryas cucullata cucullata</i> (Hooded Robin (south-eastern form))	E	V	Moderate: Suitable habitat associated with all PCTs within the CAZ (suitable woodland habitat present) (up to 2.9 ha). Few records of the species in the vicinity of the CAZ. Unlikely to occur within other sites which support more frequently inundated River red gum forest wetlands, which have a more closed canopy, and a sparse shrub layer and therefore are not likely to form core habitat for this species.
<i>Neophema chrysostoma</i> (Blue-winged Parrot)	V	V	Moderate: Suitable habitat associated with all PCTs within the CAZ (suitable foraging and dispersal habitat with nesting habitat in hollow-bearing trees) (up to 2.9 ha). There are a number of recent records of the species in the vicinity of the CAZ. Species likely disperses to nearby mallee communities to utilise its preferred feeding habitat.
<i>Polytelis anthopeplus monarchoides</i> (Regent Parrot (eastern subspecies))	V	E	High: Suitable habitat associated with all PCTs within the CAZ (suitable foraging and dispersal habitat with nesting habitat in hollow-bearing trees) (up to 2.9 ha). There are a number of recent records of the species in the vicinity of the CAZ. Species likely disperses to nearby mallee communities to utilise its preferred feeding habitat.
<i>Polytelis swainsonii</i> (Superb Parrot)	V	V	Moderate: Suitable habitat associated with all PCTs within the CAZ (suitable foraging and dispersal habitat with nesting habitat in hollow-bearing trees) (up to 2.9 ha). There are a number of recent records of the species in the vicinity of the CAZ. Species likely disperses to nearby mallee communities to utilise its preferred feeding habitat.
<i>Rostratula australis</i> (Australian Painted Snipe)	E	E	Moderate: Suitable habitat associated with PCTs 2 and 11 within the CAZ (wetland habitat) (up to 2.1 ha). Although not previously observe within the CAZ, suitable wetland habitat occurs within the CAZ. The species may utilise habitat within the CAZ sporadically for foraging on the course of dispersal.
<i>Stagonopleura guttata</i> (Diamond Firetail)	V	V	Moderate: Suitable habitat associated with all PCTs within the CAZ (breeding, foraging and dispersal opportunities within all forest/woodland areas within the CAZ) (up to 2.9 ha).

Species	Conservation Status		Likelihood of occurrence and habitat utilisation
	EPBC Act	BC Act	
			Previous records occur in the vicinity of the CAZ although limited.
<i>Anseranas semipalmata</i> (Magpie Goose)	-	V	High: Suitable habitat associated with all PCTs within the CAZ (up to 2.9 ha). Redbank East Trail at Twin Bridges Swamp (ID05b) (preferred sedge-rich dense habitat present). All other sites (seasonally inundated wetland habitat lacking preferred, dense, sedge-rich habitat likely to be utilised only for sporadic foraging and dispersal). Species recently recorded within the Yanga National Park.
<i>Artamus cyanopterus cyanopterus</i> (Dusky Woodswallow)	-	V	Moderate: Suitable habitat associated with all PCTs within the CAZ (breeding, foraging and dispersal opportunities within all forest/woodland areas within the CAZ) (up to 2.9 ha). Previous records occur in the vicinity of the CAZ although limited.
<i>Burhinus grallarius</i> (Bush-stone Curlew)	-	E	Moderate: Suitable habitat associated with PCTs 2, 9 and 11 within the CAZ (up to 2.3 ha). Habitat within the CAZ is generally riparian, swampy and semi-aquatic. Species is likely to utilise woodland habitat within the CAZ.
<i>Circus assimilis</i> (Spotted Harrier)	-	V	High: Suitable habitat associated with all PCTs within the CAZ (suitable foraging and dispersal habitat with nesting habitat in large trees) (up to 2.9 ha). There are a number of recent records of the species in the vicinity of the CAZ.
<i>Daphoenositta chrysoptera</i> (Varied Sittella)	-	V	Moderate: Suitable habitat associated with PCTs 2, 9 and 11 within the CAZ (breeding, foraging and dispersal opportunities within all forest/woodland areas within the CAZ) (up to 2.3 ha). Previous records occur in the vicinity of the CAZ although limited.
<i>Epthianura albifrons</i> (White-fronted Chat)	-	V	Moderate: Suitable habitat associated with all PCTs within the CAZ (wetland habitat provides potentially suitable foraging opportunities, albeit with a more closed canopy than the preferred habitat of this species) (up to 2.9 ha). Many records of the species in the surrounding landscape in association with larger more open wetlands such as Kia Lake and Lake Tala than those that occur within the CAZ, where the species has not been recorded despite regular monitoring.
<i>Falco subniger</i> (Black Falcon)	-	V	High: Suitable habitat associated with all PCTs within the CAZ (suitable foraging and dispersal habitat with nesting habitat in large trees) (up to 2.9 ha). There are a number of recent records of the species in the vicinity of the CAZ.

Species	Conservation Status		Likelihood of occurrence and habitat utilisation
	EPBC Act	BC Act	
<i>Haliaeetus leucogaster</i> (White-bellied Sea-Eagle)	-	V	Recorded: Individual and stick nest recorded at Piggery Lake. Another large stick nest recorded west of 1AS and north of the Twin Bridges Group. High: Suitable habitat associated with all PCTs within the CAZ (suitable foraging and dispersal habitat with nesting habitat in large trees) (up to 2.9 ha). There are a number of recent records of the species in the vicinity of the CAZ.
<i>Hieraaetus morphnoides</i> (Little Eagle)	-	V	Moderate: Suitable habitat associated with all PCTs within the CAZ (suitable foraging and dispersal habitat with nesting habitat in large trees) (up to 2.9 ha). There are a number of recent records of the species in the vicinity of the CAZ.
<i>Lophoictinia isura</i> (Square-tailed Kite)	-	V	Moderate: Suitable habitat associated with all PCTs within the CAZ (suitable foraging and dispersal habitat with nesting habitat in large trees) (up to 2.9 ha). There are limited records of the species in the vicinity of the CAZ.
<i>Ninox connivens</i> (Barking Owl)	-	V	Moderate: Suitable habitat associated with all PCTs within the CAZ (suitable woodland and open woodland foraging and dispersal habitat with nesting habitat in hollow-bearing trees) (up to 2.9 ha). Multiple suitable hollow-bearing trees within the CAZ. Few records of this species in the vicinity of the CAZ, although typically requires large permanent territories. Nest sites are used repeatedly over years by a pair.
<i>Oxyura australis</i> (Blue-billed Duck)	-	V	High: Suitable habitat associated with PCTs 2 and 11 within the CAZ (wetland habitat provides potentially suitable foraging opportunities for the species, albeit not the deep, permanent water preferred by the species) (up to 2.1 ha). A number of recent records at the nearby Piggery Lake, nearby to the CAZ, providing higher-quality and deeper water than what is represented within the CAZ. It is considered that this species may occasionally, sporadically utilise wetlands within the CAZ for foraging in the course of dispersal. Habitat suitable for this species is well represented within the surrounding landscape.
<i>Pomatostomus temporalis temporalis</i> (Grey-crowned Babbler)	-	V	Moderate: Suitable habitat associated with PCTs 2, 9 and 11 within the CAZ (suitable woodland habitat present) (up to 2.3 ha). Many records of the species in the vicinity of the CAZ. Unlikely to occur within other sites which support more frequently inundated River red gum forest wetlands, which have a more closed canopy, and a sparse

Species	Conservation Status		Likelihood of occurrence and habitat utilisation
	EPBC Act	BC Act	
			shrub layer and therefore are not likely to form core habitat for this species.
<i>Pyrrholaemus brunneus</i> (Redthroat)	-	V	Moderate: Suitable habitat associated with all PCTs within the CAZ (suitable shrubland habitat present) (up to 2.9 ha). A handful of records of the species in the vicinity of the CAZ. Unlikely to occur within other sites which support more frequently inundated River red gum forest wetlands, which have a more closed canopy, and a sparse shrub layer and therefore are not likely to form core habitat for this species.
<i>Stictonetta naevosa</i> (Freckled Duck)	-	V	High: Suitable habitat associated with PCTs 2, 9 and 11 within the CAZ (wetland habitat provides potentially suitable foraging opportunities for the species, albeit not the deep, permanent water preferred by the species) (up to 2.3 ha). A number of recent records at the nearby Piggery Lake, nearby to the CAZ, providing higher-quality and deeper water than what is represented within the CAZ. It is considered that this species may occasionally, sporadically utilise wetlands within the CAZ for foraging in the course of dispersal. Habitat suitable for this species is well represented within the surrounding landscape.

Frogs

<i>Litoria raniformis</i> (Southern Bell Frog)	V	E	Recorded: Twin Bridges / Redbank East Trail (heard calling, suitable spike-sedge wetland habitat and adjacent, more seasonally inundated wetland habitat present forming suitable breeding habitat). Suitable habitat associated with all PCTs within the CAZ (seasonally inundated wetland habitat present forming suitable breeding habitat) (up to 2.9 ha). This species is known to occur in Yanga National Park, which contains important habitat for the species. The species has been observed utilising habitat at all four monitoring at Yanga National Park across the last decade at Mercedes Swamp, Twin Bridges, Piggery Lake, and Waugorah Lagoon. The species however is known to preferentially utilise freshly inundated areas for breeding (Wassens, 2008), and indeed when the Yanga National Park is in flood the species is likely to utilise much broader areas of the Yanga National Park than just the four core monitoring wetlands for both breeding and dispersal (Wassens, 2008).
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Reptiles

<i>Hemiaspis damelii</i> (Grey Snake)	E	E	High: Suitable habitat associated with all PCTs and non-vegetated areas within the CAZ (seasonally inundated wetland habitat and cracking soils) (up to 2.9 ha). This species is known to occur in Yanga National Park, having been recorded recently at a number of wetlands within Yanga National Park including Piggery Lake, Piggery Bridge, Twin Bridges, and nearby to the 1AS Environmental Regulator. The species is known to forage for frogs in wetland habitat, and shelter in the soil cracks of drying wetlands. The
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Species	Conservation Status		Likelihood of occurrence and habitat utilisation
	EPBC Act	BC Act	
			extent of the species' habitat utilisation within Yanga National Park is not completely understood and therefore the species is considered likely to occur at all sites.

Mammals

<i>Chalinolobus picatus</i> (Little Pied Bat)	-	V	Moderate: Suitable habitat associated with all PCTs within the CAZ (suitable foraging and dispersal habitat with roosting habitat in hollow-bearing trees) (up to 2.9 ha). Few records of this species in the vicinity of the CAZ.
<i>Myotis Macropus</i> (Southern Myotis)	-	V	Moderate: Suitable habitat associated with all PCTs within the CAZ (suitable foraging and dispersal habitat with roosting habitat in hollow-bearing trees) (up to 2.9 ha). Few records of this species in the vicinity of the CAZ.
<i>Saccolaimus flaviventris</i> (Yellow-bellied Sheath-tail-bat)	-	V	Moderate: Suitable habitat associated with all PCTs within the CAZ (suitable foraging and dispersal habitat with roosting habitat in hollow-bearing trees) (up to 2.9 ha). Few records of this species in the vicinity of the CAZ.
<i>Vespadelus baverstocki</i> (Inland Forest Bat)	-	V	Moderate: Suitable habitat associated with all PCTs within the CAZ (suitable foraging and dispersal habitat with roosting habitat in hollow-bearing trees) (up to 2.9 ha). Few records of this species in the vicinity of the CAZ.
<i>Nyctophilus corbeni</i> (Corben's Long-eared Bat)	V	V	Moderate: Suitable habitat associated with PCTs 2, 9, 11 within the CAZ (suitable box-eucalypt woodland habitat with tree hollows that may support roosting) (up to 2.3 ha). Although records of the species in the vicinity of the CAZ is limited (only a handful of Atlas of Living Australian (ALA) records) suitable habitat occurs across the CAZ, and the species is notably cryptic.

Non-threatened fauna species

The discrete areas of vegetation identified for removal may provide foraging and nesting habitat for non-threatened fauna species including arboreal mammals, birds and reptiles. Common species of the area would face the same impacts as threatened fauna. While non-threatened species were not the subject of targeted surveys, species such as the Echidna (*Tachyglossus aculeatus*) and common dunnart (*Sminthopsis murina*) are known to occur in the National Park. It is important to note that all native flora and fauna are protected under the NPW Act. There would be a very minor loss of potentially suitable foraging habitat for common fauna species, including minor indirect impacts such as noise/vibration disturbance.

Migratory species

There are 16 migratory bird species are predicted to occur within the Area of interest based on the EPBC Act PMST (DCCEEW, 2022) and NSW BioNet Atlas database (NSW DCCEEW, 2023). No migratory species were detected during the field surveys carried out for the Proposal.

While some migratory bird species would use the CAZ and surrounding areas on occasion, such as the Sharp-tailed Sandpiper (*Calidris acuminata*), the CAZ are not recognised as ‘important habitat’ as defined under the EPBC Act Policy Statement 1.1 Significant Impact Guidelines (DoE, 2013), in that the CAZ do not contain:

- Habitat utilised by a migratory species occasionally or periodically within a region that supports an ecologically significant proportion of the population of the species
- Habitat utilised by a migratory species which is at the limit of the species range
- Habitat within an area where the species is declining.

Based on the above considerations, the proposed works are unlikely to impose a significant effect on any of the listed migratory species predicted to occur within or near to the CAZ.

Areas of Outstanding biodiversity value

There are no areas of outstanding biodiversity value or natural (biodiversity) assets of intergeneration significance (as defined under Part 12A of the NPW Act) within or near the CAZ.

6.4.2 Impacts

Loss of vegetation and habitat

As a conservative worst-case scenario, the Proposal would require the removal of up to around 3 ha of predominately low-lying wetland vegetation along existing trails. In particular, removal of native vegetation would be required:

- At Bronzewing Drive along the trail edges of the proposed rock causeway CAZ (Trail ID04b) and along the banks of the channel at the replacement culvert (Trail ID04c) CAZ. Limited clearing and/or disturbance of vegetation may be required at the existing laydown area near Tarwillie Gate. Vegetation clearing would also be required for the passing and turnaround bays.
- Redbank East Trail (Trail ID05b) CAZ along the trail levee banks within Twin Bridges Swamp. Vegetation clearing would also be required for the passing and turnaround bays.
- Steves Bank Trail (Trail ID03) CAZ along discrete patches of the existing trail corridor and trail edges as vegetation has grown over the existing trail at the south western end of the trail nearby Narkungerie Creek.
- An additional area of about 8.9 ha would also be disturbed within the trails, which is understood to be bare compacted ground comprising the existing trail footprint based on observed conditions at the time of field surveys. There is the potential for minor additional vegetation management works within the existing trail corridor using mechanical methods where small patches of low-lying vegetation in poor condition has encroached into the trail at the time of construction.

The proposed vegetation to be impacted currently provides suitable foraging and nesting habitat for various fauna species, particularly woodland birds. The canopy species (River red gums), generally provide summer food resources, however, can flower opportunistically throughout the year. Due to minimal habitat being removed and the adjacent contiguous riparian vegetation, it is unlikely the vegetation being removed would be important or preferred habitat for listed local or migratory species. These small patches of vegetation are also subject to ongoing disturbance as NPWS undertake periodic vegetation management (i.e., slashing, pruning and removal) using mechanical methods of existing trails and trail edges.

The removal of vegetation would occur to small discrete areas within and immediately adjoining existing trails, with the existing vegetation currently subject to edge effects. No identified habitat trees including stags and hollow bearing trees would be removed as part of the proposed works. No EPBC or BC-listed TECs are anticipated to be impacted by the Proposal. Any species using the trees and habitat to be removed would be displaced. However, with extensive preferred habitat in the adjacent contiguous riparian vegetation and the surrounding park, the impact of the proposed vegetation removal is considered minor.

Threatened biodiversity

Overall, potential impacts to biodiversity as a result of the Proposal are expected to be minimal considering the following:

- Proposed works would occur along discrete areas of existing trails in disturbed land that is unlikely to contain suitable habitat for any threatened flora species
- Vegetation clearing is limited to removal of low-lying vegetation adjoining highly disturbed areas (up to 2.9 ha)
- The removal of hollow bearing trees would be avoided where practicable
- While the small patches of habitat to be removed may occasionally be utilised by threatened species, the area of vegetation to be removed is not considered important to the survival or recovery of any identified species
- No EPBC or BC-listed Threatened Ecological Communities would be impacted by the Proposal
- Some of the threatened species potentially present readily move through the landscape and undertake seasonal migration, while others are sedentary but capable of short distance dispersal
- Minor indirect impacts on fauna such as noise/vibration disturbance during construction may occur. Noise impacts may lead to some animals temporarily ceasing to utilise habitat adjacent to the construction footprint or may impair their normal activities. However, it is considered unlikely that these species would move permanently away these areas after completion of construction activities.
- However, despite the potential presence of these species in the surrounding area, minimal to no threatened flora or fauna species are anticipated to be present within the CAZ during construction given the works are to be confined to highly disturbed areas within the existing trail corridor (with the exception of the Grey snake).
- Minor potential for direct injury/harm to fauna species during removal of vegetation and due to construction plant and equipment

- During operation, no adverse impacts are anticipated with no flow regulating works or material changes to hydrological regimes proposed
- The Proposal does not significantly contribute to a key threatening process for the threatened terrestrial species that potentially occur within or use the CAZ
- Significant impacts on any species are considered unlikely, as works would occur in a staged manner over a short period of time in a nature typical of small construction work sites and in areas with a history of site disturbance.

The CAZ represent relatively small, isolated and discrete areas of degraded riparian and instream habitat within the locality, with a negligible combined total footprint of approximately up to 12 ha. Discrete areas of the footprint may provide suitable but marginal habitat for a number of threatened species such as the Grey Snake, Australasian Bittern and Southern Bell Frog. However, this footprint is considered negligible in the context of suitable habitat available in the surrounding landscape of the Yanga National Park (<0.01% of the approximately 35,597 ha Yanga National Park). Considering the scale of potential habitat removal is so minor, it is unlikely that these areas represent habitat that is significant to any local population.

Other impacts

Other potential impacts to terrestrial biodiversity include:

- **Fauna injury and mortality** — Fauna injury or death could occur during vegetation clearing. Some mobile species, such as birds, would be able to move away from the path of clearing and may not be greatly affected unless they are nesting. However, other species that are less mobile (e.g. ground dwelling reptiles and mammals), or those that are nocturnal and nest or roost in trees during the day (e.g. arboreal mammals and micro bat species), may find it difficult to move rapidly when disturbed. Threatened fauna such as Grey snakes could also be struck by construction vehicles, plant and equipment or become trapped in equipment and excavations. While this could result in injury and death, the likelihood of this occurring is considered negligible as the CAZ are small and within existing disturbed areas.
- **Proliferation of weeds** — Proliferation of weed species is likely to occur as vegetation is removed, soil is disturbed, gravel and crushed rock is imported, and machinery moves about the work sites. During construction there is potential to disperse weed seeds and plant material into adjoining areas of moderate to high quality native vegetation where weed species do not currently occur in high density. Areas of bare soil created at the CAZ would provide opportunities for weed establishment. Proliferation of weed species can also be exacerbated following inundation of the floodplain, with recent flood events in 2023 increasing the spread and abundance of weeds across the Yanga National Park. The impacts from weed invasion would likely commence a few months after construction and gradually increase over months and seasons. Proliferation of weed species has the potential to impact on the quality and integrity of the native vegetation within and surrounding the CAZ including habitat for threatened species.
- **Pests** — The movement of plant and equipment has the potential to transfer pests within Yanga and alter their abundance. The CAZ are likely to provide habitat for a range of pest species including rabbits, foxes and cats. Construction activities have the potential to disperse pest species across the surrounding landscape due to habitat removal, noise, and

human presence during construction and operation. However, the Proposal is unlikely to significantly increase the value of the habitat for pest species in the study areas over the long-term. Rabbits tend to colonise more disturbed and modified open habitats, such as the agricultural landscape surrounding park, and the Proposal is unlikely to contribute to increased levels of predation on native fauna from foxes and cats as the CAZ are mostly limited to existing disturbed areas.

- **Pathogens** — The movement of plant and equipment has the potential to transfer pathogens within the Yanga National Park. The most likely causes of pathogen dispersal and importation associated with the proposed activity include earthworks, movement of soil, and attachment of plant matter to vehicles and machinery. The potential for pathogens to occur will be treated as a risk during construction.
- **Noise** — Construction noise may result in fauna temporarily avoiding habitats adjacent to the CAZ. The impacts from noise emissions would be localised to the CAZ and adjacent areas and are not considered likely to have a significant, long-term impact on wildlife populations. No nightworks are proposed, which would avoid disturbance to fauna at dawn, dusk and at night.
- **Dust** — Dust generated during construction may be deposited onto the foliage of vegetation adjacent to the CAZ. This has the potential to reduce photosynthesis and transpiration and cause abrasion resulting in reduced growth rates and decreases in overall health of the vegetation. Deposition of dust on foliage is likely to be highly localised.

6.4.3 Safeguards

Measures proposed to avoid, minimise or manage potential terrestrial biodiversity impacts as a result of the Proposal are detailed in Table 6-8.

Table 6-8 Safeguards for terrestrial biodiversity impacts

Impact	Safeguard	Responsibility	Timing
Impact to surrounding vegetation	The limits of the CAZ and areas for parking and turning of vehicles and plant will be accurately and clearly communicated to site personnel prior to commencement of works. These areas will be located so that local vegetation disturbance is minimised.	Contractor	Prior to construction
	Where feasible, all materials, plant, equipment, work vehicles and stockpiles will be placed to avoid damage to surrounding vegetation and will be outside tree driplines.	Contractor	Construction
	All identified hollow-bearing trees within the CAZ will be prioritised for retainment with all potential impacts (including pruning and lopping of branches) to be avoided where practicable.	Contractor	Pre-construction / Construction

Impact	Safeguard	Responsibility	Timing
	If any damage occurs to vegetation outside the approved CAZ, it is to be reported and managed as an environmental incident in accordance with the environmental incident management procedure contained in the CEMP. The Department and NPWS will be notified so that appropriate remediation strategies can be developed and implemented.	Contractor, the Department	Construction
	Construction personnel will be informed of the environmentally sensitive aspects of the CAZ, including being shown plans of directly impacted and adjoining areas that identify vegetation communities; hollow-bearing trees; important flora and fauna habitat areas; and locations where threatened species, populations or ecological communities have been recorded.	Contractor	Construction
	Disturbance will be restricted to existing disturbance areas where possible.	Contractor	Construction

Impact	Safeguard	Responsibility	Timing
Impact to native plants and animals including threatened species	A pre-clearing inspection will be undertaken 48 hours prior to any native vegetation clearing by a suitably qualified representative from the Department and/or NPWS along with the Contractor's Environmental Manager (or delegate). The pre-clearing inspection at each CAZ will include, as a minimum: • A check of the physical demarcation any areas subject to vegetation clearing within the CAZ (i.e., Trail ID03, Trail ID04b, Trail ID04c and Trail ID05b) • Identification of hollow bearing trees within areas of the CAZ subject to vegetation clearing to avoid unintended damage during the clearing and subsequent construction works • Identification of habitat features that may need to be relocated outside the CAZ • Identification of any threatened flora and fauna The completion of the pre-clearing inspection will form a hold point requiring sign-off from the Department.	Contractor / the Department	Construction
	Where feasible, undertake brush cutting in preference to complete removal of vegetation to retain groundcover and topsoil.	Contractor	Construction
	Construction personnel will be made aware that any native fauna species encountered must be allowed to leave the CAZ without being harassed and NPWS called for assistance where necessary.	Contractor	Construction

Impact	Safeguard	Responsibility	Timing
	A procedure for dealing with unexpected presence of threatened species will be implemented during construction, including cessation of work and notification of the contractors appointed environmental representative, NPWS and the Department, determination of appropriate mitigation measures in consultation (i.e. relevant relocation measures) and updating of ecological monitoring requirements.	Contractor	Construction
Impacts to threatened species	Construction during Spring (September - November) will be avoided if possible. This time falls within the breeding periods of multiple species including: • Australasian Bittern (October - February) • Southern Whiteface (July - October) • White-bellied Sea-Eagle (June - September) • Southern Bell Frog (September - April).	Contractor	Construction

Impact	Safeguard	Responsibility	Timing
	The following safeguards will be implemented to minimise impacts to the Grey Snake: • Construction during the Grey Snake breeding period (January - March) will be avoided if possible. • Minimise disturbing suitable habitat, where practicable, (i.e., cracking soil and rocks, particularly in association with waterways) and consideration of placement of laydown areas will avoid potential suitable habitat. • Where avoidance of suitable habitat and breeding period cannot be achieved, a pre-clearance survey immediately prior to construction will be undertaken at Redbank East Trail (ID05b) by suitably qualified personnel to relocate any individuals identified. • For any soil excavations undertaken at Redbank East Trail, suitably qualified personnel must be present during the procedure to assess the presence of individuals in the soil. • Minimise disruption of aquatic habitat and emergent aquatic vegetation to prevent affecting Grey Snake food sources (e.g., frogs).	Contractor	Construction

Impact	Safeguard	Responsibility	Timing
Impacts to threatened species	Avoidance and mitigation measures are recommended to prevent impacts to the Southern Bell Frog including: - Implement hygiene and disinfection protocols for chytrid fungus by ensuring all equipment, footwear, and vehicles are disinfected before entering and after leaving frog habitats to prevent its spread, following the Department of Environment and Climate Change (NSW) (2008) guidelines <i>Hygiene Protocol for the Control of Disease in Frogs</i>. - Schedule construction works outside of the breeding season, between September and April, to minimise disturbance. If this cannot be achieved, pre-clearing surveys will occur immediately prior to ground disturbance at key identified CAZ (Redbank East trail ID05b) to minimise potential impacts. - Consider weather conditions and avoid construction works during wet conditions when frogs are more active and vulnerable. - Minimize and avoid handling frogs whenever possible. If handling is necessary, use clean, disposable gloves to prevent disease transmission. Any required handling or removal should be performed by suitably qualified personnel. Any handling of frogs will be consistent with the Department of Environment and Climate Change (NSW) (2008) guidelines <i>Hygiene Protocol for the Control of Disease in Frogs</i>. - To address any incidental impacts outside the CAZ on mapped key habitats, restore wetland habitats while ensuring water quality and controlling invasive species. - Identify and map key habitat areas to avoid any residual or indirect impacts during construction.	Contractor	Construction

Impact	Safeguard	Responsibility	Timing
Impacts to habitat features	Relocation of habitat features (e.g. fallen timber, hollow logs) outside the CAZ will occur in accordance with an approved project-specific procedure to be included in the Construction Environmental Management Plan (CEMP).	Contractor	Construction
Impacts from introduction and spread of weeds	Weed management will be undertaken in consultation with NPWS in areas affected by construction prior to any clearing works in accordance with the <i>Biosecurity Act 2015</i> to minimise the risk of weeds being spread to the surrounding environment; including during transport of waste off-site to a licenced waste disposal facility.	Contractor	Construction
	All weeds, propagules, other plant parts and/or excavated topsoil material that is likely to be infested with weed propagules will be treated on site or bagged, removed from site, and disposed of at a suitably licensed waste facility. If pesticide use is proposed it must occur in accordance with NPWS's requirements including the <i>Pesticide Use Notification Plan</i> (NPWS, 2022).	Contractor	Construction
Impacts from introduction and spread of plant pathogens	All vehicles and machinery engaged in earthworks and vegetation clearance activities will follow the Myrtle Rust hygiene protocol for vehicles and heavy machinery in Table 5 of the <i>Hygiene Guidelines</i> (DPIE, 2020).	Contractor	Construction
Wildlife impacts from vehicle strike	Drivers must stay vigilant for fauna during machinery operation and vehicle movements.	Contractor	Construction

6.4.4 Residual impacts

Overall, the residual impacts on terrestrial biodiversity are low given the limited scale and extent of the proposed works, with the works primarily to be confined to the existing trail corridor as well as the short-term and temporary nature of impacts during construction and absence of impacts during operation. No TECs would be impacted as part of the Proposal.

42 threatened flora and fauna species have the potential to occur based on background research and the presence of suitable habitat within and surrounding the CAZ. Assessments of significance have been prepared for these species and these conclude that the Proposal would not have a significant impact on these species (refer to Appendix F of Attachment A).

6.5 Aquatic biodiversity

6.5.1 Existing environment

There are numerous aquatic environments within the Yanga National Park including major waterways, semi-permanent/ permanent swamps, wetlands and lakes, minor tributaries, flood runners, anabranches, lagoons and billabongs associated with the Murrumbidgee River. The Murrumbidgee River itself, which borders the Yanga National Park to the west, is characterised as meandering, moderately flowing and turbid, and fringed by a River red gum riparian zone and forest. The freshwater environment of the Murrumbidgee River is comprised of an extensive range of physical aquatic environments including deep pools, shallow runs/riffles, as well as instream bars and benches.

Across the complex system of interconnected wetlands, creeks and braided channels on the floodplain, there are extensive stands of River red gum forests and/or Black box woodlands. The condition of the River red gum forest within the Yanga National Park has been declining since the 1970s, primarily due to land use changes and river regulation. As detailed in Section 6.2.1, the network of trails and levee banks assist in managing inundation to achieve desired ecological outcomes across the floodplain such as maintaining water levels in key wetland areas to support waterbird breeding events and/or provide refuge habitat for small-bodied native fish.

An extensive part of the Yanga National Park can be inundated and is hydrologically linked with the Murrumbidgee River during overbank flow and flooding. Under flooding conditions (unregulated flows), the floodplain aquatic ecosystems provide high quality aquatic habitat for aquatic organisms (Baldwin & Mitchell, 2000). During these flows, the trails and levee banks are generally overtopped at low points and in some cases breached, hampering park operations and management of water levels to achieve the key outcomes for aquatic ecosystems across the Yanga National Park.

Aquatic fauna

A variety of aquatic fauna, including fish and reptiles, move from the main channel to floodplain habitats during overbank flows to take advantage of the rich food resources. Fish use floodplain habitats for a variety of reasons, including shelter, feeding, spawning and recruitment (Junk, et al., 1989). The low water velocity and high productivity of floodplain habitats makes them important feeding and nursery areas. Spawning in floodplain habitats can provide larvae and juveniles with safer conditions (e.g., protection from predation) and more food than the main waterway channel.

Historically, there have been 21 native fish species recorded in the broader Murrumbidgee catchment (NPWS, 2020). However, changes to natural flooding regimes, invasive species, diversions and barriers to fish passage such as weirs and block banks have severely degraded fish communities within the catchment (Gilligan, 2005). Native fish species within the Yanga National Park and adjoining Murrumbidgee River include Australian Smelt (*Retropinna semoni*), Bony Bream

(*Nematalosa Erebi*), Carp Gudgeon (*Hypseleotris Spp.*) and Golden Perch (*Macquaria Ambigua*) and Murray Cod (*Maccullochella peelii*) (Wassens et al., 2021; Kopf et al., 2019). A number of non-native species including Common Carp (*Cyprinus carpio*), Eastern Gambusia (*Gambusia holbrooki*), Oriental Weatherloach (*Misgurnus Anguillicaudatus*) and Redfin Perch (*Perca Fluviatilis*) have also recorded in the floodplain (Wassens et al., 2021; Kopf et al., 2019).

Threatened and important aquatic species and communities

A number of Commonwealth and state-listed threatened aquatic species have been identified as either being present or as being likely to occur within the waterways of the Yanga National Park based on field survey evidence, database searches, predicted habitat and the predicted distribution maps for threatened species listed under the FM Act. These species include:

- Murray Cod (*Maccullochella peelii*) listed as vulnerable under the EPBC Act
- Trout Cod (*Maccullochella macquariensis*) listed as endangered under the EPBC Act and FM Act
- Silver Perch (*Bidyanus bidyanus*) listed as critically endangered under the EPBC Act and vulnerable under the FM Act.

However, the proposed works are focused on existing unsealed trails, with minimal riparian and instream works (up to around 3 ha in total) to occur in non-permanent wetlands and ephemeral flood runners during dry to low flow conditions. As a result, these species are not considered likely to be present within the CAZ.

Lowland Murray River Drainage System Endangered Ecological Community

The Yanga National Park and surrounding floodplain areas are situated within the endangered ecological community (EEC) known as the 'Lowland Murray River Drainage System' (Lowland Murray River EEC). The Lowland rivers provide a wide range of habitats for fish and invertebrate. Floodplains also provide a mosaic of habitat types, including permanent and temporary wetlands, as well as terrestrial habitats (DPI, 2007). In the Yanga National Park, a diverse range of existing habitats are representative of this EEC, including permanent and intermittent river channels, intermittent swamps, and billabongs.

6.5.2 Impacts

Construction

Direct harm to native fauna

No direct harm to native aquatic fauna from construction plant or vehicles is anticipated. The instream footprint of the CAZ is minimal, and the works would only be carried out when the waterways have low to no flow. This would mean there is a low likelihood that aquatic fauna would be present and impacted during construction.

Loss or degradation of aquatic vegetation

The construction works would require clearing of small patches of riparian vegetation (up to around 3 ha in total). Removal of aquatic vegetation therefore has the potential to result in habitat loss for of adults, larvae and young-of-year native species along with decreased bank stability and

increased erosion. However, given the negligible amount of riparian vegetation clearing centred on areas subject to existing disturbance from the construction and usage of the existing trails only minor impacts are anticipated.

The proposed earthworks and grading works have the potential result in increased sedimentation, which can be mobilised and deposited into downstream receivers via surface runoff during rainfall and high river flows. Localised increases in sedimentation can impact water quality in nearby waterways, as the increased turbidity can result in degraded aquatic habitats (i.e., decreased trophic interactions due to poor visibility) and increased mortality of aquatic fauna (i.e., clogging of gills and decreased predation). This risk will be managed through the implementation of an erosion and sediment control plan as detailed in Section 6.2.3.

Temporary barriers to fish passage

The proposed works would do not require instream works, with the exception of minor bank disturbance along Redbank East Trail and streambed and bank disturbance at the replacement culvert. The proposed bank works along Redbank East Trail (Twin Bridges Bank) are located in a continuous semi-permanent wetland (Twin Bridges Swamp) with no defined channel, would have a negligible instream footprint (approximately 0.5 ha) and would be carried out during dry to low flow conditions. Similarly, the replacement culvert works would be completed during dry to low flow conditions and would have a negligible instream footprint (<0.1 ha) in an ephemeral poorly defined flood runner. The temporary filling of existing low points in the trail footprint at the Hamptons bank, Snake bank and Steves Bank Trails during construction is considered unlikely to impact fish passage given the works would be completed during dry to low flow conditions. In the event of significant unregulated flow events within the Yanga National Park during construction, the existing regulators and culverts within the Yanga National Park such as Grisdale's regulator would enable fish passage into and out of Tarwillie Swamp. As such, there would be minimal to no impacts to fish passage during construction.

Proliferation of pest species

Mobilisation of sediment from construction activities can favour the proliferation of pest species (i.e. Common Carp) that may be able to tolerate poorer water quality than native species. This has the potential to impact native aquatic species as invasive species have been found to out-compete native species for food and habitat (Marshall et al., 2019).

Operation

Operation of the Proposal would not adversely impact on aquatic biodiversity. The proposed works are anticipated to result in minor localised beneficial impacts to adjoining aquatic environments during operation, through reduced sedimentation and erosion across the trails through the placement and compaction of crushed gravel on the finished surface. For the pipe culvert, given the existing structure is defunct and does not pass flows or provide fish passage, the replacement culvert is likely to result in a marginal improvement in fish passage through the structure during operation.

At Redbank East Trail (Trail ID05b), the potential for minor localised increases in inundation levels in Twin Bridges Swamp during unregulated flows is considered unlikely to adversely impact on aquatic biodiversity. Given this increase would be marginal, highly localised along Redbank East Trail and

would occur sporadically during infrequent major unregulated flow events, no material impacts to aquatic biodiversity are anticipated.

6.5.3 Significance test for threatened aquatic communities

The potential for construction and operation of the Proposal to have a significant impact to threatened aquatic species, populations and ecological communities has been assessed in accordance with State and Commonwealth significant impact criteria. The assessments determined that the Proposal is unlikely to have a significant impact on threatened aquatic species, populations or communities. Table 6-9 provides a summary of key considerations and the outcomes of the significance tests.

Table 6-9 Summary of the tests of significance for impacts to threatened ecological communities

Common name	Assessment	Determination of significance
Lowland Murray River Aquatic Endangered Ecological Community	The proposed construction works would require the removal of small discrete patches of vegetation in the riparian corridor and minor instream disturbance. However, given the negligible instream footprint and vegetation clearance required (up to around 3 ha) the Proposal is unlikely to fragment, or impact on the long-term survival of the ecological community in the locality.	The Proposal is not likely to significantly impact on Lowland Murray River EEC.

6.5.4 Safeguards

Measures proposed to avoid, minimise or manage potential aquatic biodiversity impacts as a result of the Proposal are detailed in Table 6-10.

Table 6-10 Safeguards for aquatic biodiversity impacts

Impact	Safeguard	Responsibility	Timing
Removal of aquatic & riparian vegetation	Rehabilitation of disturbed channel and bank areas subject to vegetation clearing (Rock causeway -Trail ID04b; Replacement culvert - Trail ID04c; Redbank East Trail – Trail Levee - Trail ID05b) will be undertaken as soon as practicable, progressively and in accordance with the site rehabilitation plan and in consultation with NPWS.	Contractor	Construction

6.5.5 Residual impacts

With implementation of the safeguards and management measures in Table 6-10, impacts to aquatic ecosystem values would be negligible. Any residual impacts are not expected to significantly compromise the functionality, long-term connectivity or viability of habitats, or ecological processes within the Yanga National Park.

6.6 Aboriginal heritage

The *Yanga National Park Supply Project - Trail works: Aboriginal Cultural Heritage Assessment* (Austral Archaeology, 2024) assesses the potential for Aboriginal archaeological material to occur within the CAZ. The assessment is provided in Attachment B and is summarised below.

6.6.1 Existing environment

Landscape context

The Yanga National Park displays a diverse ecological and topographic landscape. It is based around the Murrumbidgee River, which would have been able to support a large Aboriginal population based on the large array of food sources that would have been present. All Aboriginal tribes of the Riverine lived on the various watercourses which make up the landscape of the region. The climate allowed for year-round habitation, the topography allowed for easy mobility, the rivers and associated floodplains provided ample resources from which to survive. The population along the rivers was observed during the late 1850's as being much denser than in the highlands, potentially due to this wealth of resources and favourable landscapes. Reports by Charles Sturt indicate populations upwards of 1,000 along the major watercourses such as the Murrumbidgee Rivers (Sturt, 1844). These numbers are however only approximate based on the earliest observations; a true and accurate representation of pre-colonial populations of Aboriginal people living in this region is impossible to work out. Population losses at the time of settlement and arrival of early squatters would have dramatically impacted these numbers. This, along with pandemics and population displacement resulted in a significant reduction in the population post-contact.

As a result of the geology, accessible raw materials to produce stone tools were limited. Raw materials to make lithics were not readily available and needed to be brought into the area. Techniques such as bipolar flaking were employed to ensure all raw materials were used to maximum efficiency. Ecologically, the dominance of River red gum in the area may result in high numbers of scarred trees due to the usage of Red Gums in the manufacture of canoes (Atkinson and Berryman, 1983). However, it should be noted that since contact, the landscape and hydrology has been highly modified, particularly around the current water bodies.

Ethnographic context

Archaeological evidence in the Yanga region shows an inhabited landscape from up to 40,000 years ago to contact (Kamminga, 2010), with an increase in site frequency in the past 5,000 years (this may be a function of site survival rather than necessarily frequency, as discussed) however few securely dated sites are present in the region to allow robust conclusions to be made. On a regional level, there is an abundance of environmental factors which would have promoted and supported this intense traditional occupation with extensive permanent and seasonal water sources, third and fourth order streams and confluences, a major river, and lush vegetation in open forests, wetlands, swamps and plains. The vegetation and topography presented conditions conducive to occupation, with the construction of campsites and later humpies. Aboriginal life was seasonally dependant and transitioned between the resource-rich wetlands and the plains (particularly in winter when surface water or floodwaters pushed out from major rivers along smaller order streams and tributaries), with abundance and increased mobility in, and following, times of flood.

The recordings of Aboriginal life and culture is seen through the lens of early 1800s explorers such as Charles Sturt, Peter Beveridge and John Oxley. By the time these recordings occurred, the Aboriginal population of the Riverine area had already been affected by dispossession, displacement, acts of violence and disease. Understandings of population size, traditional lifestyle and kinship/language distribution are relative to the area, as recordings of Aboriginal people and traditions were made by non-Aboriginal people during the post-contact period (Dowling 1997; Littleton and Allen 2007).

Although there were many Aboriginal groups along the Riverine Plain, the Muthi Muthi are considered the traditional owners of the Yanga National Park. Similarities existed amongst local tribal groups in their use of traditional material culture; wood, stone, shell and bone comprised the raw materials of this world, most of which have little chance of being preserved in the archaeological record. Evidence of campsites, with deposits of stone artefacts, hearths or middens, in contrast, are likely to be found where the landscape has not suffered severe ground disturbance. Although excluded from many written histories and often removed from their country, Aboriginal people actively negotiated post-contact interactions and power relations, capitalising on traditional skills to contribute and engage with new European industries or activities (Dardengo et al., 2019).

The land, water, plants, and animals within the landscape are often central to Aboriginal cultural and spiritual practices and a significant part of Aboriginal identity. Aboriginal heritage and connection to Country can be inseparable and need to be managed in an integrated manner across the landscape.

Previous archaeological work

Numerous archaeological assessments have previously been completed within the Riverine Region, with many local projects examining project areas in proximity to the area of interest. The studies come in the wake of increased developments linked to rapid changes in agricultural land use in the last 40 years, thus serving to increase our understanding of the Aboriginal archaeological potential.

Regional studies give an overview of results garnered around the Murrumbidgee River and its tributaries, with Klaver's PhD thesis (1998) centred on the region to the east of Hay, Pardoe and Martin (2001) focused on the entire Murrumbidgee region, and Martin's PhD thesis (2006) centred on the Hay Plains. Each regional analysis built upon the other and provides a greater understanding of the study area's specific regional archaeological character.

The first regional assessment of the Riverine Region, as it relates to the current area of interest, was undertaken by J. M. Klaver as part of an unpublished PhD Thesis submission for the Australian National University in Canberra (1998). The study aimed to reformulate the land use model of the Holocene for the riverine plains and outline avenues for further scientific investigations, with a special focus on earth mounds. The thesis provides an overview of current regional models for the study of Aboriginal archaeology in southeast Australia and specifically work done in the region on earth mounds. The study observed that earth mound sites were generally found in association with a wide range of water sources including rivers, creeks, channels, billabongs and swamplands. Most were identified in currently open and wooded areas.

Another report from Colin Pardoe and Sarah Martin (2011), presented an assessment of the nature and distribution of Aboriginal archaeological sites within the Murrumbidgee Province. A major aim of this project was to generate a predictive model that could be used by Aboriginal communities, land managers and property owners to help assess the future likelihood of finding Aboriginal cultural

material in particular areas of the landscape. The authors produced a map-based model and subsequent analysis of site distribution, which identified five hot spots in the Murrumbidgee Province to hold significant Aboriginal cultural material including an area around the Yanga National Park, a loop in the Murrumbidgee River from Maude to Great Cumbungi Swamp and down to Balranald.

A number of studies have also been completed within areas of the Yanga Precinct including Kamminga (2010) which completed an archaeological report in the Yanga National Park. The study identified two different Aboriginal sites in the National Park. The sites include an Aboriginal camp site located on Waugorah Road comprised of a hearth and a low-density artefact scatter, along with a low-density artefact scatter, comprised of 54 artefacts, associated with mussel shell fragments and a hearth. This site was located on the lunette margins of Lintot Lake.

In 2017, Ozark Environmental & Heritage Management Pty Ltd completed an ACHA for the proposed Abercrombie Water Efficiency Project, which included a study area that intersects with the southern section of Yanga Precinct. The initial assessment located seven sites, including three open camp sites and two isolated stone artefacts, a further survey then found an additional 42 sites. These sites were mainly associated with water features such as current and past wetland depressions.

Search of heritage registers

A search of the Heritage NSW Aboriginal Heritage Information Management System (AHIMS) database undertaken on 28 October 2024 identified 231 previously recorded sites within the Area of Interest. The nature and location of the registered sites reflects the past Aboriginal occupation and land use patterns from which they derive, but it also influenced by historical land-use and the nature and extent of previous archaeological investigations. Although Aboriginal occupation covered the whole of the landscape, the availability of fresh water and associated resources was a significant factor in repeated or long-term occupation of specific areas.

The registered sites surrounding the Proposal are shown in Figure 6-19.

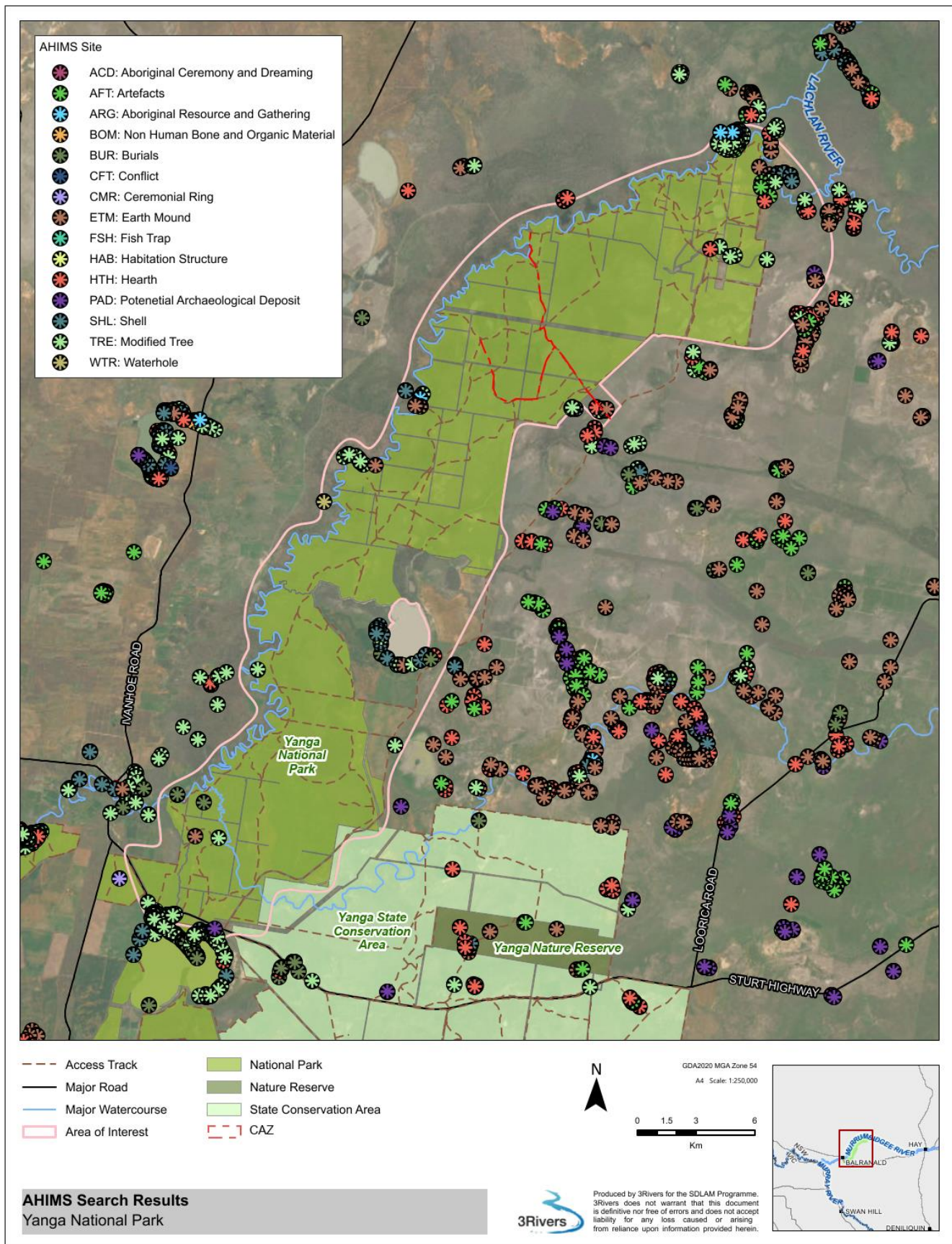


Figure 6-19 AHIMS sites surrounding the Proposal

Archaeological survey

An assessment in accordance with the *Code of Practice for the Protection of Archaeological Investigation in NSW* (DECCW, 2010) has been carried out across the sites proposed for works. Archaeological surveys of the CAZ were conducted on 16 to 19, and 22 May 2023. The surveys were carried out by qualified archaeologists who were accompanied by Registered Aboriginal Parties to determine the presence of surface and subsurface heritage items.

Ten Aboriginal cultural heritage sites were located during the field investigation in proximity to the proposed CAZ, including six modified trees, one earth mound and one isolated artefact. A number of the sites were previously recorded on AHIMS. The identified cultural heritage sites in proximity to the CAZ are detailed in Table 6-11 below and shown in Figure 6-20.

Although two sites are located within the CAZ (AHIMS # [Redacted] and [Redacted]), all identified sites can be avoided by the proposed works and therefore the assessment determined that the proposed trail works would not have a likelihood of harming any Aboriginal objects. Refer to the Yanga National Park Supply Project - Trail Works: Aboriginal Cultural Heritage Assessment Report for further details as provided in Attachment B.

No further archaeological investigation or other Aboriginal cultural heritage assessment work is required to carry out the proposed trail works.

Table 6-11 Cultural heritage sites in proximity to the CAZ

Site No. (AHIMS ID)	Site Name	Feature(s)	Relevant CAZ	Description
[Redacted]	Nimmie-Caira 18-058	Earth mound	Bronzewing Drive - Eastern Section (Trail ID04a) - Outside of CAZ	Earth mound
[Redacted]	Grisdale's Regulator Modified Tree 2	Scarred tree	Snake Bank Trail (Trail ID02) - Outside of CAZ	River red gum tree (potential ring tree)
[Redacted]	Twin Bridges Bank Modified Tree 2	Scarred tree	Redbank East Trail (Trail ID05b) - Within the CAZ	River red gum scarred tree (Canoe)
[Redacted]	Twin Bridges Bank Modified Tree 1	Scarred tree	Redbank East Trail (Trail ID05b) - Outside of CAZ	River red gum ring tree
[Redacted]	Tarwillie Sills Modified Tree 2	Scarred tree	Snake Bank Trail (Trail ID02) - Outside of CAZ	River red gum scarred tree
[Redacted]	Tarwillie Sills Modified Tree 1	Scarred tree	Snake Bank Trail (Trail ID02) - Outside of CAZ	River red gum scarred tree (Stag)

Site No. (AHIMS ID)	Site Name	Feature(s)	Relevant CAZ	Description
[Redacted]	Steves Bank Modified Tree 1	Scarred tree	Steves Bank Trail (Trail ID03) – Within the CAZ	River red gum scarred tree (Coolamon scar)
[Redacted]	Redbank E Trail ISO	Isolated artefact	Redbank East Trail (Trail ID06) – Outside of CAZ	Isolated silcrete proximal fragment identified in the northern dune.

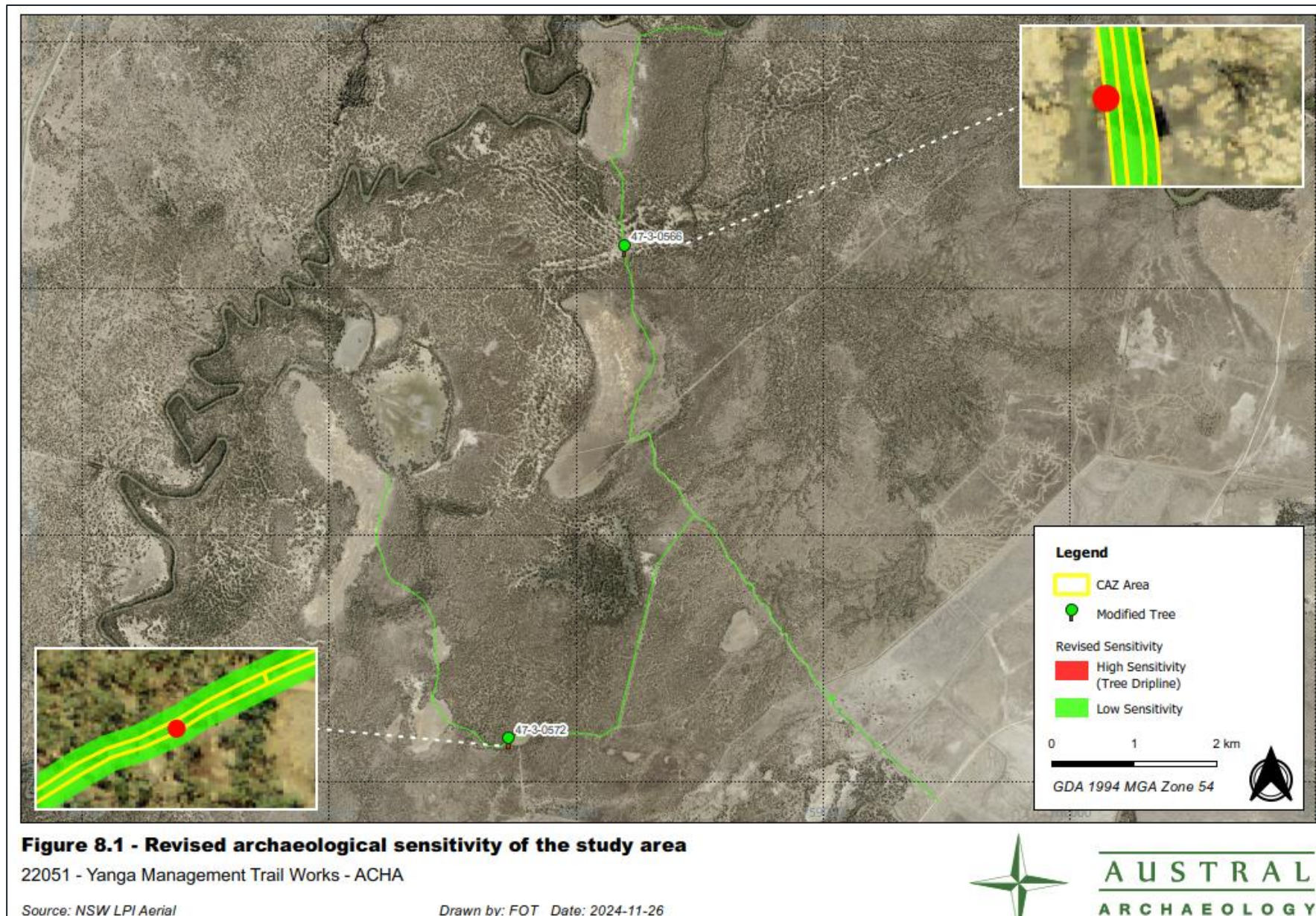


Figure 6-20 Cultural heritage sites in proximity to the CAZ

6.6.2 Impacts

The Proposal would involve shallow ground-disturbing works (to a maximum depth of 200 mm, with the exception of the replacement culvert), generally within the existing disturbance footprint of trails (i.e. trail corridor) adjoining and within the Yanga National Park.

Although two sites are located within the CAZ (AHIMS # [Redacted] and [Redacted]), impacts to these sites would be avoided with no ground-disturbing works to occur in the canopy dripline of these modified trees.

All remaining identified sites would be avoided by the proposed works. The Proposal is therefore considered likely to avoid harm to existing Aboriginal cultural heritage or values during the construction phase, due to the absence of proposed impacts to any identified sites in proximity and the heavy modification of the original landscape during previous works within the majority of the CAZ. Accordingly, an AHIP is not required to carry out the construction works. However, given the presence of identified Cultural heritage sites in the Area of Interest and proximity of the works to sensitive features such as waterways there is a risk of encountering unexpected Aboriginal cultural heritage items during construction. Unexpected Aboriginal cultural heritage finds during construction will be managed in accordance with NPWS's Unexpected Finds Protocol.

6.6.3 Safeguards

Measures proposed to avoid, minimise or manage potential Aboriginal heritage impacts as a result of the Proposal are detailed in Table 6-12.

Table 6-12 Safeguards for Aboriginal heritage impacts

Impact	Safeguard	Responsibility	Timing
Unexpected finds	Unexpected Aboriginal cultural heritage finds will be managed in accordance with NPWS's Unexpected Finds Protocol – Aboriginal Cultural Heritage, which is provided as an appendix to Attachment B and summarised below. Aboriginal objects If an Aboriginal object is discovered during construction, all works in this location must stop and no further harm must occur to the area. The find must be left in place and protected from any further harm. Notify the Department Project Manager of the find, who in turn will notify NPWS, the Department's representative, Heritage NSW, and the Environment Line (13 15 55) and arrange for a qualified archaeologist and representatives	Contractor/the Department	Construction

Impact	Safeguard	Responsibility	Timing
	of the registered Aboriginal parties to inspect the find. If they confirm that the find is an Aboriginal object, the item will be recorded on AHIMS, agreement reached on its management, and an application made for an Aboriginal heritage impact permit. Aboriginal human/ancestral skeletal remains If Aboriginal human/ancestral skeletal remains are discovered, all work in the vicinity of the remains must stop. Notify the Department Project Manager of the find, who in turn will notify NSW Police if the material is determined to be of human origin and less than 100 years old, or NPWS Aboriginal Partnerships and Heritage Unit, WaterNSW's heritage officer, Heritage NSW, and the Environment Line (13 15 55) if the remains are believed to be Aboriginal. If in doubt or required by NSW Police, the Department will obtain specialist advice from a forensic anthropologist or bioarchaeologist to confirm that the bones are human, their age and whether they are Aboriginal or not. The remains must be left in place and protected from further harm or damage or unauthorised access until further advice states otherwise. If the remains are confirmed to be Aboriginal, the Department will notify the RAPs. Aboriginal ancestral remains will be recorded in a culturally appropriate manner in collaboration with Heritage NSW and the RAPs. Work will not recommence at the location until authorised in writing by Heritage NSW if the remains are considered by the NSW Police and Heritage NSW to be Aboriginal.		
Accidental impacts to Aboriginal items	No ground-disturbing works are to occur in the canopy dripline of any modified trees in proximity to the CAZ including Steve Bank Trail Modified Tree 1 (AHIMS ID: [Redacted]) and Twin Bridges Bank Modified Tree 2 (AHIMS ID: [Redacted]) adjoining Redbank	Contractor	Construction

Impact	Safeguard	Responsibility	Timing
	East Trail. Temporary fencing, using bollards and high visibility mesh, tape and/or flag string must be used to indicate the dripline of the canopy.		
Awareness and induction	All personnel working on site are to be provided site specific cultural heritage induction to highlight the cultural sensitivities of the area, identified cultural heritage sites in proximity to the CAZ and are to be made aware of the procedures for the management of Aboriginal cultural heritage during construction, such as the discovery of Aboriginal artefacts or other cultural material.	Contractor	Construction

6.6.4 Residual impacts

All Aboriginal cultural heritage sites both previously recorded and/or identified during archaeological surveys would be avoided. As a result, it is anticipated that no impacts to Aboriginal heritage due to the Proposal would occur. If unexpected finds occur during the Proposal, the processes identified above would be implemented.

6.7 Historic heritage

6.7.1 Existing environment

The earliest account of European exploration in the Murrumbidgee Province of the Riverine Plain was by Charles Sturt in 1829-30, when he explored the Murray River and Lower Murrumbidgee (Sturt, 1844). The area was later explored by Mitchell, who passed through the area in 1836. European settlers started arriving in the district from 1848 with the township of Balranald gazetted on 4 April 1851. The Burke and Wills expedition also crossed the Murrumbidgee River at Balranald in 1860 (Wakool Indigenous Corporation 2016).

The Yanga National Park is situated on the former Tala and Nap Nap runs, established by William Charles Wentworth in 1835 and occupied by Augustus Morris and George Hobler (Tonkin Zulaikha Greer Architects, 2013). The runs with frontage to the Murrumbidgee were all occupied by 1847, with early records and references to the Tala and Nap Nap runs found in George Augustus Robinson's journals (Tonkin Zulaikha Greer Architects, 2013).

The Tala and Nap Nap runs were sold by Wentworth in 1853 and for the next 70 years were subject to multiple different owners (Tonkin Zulaikha Greer Architects, 2013). A syndicate of owners were

the first to acquire the runs in the 1853, which included Morris, Thomas Sutcliffe Mort, Thomas Holt and Thomas Ware Smith (High Ground Consulting, 2007a; 2007b).

By 1886, Yanga Station covered 168,000 ha and had approximately 151,000 sheep and 2000 cattle on the property (Argus 14 August 1876). The Yanga Station was sold by the Black family in 2005 to the NSW Department of Environment and Conservation and is presently the Yanga National Park, part of the wider Murrumbidgee Valley National Park (NPWS, 2020).

In order to support this pastoral usage, construction of a series of weirs, regulators, dams and a network of trafficable levees and trails commenced along the Murrumbidgee River in the early 20th century (High Ground Consulting 2007a; 2007b). A number of these structures are now listed historic sites including the Yanga 1AS (and 1ES) Regulator, which were constructed sometime between 1960 and 1980 as part of the continuing renewal of the irrigation infrastructure occurring on the Yanga Station (High Ground Consulting, 2007a; 2007b).

Desktop searches

A search of the World Heritage List, National Heritage List, Commonwealth Heritage List, and State Heritage Register carried out on 1 June 2024 did not identify any listed items of heritage significance near the Proposal. The nearest identified items of national, commonwealth or state listed heritage significance are located at Balranald, south west of the Yanga National Park.

However, a large number of heritage items located at the Yanga National Park are identified in the Historic Heritage Information Management System (HHIMS) under Section 170 of the Heritage Act, with items relevant to the Proposal shown on Figure 6-21.

Site inspection

An inspection of the CAZ as part of the Aboriginal Heritage archaeological surveys was carried out by archaeologists on 16 to 19, and 22 May 2023. No areas of potential archaeological value were identified within the CAZ.

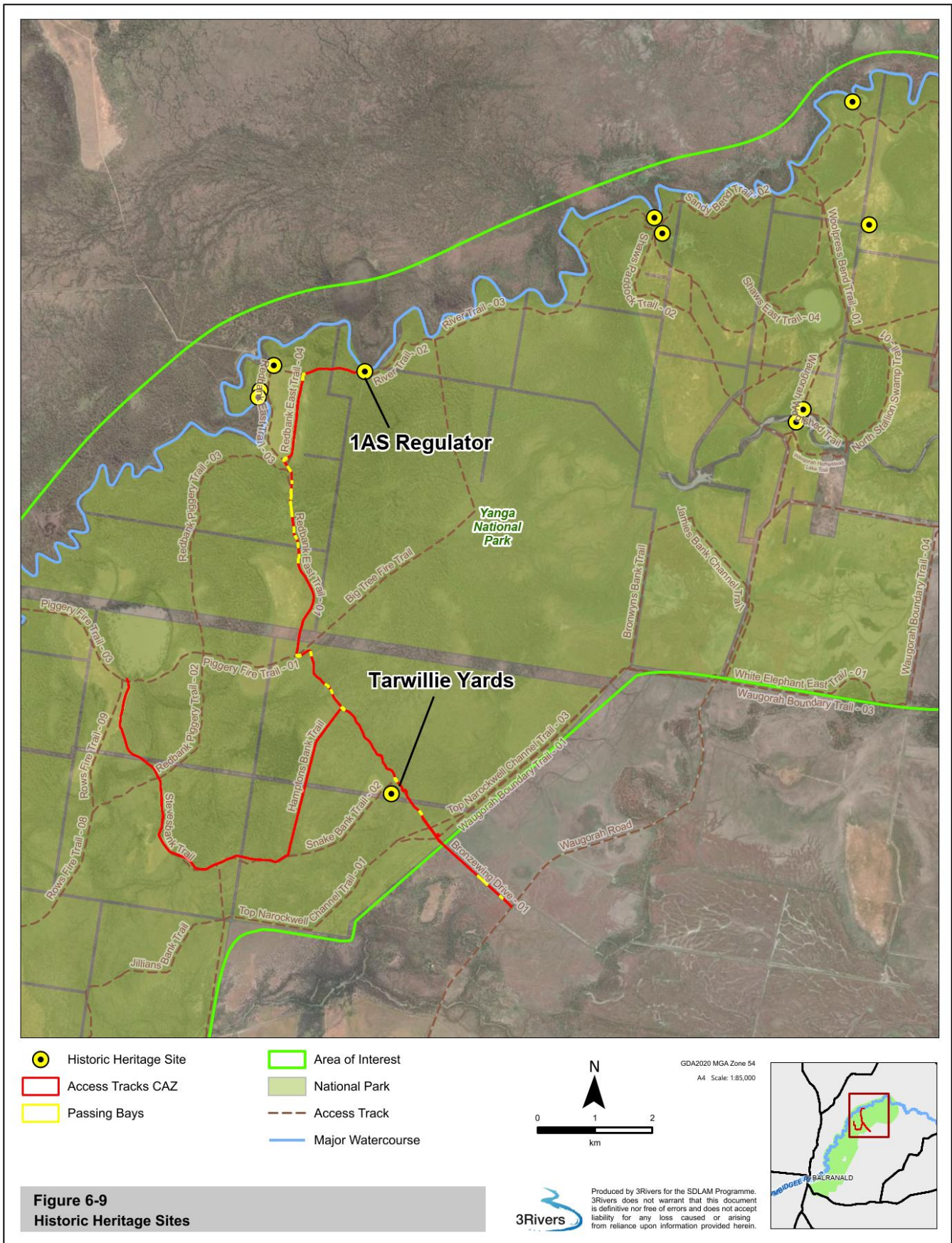


Figure 6-21 Historical heritage surrounding the Proposal

6.7.2 Impacts

A large number of previously recorded historic heritage items are located within the Yanga National Park. The rich history of the Yanga National Park, in conjunction with heritage listed sites, also indicates that there are likely to be previously unrecorded items of historical heritage significance located within the Proposal area. The following NPWS section 170 listed heritage items are located in the general vicinity of the proposed trail works:

- Tarwillie Yards (Register ID: 12063) - approximately 200 metres from Bronzewing Drive - Eastern Section (trail ID04a)
- Yanga 1AS Regulator (Register ID: 12065) - approximately 50 metres from Redbank East Trail / River Trail (trail ID06).

However, given the offset of these items from the CAZ, the Proposal would not impact on these items or any other listed historic heritage items during construction or operation.

6.7.3 Safeguards

Measures proposed to avoid and/or manage potential historic heritage impacts as a result of the Proposal are detailed in Table 6-13.

Table 6-13 Safeguards for non-Aboriginal heritage impacts

Impact	Safeguard	Responsibility	Timing
Unexpected finds	If historical archaeological relics are discovered during construction, all work will cease in the area. The Contractor will notify the Department Project Manager, who in turn will notify NPWS and the WaterNSW heritage officer.	Contractor/ the Department	Construction

6.7.4 Residual impacts

There are no listed or identified historical heritage items within the CAZ. Construction and operation of the Proposal is unlikely to affect any historical heritage item or the broader historical heritage values of the National Park.

6.8 Air quality

6.8.1 Existing environment

Based on the existing land uses surrounding the Proposal, the existing air quality would be characteristic of a rural bushland and riverine plains environment. The main contributors to air quality in the environment surrounding the Proposal would include emissions from motor vehicles and machinery used for park operations. Existing air quality would also be impacted during periods of high wind, bushfires, other forms of fires, or dust storm events. There are no major industrial sources of air pollutants in the surrounding area. The Proposal is well removed from industry and large population centres, meaning that the concentration of air pollutants in the ambient environment would likely be at baseline levels.

A search of the National Pollutant Inventory in June 2024 did not identify any sources for air polluting substances near the Proposal.

The Department's nearest air quality monitoring station is located at Hay Airport automatic weather station, operated by the Bureau of Meteorology (station No. 075019) about 90 km east of the Yanga National Park. This station measures and reports hourly updates on particle concentrations such as dust as total suspended particulates, for fine particles ranging from PM_{2.5} up to PM₁₀. The measurements taken for a five-day average in August 2022 indicates PM_{2.5} had minimum 1 µg/m³ and maximum 9 µg/m³. PM₁₀ ranges from minimum 1 µg/m³ to maximum 10 µg/m³. The particulate matter measurements indicate air quality are within the 'good' range of the Air Quality Index 'and particle matter concentrations are well below the 1-hour and 24-hour criteria'. It is expected that the air quality measurements for the Yanga National Park would be similar.

There are no sensitive receivers located within one km of the CAZ. The closest sensitive receivers are homesteads on agricultural properties across the Murrumbidgee River, with the nearest located approximately two km west of the Proposal.

6.8.2 Impacts

Construction

Air quality impacts during construction of the Proposal are expected to be minor. Construction air quality impacts would be limited to localised and temporary indirect impacts from elevated exhaust emissions and dust generation. Dust particles may be generated as a result of a range of activities associated with the Proposal including:

- Vegetation clearing
- Construction traffic on unsealed roads
- Haulage of spoil
- Stockpiling
- Loading and unloading of material
- Earthworks including stripping topsoil, excavations and placement of fill.

Airborne dust or exhaust emissions from vehicles, plant and equipment can cause nuisance, harm or injury to recreational users, nearby residents and contractor staff if not adequately managed. However, dust generation and exhaust emissions during construction are considered to have only temporary, non-continuous and localised impacts on potential receptors. Given the short duration, small CAZ area and relatively minor nature of the proposed construction works, any air quality impacts would be temporary, localised and minor.

In addition, aside from recreational users and environmental receptors, there are no potential sensitive receivers that would be impacted by elevated levels of dust or emissions due to the remoteness of the site and large setbacks to surrounding residences. As the proposed CAZ is located in isolated bushland areas away from recreational users with access to be further restricted during construction, negligible impacts are anticipated on recreational users. There would be negligible emissions of air pollutants associated with the operation of the structures and consequently negligible potential for air quality impacts in the surrounding environment.

Given the NPWS managed trails are inaccessible to the public and the publicly accessible stretch of trail at Bronzewing Drive would be temporarily closed during construction works no impacts to recreational users are anticipated. The nearest sensitive receiver to any of the construction works would therefore be any homesteads on agricultural properties approximately two km from the construction works, which is sufficiently distant to make it unlikely that any sensitive receivers would experience adverse air quality impacts during the construction phase. Any adverse impacts will be managed through the preparation and implementation of a Construction Environment Management Plan (CEMP) and environmental safeguards listed in Table 6-14.

Operation

The only air quality impacts during operation of the Proposal would be emissions from vehicles using the trails, which are no greater than those currently associated with park operations.

6.8.3 Safeguards

Measures proposed to avoid, minimise or manage potential air quality impacts as a result of the Proposal are detailed in Table 6-14.

Table 6-14 Safeguards for air quality impacts

Impact	Safeguard	Responsibility	Timing
Dust generation during construction	Work methods will be modified during high wind conditions if excessive dust is generated.	Contractor	Construction
	All vehicles on site will be confined to designated routes.	Contractor	Construction
	Control measures will be included in the CEMP to limit vehicle speeds to minimise dust emissions.	Contractor	Construction

Impact	Safeguard	Responsibility	Timing
	Manage stockpiles as per the Erosion and Sediment Control Plan.	Contractor	Construction
Vehicle emissions	Trips and trip distances will be controlled and reduced where possible, for example by coordinating delivery and removal of materials to avoid unnecessary trips.	Contractor	Construction
	Minimise engine idling and ensure vehicle engines are switched off when stationary or parked within ancillary facilities or CAZs.	Contractor	Construction

6.8.4 Residual impacts

Potential air quality impacts associated with the construction of the Proposal are considered likely to have a negligible impact due to the remote location of the CAZ, offset from sensitive receivers, small scale of the Proposal and safeguards detailed above. The nearest sensitive receivers are about two km from the Proposal and are unlikely to be adversely affected by adverse air quality.

The Proposal has the potential to cause only minor air quality impacts, and the likelihood of any impacts to air quality would be reduced with the implementation of the safeguards identified in Table 6-14. No air quality impacts would occur during operation.

6.9 Noise and vibration

6.9.1 Existing environment

The existing acoustic environment of the Proposal can be generally characterised by ambient environmental noise associated with the Yanga National Park and surrounding bushland areas. It is expected that ambient noise levels would be generally consistent with typical day/night patterns in a remote and isolated noise environment. Anthropogenic sources of noise are infrequent and mainly restricted those periodically originating from park operations (such as the use of vehicles and machinery). The Proposal is located in a remote environment with low levels of background noise consisting of mostly natural and rural sounds. The closest noise-sensitive receivers to the Proposal would be users of the broader Yanga National Park (including recreational users and workers) and receivers at nearby agricultural properties. Noise-sensitive receivers within a 10 km radius of the Proposal include:

- A NPWS Depot located approximately 7.5 km to the north east
- A small NPWS campground (Woolpress Bend campground) located approximately 10 km to the north

- Homesteads on agricultural properties on the western side of the Murrumbidgee River and to the east of National Park along Waugorah Road, the nearest of which is about two km west of the Proposal.

6.9.2 Safeguards

Measures proposed to avoid, minimise or manage potential noise and vibration impacts as a result of the Proposal are detailed in Table 6-15.

Table 6-15 Safeguards for noise and vibration impacts

Impact	Safeguard	Responsibility	Timing
Construction noise and vibration	Unless otherwise approved by the Department through an out of hours application process, construction hours will be limited to: • Monday to Friday: 7 am to 6 pm • Saturday: 8 am to 5 pm. No construction work on Sundays or public holidays.	Contractor	Construction
	All machinery will be well maintained and in good working order. All vehicles and equipment will be fitted with silencing devices, where applicable.	Contractor	Construction

6.9.3 Residual impacts

The Proposal has the potential to cause minor noise and vibration impacts, with the likelihood of any impacts reduced with implementation of the safeguards identified in Table 6-15.

During the construction phase, there could be localised, and short-term noise and vibration impacts due to construction equipment, plant and vehicles (grader, roller, trucks etc.). This noise is anticipated to comply with the noise levels specified in the EPA Interim Construction Noise Guideline (EPA, 2020).

However, potential noise and vibration impacts associated with the construction of the Proposal are considered likely to have a negligible impact due to the remote location of the trails, absence of sensitive receivers, small scale of the proposed works and safeguards detailed above. No noise impacts would occur during operation.

6.10 Traffic and access

6.10.1 Existing environment

Construction access to the Proposal would occur from Waugorah Road via Sturt Highway to the south of the National Park. The local road network is infrequently travelled, with majority of surrounding public roads managed by Murray River Council and Transport for NSW (Sturt Highway). Local traffic movements within and immediately adjoining the Yanga National Park are typically associated with ecologists undertaking monitoring and research including the Murrumbidgee Monitoring Evaluation & Research (MER) Program staff, licenced commercial fisherman, NPWS staff, WaterNSW staff and adjacent landowners.

A number of these trails including those leading to the CAZ, are inaccessible to public and infrequently used by NPWS staff, with locked NPWS gates restricting unauthorised access. NPWS currently use many of these trails to inspect, maintain and operate the existing regulators and the various water management structures within the Yanga National Park. It is proposed that access to the CAZ for the Proposal would utilise these same trails in accordance with the existing arrangements.

Significant rainfall events and flooding can damage trails and render large sections of the Yanga National Park inaccessible for weeks at a time, cutting off access to key parts of the Yanga National Park.

An overview of the proposed construction access routes is shown in Figure 6-22 below.

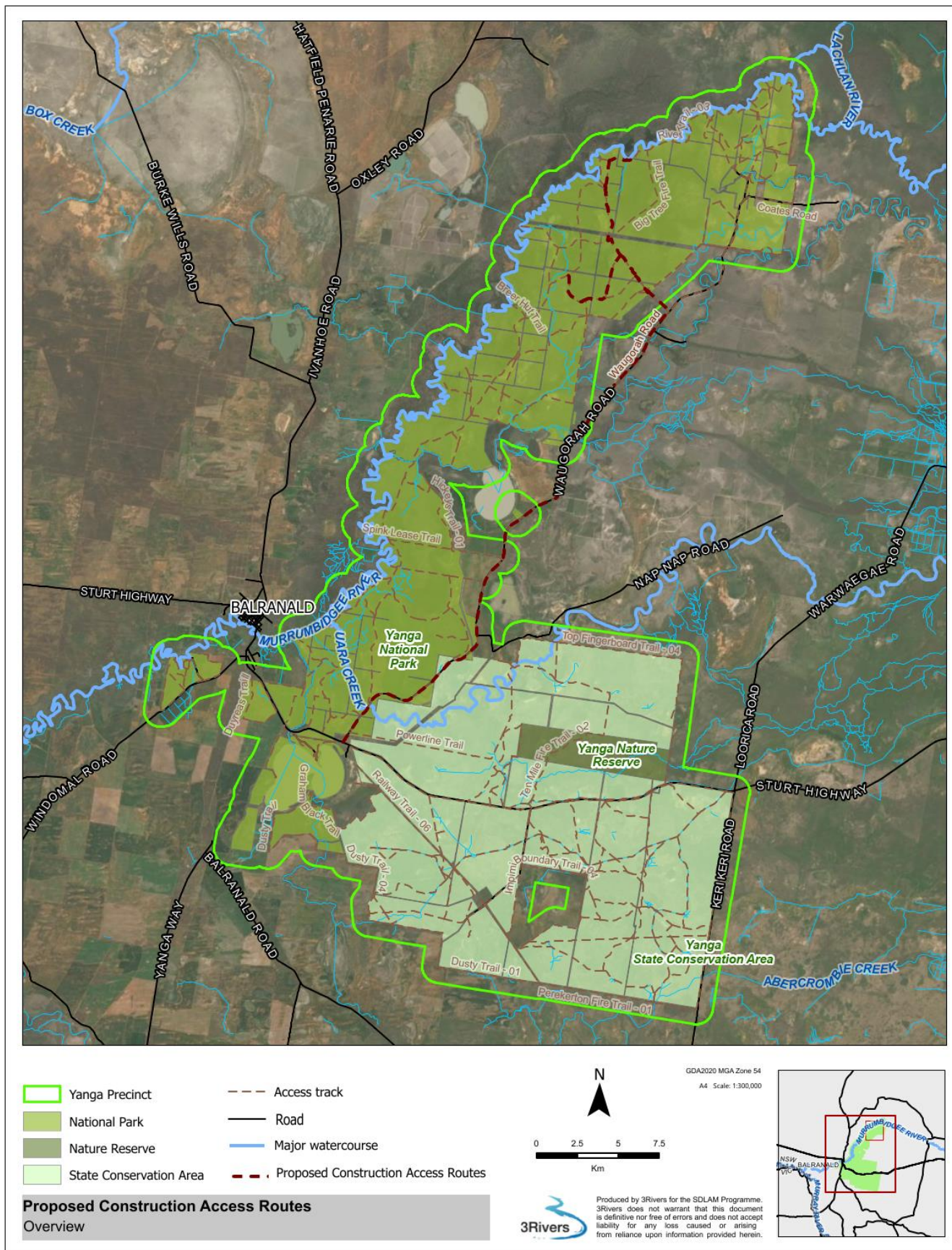


Figure 6-22 Proposed local construction access routes

6.10.2 Impacts

Construction

As described in Section 3.3.12, during peak construction there would be up to eight vehicle movements (including three heavy vehicles) per day associated with haulage and transportation of construction machinery and materials (i.e., crushed rock /gravel, precast culvert structure) to the Yanga National Park. Light vehicle movements would be associated with employees and smaller deliveries.

The key traffic and transport risks associated with the Proposal include:

- Heavy vehicles turning onto and off the Sturt Highway in a 110 km per hour speed zone
- Waugorah Road as the primary access route to site contains limited passing bays, steep shoulders and a number of small existing culverts in unknown condition
- Long haulage distances required for quarry originated construction materials.

These risks would be effectively managed by the approved traffic management plan and are considered to be negligible when managed. Construction vehicles would cause a negligible increase in heavy vehicle traffic on the Sturt Highway. No upgrade or maintenance of roads or trails outside of the proposed scope of works is required.

The proposed trail works are almost exclusively located in remote and publicly inaccessible areas of the Yanga National Park, with minimal impacts to recreational users and local traffic anticipated (with the exception of Bronzewing Drive – Eastern Section (ID04a). All access roads to be utilised including those trails slated for proposed works are anticipated to have the capacity to accommodate these vehicle movements, with the additional vehicles passings through the surrounding road network considered likely to have a negligible impact on the performance of the road network.

During construction, access for NPWS, ecologist researchers, licenced commercial fishing operators and WaterNSW vehicles to existing trails may be temporarily disrupted. Although temporary road closures on trails would be required to facilitate the Proposal, these works would generally be undertaken outside of peak usage windows to minimise the potential for impacts to road users.

Given the short duration of the works and the controls listed in Section 6.10.3, including the implementation of a traffic management plan, temporary adverse impacts to the trafficability of discrete trails are not anticipated to cause significant impacts to NPWS operations and park management.

Operation

The Proposal would benefit park management activities through improved vehicle access for NPWS staff and reduced trail maintenance requirements/costs.

6.10.3 Safeguards

Measures proposed to avoid, minimise or manage potential traffic and access impacts as a result of the Proposal are detailed in Table 6-16.

Table 6-16 Safeguards for traffic and access impacts

Impact	Safeguard	Responsibility	Timing
Construction traffic	A construction traffic management plan will be prepared as part of the CEMP. The plan will include: • A driver code of conduct • Confirmation of haulage routes and access locations • Measures to maintain access and capacity to existing roads where possible • Traffic control measures including signage at appropriate locations to notify road users of increased traffic volumes and construction vehicles • A response plan for any construction-related traffic incidents • Provisions for emergency site access.	Contractor	Construction
	Three weeks' notice will be provided to NPWS and WaterNSW prior to construction commencement.	Contractor	Prior to Construction
	Consultation with NPWS and DCCEEW will be undertaken to minimise the impacts on park operations during construction including temporary trails or road closures.	Contractor	Construction
	Where appropriate, consultation with Murray River Council will be undertaken to minimise the impacts to the surrounding road network during construction including temporary trails or road closures. Any agreed traffic management measures will be incorporated into the traffic management plan.	Contractor	Construction

6.10.4 Residual impacts

The traffic and access impacts during construction of the Proposal are considered negligible due to the localised and short-term increases in traffic on the surrounding road network from construction vehicles. During operation, the Proposal would result in improved access into and throughout the Yanga National Park.

6.11 Visual and Land use

6.11.1 Existing environment

The existing visual amenity at park is typical of a natural, floodplain and bushland environment. Creeks, rivers, lakes and other waterbodies are interspersed throughout the surrounding River red gum forest and lignum shrublands.

There is an extensive network of about 200 km of unsealed NPWS managed trails throughout the Yanga Precinct that provide access for management operations. A number of these trails, including all the trails subject to proposed works (with the exception of Bronzewing Drive – Eastern Section), are inaccessible to public and infrequently used by NPWS staff, with locked NPWS gates restricting unauthorised access.

The Proposal involves repair, upgrade and maintenance works to trails within or adjacent to the Yanga National Park. The proposed works would generally be within the existing trail corridor and are generally not within sight of any passing public traffic or sensitive receivers.

6.11.2 Impacts

Construction

The Proposal is not likely to significantly affect the existing land use or scenic landscape. The majority of works are to be carried out in publicly inaccessible areas of the National Park where the land use and natural character of the area is already impacted by the existing trails. There are no permanent residents located within or adjoining the proposed CAZ who would experience amenity impacts during construction.

During the construction phase, there will be localised and short-term visual impacts to the scenic landscape in the vicinity of the CAZ due to disturbance by vehicles, stockpiling and machinery. This impact is not considered to be significant since the trails are inaccessible to the public (with the exception of the eastern Section of Bronzewing Drive) and the majority of construction activities would be screened by surrounding vegetation.

During construction, access to trails within the Yanga National Park would be restricted for NPWS and WaterNSW operational staff. However, given the minor, short-term and temporary nature of this access restriction, impacts to existing land use are anticipated to be negligible.

Operation

Given the remote locations and small scale of the Proposal, the Proposal is not expected to have a substantial impact on visual amenity or landscape character at the Yanga National Park. Due to the small footprint of the works, remote locations and the dominance of existing vegetation at each CAZ, the overall visual impact of the Proposal would be negligible. Similarly, as the Proposal is focused on maintaining and upgrading existing trail infrastructure it is not expected to impact on existing land use in the National Park or surrounding region.

6.11.3 Safeguards

Measures proposed to avoid, minimise or manage potential visual impacts as a result of the Proposal are detailed in Table 6-17.

Table 6-17 Safeguards for visual amenity impacts

Impact	Safeguard	Responsibility	Timing
Visibility of construction works	All construction equipment will be removed from the Yanga National Park as soon as it is not required, including any material and refuse related to the works. Following construction, all areas subject to disturbance outside the permanent infrastructure footprint (i.e., existing trails, culvert and rock causeway) would be rehabilitated as soon as practicable, progressively and in accordance with the CEMP and in consultation with NPWS.	Contractor	Construction

6.11.4 Residual impacts

Given the remote location, small scale of the Proposal and safeguards detailed in Table 6-17, the Proposal is considered to have a negligible impact on visual amenity or landscape character at the Yanga National Park during both construction and operation.

Given the Proposal is focused on maintaining and upgrading existing trail infrastructure, it is not expected to affect land use in the region.

6.12 Hazards

6.12.1 Existing environment

Bush fire risk

The Proposal is not located on land that is mapped as bush fire prone or within a vegetation buffer (buffer from bush fire vegetation category classes 1, 2 and 3) in accordance with the NSW RFS's Guide for Bush Fire Prone Land Mapping (NSW RFS, 2015).

However, given the bushland nature of the Yanga National Park, it is considered that the Proposal is vulnerable to bush fires due to the vegetation cover surrounding the CAZ. The *Murrumbidgee Valley National Park (Yanga Precinct) Fire Management Strategy* (NPWS, 2015) identifies the existing bushfire regime at Yanga National Park, including historic wildfires and controlled burns. Bush fires are more likely to occur during the Bush Fire Danger Period and their frequency may increase with

warmer temperatures and more hot days. The strategy identifies the critical wildfire season as generally occurring over summer, between December through to February. The last known wildfire previously occurred in central Yanga in late 2005/ early 2006.

The strategy identifies two types of fire trail category: essential and important. Of relevance to the Proposal is that Waugorah Road, Bronzewing Drive, Redbank East Trail, River Trail and Steves Bank Trail are all essential fire trails. The strategy defines fire thresholds for vegetation communities to conserve biodiversity. Fire thresholds are assigned with consideration of fire history including the time since areas of the National Park were last burnt and the recent frequency of burning. The strategy recognises three fire management zones across the Yanga Precinct, with most of the Proposal located within the land management or Strategic Fire advantage zones. The objectives of this zone are to conserve biodiversity and protect cultural and historic heritage and to manage fire consistent with the applicable fire thresholds.

As discussed in Section 4.2.2, the Proposal is located in the Mid Murray Zone Bush Fire Management Committee area. The bush fire risk management plan prepared by the committee in 2009 identifies the bush fire season for the area as running from October-November to March-April. Fire weather conditions for the area are described as being usually associated with winds from the west around to the north accompanied by high daytime temperatures and low relative humidity. Dry lightning storms occur frequently during the bush fire season and often start forest and grass fires. There is also risk of fire during cooler months from the ignition of cured reed beds such as Phragmites and Cumbungi which are highly flammable and burn with extreme intensity.

The area has on average 250 bush/grass fires per year, of which six to 10 on average can be considered to be major fires. The main sources of ignition in the area are lightning strikes, unattended campfires, power lines, machinery and traffic, escaped agricultural burns and the use of cutting and welding equipment. Potential major risk seasons follow significant periods of high growth from high winter rainfall which allow the build-up of fine fuels and create the potential for a major fire season across the whole of the Mid-Murray Zone when this material cures (Mid Murray Zone Bush Fire Management Committee, 2009).

NPWS adopts a strategic approach to managing fires in parks and reserves including research, planning, hazard reduction, rapid response firefighting crews and community alerts. NPWS, in consultation with the community and other organisations, develop fire management strategies outlining plans of action for use in the event of a fire. The plans cover the protection and conservation of wildlife and property and extend across all NSW National Parks. The type of strategy developed for each park varies according to the complexity of the Yanga Precinct's fire management issues.

Flooding

The Proposal is not mapped within the flood planning area identified in the Wakool LEP. However, as discussed in Section 6.10.1, significant rainfall events and in particular high flows in the Murrumbidgee River can render large sections of the Yanga National Park inaccessible for weeks at a time, cutting off access to key parts of the Yanga National Park.

Safety and security

A number of existing trails are in poor condition and unsafe for vehicles. Further, high river flows and rainfall can cut-off access along and to these trails for extended periods, causing significant damage and preventing access for maintenance and operation of NPWS assets such as flow-regulating structures. The Proposal seeks to improve trail condition, durability and access throughout the Yanga National Park.

6.12.2 Impacts

Construction

Bushfire risk

Construction activities for the Proposal would pose an increased risk of bush fire due to the potential for vehicles (i.e., vehicle exhaust systems when traversing over dry vegetation) if not appropriately managed. There is also the potential for increased bushfire risk should waste vegetation from vegetation clearing and pruning be left in-situ and/or stockpiled onsite. Fuel leaks and spills from plant and equipment and temporary storages of small quantities of flammable materials, such as fuel, could also provide a fuel source for bush fires or cause a bush fire if ignited.

Flooding

Construction of the Proposal would be scheduled when there are low flows in the Murrumbidgee River and there would be no or minimal flow in the waterways within the Yanga National Park. The proposed works would have a negligible impact on local flood patterns.

Further, as discussed in Section 6.1.3, construction activities would cease during and immediately following rainfall events of more than 50 mm in 24 hours, or otherwise in accordance with NPWS access consent conditions requirements.

Safety and security

The contractor would be responsible for the safety of their staff and subcontractors working at the construction sites and any visitors to the sites. The contractor would require all people attending the sites to complete a safety induction that informs them of the safety procedures being implemented during the construction works.

Operation

Bushfire risk

The Proposal would not increase the occurrence of bushfires or threat to life. Operation of the Proposal would improve access for NPWS to engage in bush fire maintenance and in an emergency bushfire event.

Flooding

Operation of the Proposal would not impact of local flood regimes, given no material changes to inundation depths or extents are anticipated.

6.12.3 Safeguards

Measures proposed to avoid, minimise or manage potential hazard impacts as a result of the Proposal are detailed in Table 6-18.

Table 6-18 Safeguards for hazards

Impact	Safeguard	Responsibility	Timing
Bush fire risk during construction	The following controls will be implemented to mitigate potential for fires and increased bush fire risk during construction: - No stockpiling or burning of waste vegetation to occur onsite - Daily weather checks will be undertaken during the pre-start meeting to note for potential fire danger - Any notices erected, displayed or issued by NPWS regulating the use of fire in the National Park will be complied with - Machinery which may result in sparking or ignition must not be used on a Total Fire Ban Day without an exemption from the NSW RFS - Fuel and other similar flammable materials, such as gas cylinders and paint, will be stored in appropriate fire-resistant storage containers - Appropriate firefighting equipment (e.g., water pump, extinguisher and hand tools) should be available on site along with trained staff - Stationary plant will be parked in cleared areas - No smoking on site in accordance with clause 19 of the NPW Regulation.	Contractor	Construction
	All works will be undertaken in accordance with the operational guidelines under the <i>Murrumbidgee Valley National Park National and Park Fire Management Strategy</i> which includes provisions pertaining to operation of earthmoving equipment and visitor management.	Contractor	Construction
Emergency response	Emergency contacts including NPWS's Duty Officer and response procedures will form part of the CEMP and site inductions.	Contractor	Construction

6.12.4 Residual impacts

Following the implementation of safeguards and mitigation measures in Table 6-18, the Proposal would have a minimal bushfire risk during the construction phase. Operation of the Proposal is considered likely to have beneficial impacts for the management of future bush fire risk given the alignment of the works with FAFT standards.

Carrying out the construction works when there is low flow in the Murrumbidgee River would minimise the potential flooding of the CAZ. Operation of the Proposal would have negligible impact on the local flood regime.

6.13 Socio-economic

6.13.1 Existing environment

The Yanga National Park is predominately located within the Murray River Council LGA. As per the 2021 census, 5,189 people were reported as being in the LGA's labour force. Of these 62.8% were employed full time, 27.9% were employed part-time and 3.1% were unemployed. The most common occupations included Managers (24.5%), Professionals (9.0%), Labourers (17.0%) and Trades Workers (11.0%). The population of the surrounding area is sparse, with few towns in the region. The nearest town to the Proposal is Balranald, which is located in the Balranald Shire LGA approximately eight km south west of Yanga National Park with a population of 2,208 (ABS, 2021). The few medium sized towns within the broader region including Hay are primarily established along the banks of the Murrumbidgee River, which supports a diverse horticultural industry and dryland agriculture.

The Yanga National Park is the traditional land of many First Nations groups including the Wathi, Daddi Daddi, Muthi Muthi and Nari Nari (NPWS, 2020). First Nations groups in the area are represented by the Balranald Local Aboriginal Land Council and a number of other organisations. The Murrumbidgee River and smaller waterways that flow through the Yanga National Park have great spiritual significance to the First Nations groups.

The Yanga National Park is located in the Riverina Murray Tourism Zone and provides opportunities for visitors in a pastoral setting which includes old station buildings, Aboriginal cultural heritage and the River red gum forests and wetlands of the Murrumbidgee River. The Yanga National Park is collectively estimated to receive 16,000 to 20,000 visitors annually, with peak visitation generally occurring in the cooler months from March to November (NPWS, 2020), noting that there is no public access to the central section of the Yanga National Park where the Proposal is located. Tourism based around the river environment, Lowbidgee wetlands and water activities plays an important role in the regional economy.

Activities such as bushwalking, birdwatching, camping, nature appreciation, fishing, picnicking and sightseeing are promoted to the public and the Yanga precinct offers visitors opportunities to appreciate the outstanding natural environment in a setting that articulates the shared history between Aboriginal and non-Aboriginal peoples (NPWS, 2020). However, access to certain management trails and remote areas within the National Park is restricted via locked gates which prevent unauthorised access and other illegal activities which degrade park values, interrupt park operations and pose a safety risk to visitors and staff. The activity may impact access to Woolpress Bend Picnic Area and Campgrounds in the northern most reaches of the Yanga National Park. NPWS may consider increased traffic movements on Waugorah Rd, particularly oversize vehicles, an unacceptable risk and close the campground during construction.

The Murrumbidgee River, Yanga Lake and other waterbodies within the Yanga National Park offer opportunities for recreational fishing for a variety of species including Murray cod (*Maccullochella*

peelii) and golden perch (*Macquaria ambigua*). A number of registered commercial tour operators periodically offer guided tours in the National Park under a NPWS licence, with the Yanga National Park understood to be infrequently used by commercial fishing operators for access to the Murrumbidgee River.

6.13.2 Impacts

Business, employment and social infrastructure

The proposed works are not anticipated to result in direct social or economic impacts within the Yanga National Park or the surrounding region. Whilst commercial tour operators are understood to periodically operate within the Yanga National Park, impacts are anticipated to be minimal, with the works scheduled to commence outside of peak periods and the existing trails are not accessible to the public.

Construction of the Proposal would provide temporary benefits to local and regional businesses, particularly in industries that provide goods and services to support construction activities. Businesses in hospitality, accommodation and trades within Balranald and other local towns in the region are the most likely to benefit.

Local businesses could also see a short-term beneficial impact with increased revenue from sourcing of local supplies and construction workforce spending. Although local procurement will be prioritised where possible, it is likely that some of the workforce would need to be sourced from outside the local region, due to the technical requirements of the proposed works and the limited availability of local workers with the necessary skills and experience. This non-resident workforce would contribute to increased spending locally while in Balranald and the surrounding region during construction.

Construction of the Proposal is not expected to negatively impact or significantly increase demand on social infrastructure or health services within Balranald due to the low numbers of workers required. It is expected that most local facilities such as the Balranald District Hospital, would have the capacity to meet any potential increased demand, and the additional revenue for income generating facilities such as cafes would be a short-term beneficial impact. Minimal impacts to accommodation within Balranald are anticipated due to the low numbers of workers with construction likely to occur outside the peak tourism season of March to November.

Recreational users

Construction of the Proposal will not significantly affect local tourism or recreational usage within the Yanga National Park as the trails are generally located in remote and publicly inaccessible areas of the National Park.

Key stakeholders including NPWS, WaterNSW and the Nari Nari tribal council would be notified in advance of construction commencing and would be updated on the progress of the works during the construction phase so impacts can be avoided where possible.

Park Management and Operations

As described in Section 6.10.2, the proposed works are located remote and discrete areas of the Yanga precinct away from all park management facilities. During construction, access for NPWS vehicles to certain trails and existing infrastructure may be temporarily disrupted.

The proposed works are anticipated to be staggered across the trails over a three-month period, with only one trail anticipated to be closed for a short period for works at a given time. The staging and timing of proposed works would be developed in coordination with NPWS field staff to minimise disruptions to park operations. Given the short duration and staggering of the works, the construction of the Proposal is not anticipated to cause significant impacts to NPWS operations and park management.

6.13.3 Safeguards

No specific socio-economic safeguards are proposed as the Proposal would have negligible adverse socio-economic impacts. Ongoing consultation will be carried out with key stakeholders regarding the timing of works and notification to any temporarily disrupted users such as NPWS and WaterNSW operational staff.

6.13.4 Residual impacts

Construction of the Proposal would likely provide temporary benefits to local and regional businesses, including businesses that provide hospitality, accommodation, trades, and goods and services to support construction. The Proposal is unlikely to impact local tourism or recreational usage within the area given it is located in a remote area of Yanga that is inaccessible to the public.

6.14 Waste, contamination, natural resources and hazardous materials

6.14.1 Existing environment

A review of the NSW Environment Protection Authority's contaminated land record of notices under section 58 of the *Contaminated Land Management Act 1997* and the list of NSW contaminated sites notified to the Environment Protection Authority under section 60 of the Act did not reveal any registered contaminated land sites within the Area of Interest.

A review of premises currently regulated by an environment protection licence under the POEO Act and premises that are no longer required to be licensed under the POEO Act did not reveal any identified premises within the Area of Interest. Pursuant to section 4.6 of the State Environmental Planning Policy (Resilience and Hazards) 2021 there is no apparent reason to consider that the land proposed to be developed would be contaminated and, as such, no further contamination investigation is required. A search of the National Pollutant Inventory for the 2022/2023 reporting period did not identify any sources for air polluting substances near the Proposal.

6.14.2 Impacts

Construction

Natural Resources

The proposed works would necessarily consume energy including embodied energy in the precast components of the replacement culvert, transportation of materials (crushed gravel), equipment and personnel to and from the CAZ, and fuel used to power plant, equipment and vehicles engaged in the construction works. The construction works would also require water for a range of activities including dust suppression, and washdown. Energy and water used during construction would be minor due to the short duration and relatively small scale of the proposed works.

Waste and hazardous materials

The construction of the Proposal would generate spoil from earthworks and vegetation removal. General waste would also be generated by construction personnel. Waste streams would include:

- Green waste from cleared vegetation
- Minor quantities of spoil material from excavation to accommodate the culvert, bank works at Redbank East trail and excess trail surface material from grading
- Oil, grease and other liquid waste from the maintenance of construction plant and equipment
- Minor quantities of general waste.

Contamination

Fuels and lubricants would be used on site during construction activities and these chemicals may pose a potential contamination risk to soils in the event of a spill. Spilt chemicals may alter soil properties and can impact negatively on soil health and consequently plant growth or if absorbed by plants/animals could potentially enter the food chain with adverse impacts. Contaminants in the soil can be mobilised during high rainfall events and surface water runoff which may potentially spread such contamination through the soil profile, or into surface or groundwater potentially impacting aquatic habitats. The potential contamination risk during construction is considered low with further discussion and safeguards detailed in Table 6-19.

There is also the potential for hydraulic leaks and localised soil and water contamination during construction, if not adequately managed. However, given the works would occur in dry waterways and quantities of earthworks are anticipated to be minimal, this not considered to be a significant risk.

Operation

Operation and maintenance of the Proposal would not involve the generation of waste. Vehicular use during operation would be similar to the existing case and is generally anticipated to pose a low contamination risk.

6.14.3 Safeguards

Waste management for the Proposal would be based on the waste management hierarchy established by the objectives of the *Waste Avoidance and Resource Recovery Act 2001*. This includes

reducing the amount of waste produced as much as possible, maximising waste reuse, and disposing waste as the last option and doing so appropriately. Crushed rock fill material would be required for the construction of the proposed structure. This material would likely be sourced off site. All waste including surplus fill material will be classified in accordance with the *Waste Classification Guidelines* (Environment Protection Authority, 2014a), with appropriate records and disposal dockets retained for audit purposes. The Proposal would further minimise construction waste through:

- Sustainable selection of construction materials including minimising haulage by preferentially using local quarries to import fill, gravel and riprap material
- Detailed estimation and accurate ordering of quantities of materials required.

All suitable excavated material is to be reused onsite as backfill and/or where appropriate, for the construction of earthen cofferdams required as part the proposed waterway infrastructure works under the Yanga National Park Project. Any materials that cannot be reused onsite would be removed and recycled or disposed of at a suitably licensed facility.

Measures proposed to avoid, minimise or manage potential waste, natural resources, contamination and hazardous materials impacts as a result of the Proposal are detailed in Table 6-19.

Table 6-19 Safeguards for waste, contamination and hazardous material impacts

Impact	Safeguard	Responsibility	Timing
Spoil generation	All suitable topsoil and spoil material would be reused as part of the trail works. Any suitable surplus material would be stockpiled onsite and where feasible, reused onsite as backfill and/or for construction of cofferdams for other works proposed under the Yanga National Park Supply Project.	Contractor	Construction
	Any topsoil and spoil material that cannot be reused onsite would be removed and recycled or disposed of at a suitably licensed facility.	Contractor	Construction
Beneficial reuse onsite	Cleared vegetation suitable for use in the rehabilitation works (e.g., fallen logs that could provide habitat) would be retained on site for later reuse. Other cleared vegetation would be mulched and either disposed off-site at a suitably licenced waste facility or, if requested by and agreed with NPWS, made available for NPWS to reuse within Yanga National Park. Earth removed that is surplus to the requirements of the site where it was excavated and which can be classified as	Contractor	Construction

Impact	Safeguard	Responsibility	Timing
	virgin excavated natural material or excavated natural material could be used for other works proposed in the Yanga National Park as part of the Yanga National Park Supply Project, or otherwise disposed off-site at an appropriately licenced waste facility.		
Hazardous materials	Any hazardous materials will be stored in accordance with existing or agreed NPWS procedures.	Contractor	Construction
Accidental spill	All contractors and staff will be appropriately trained through a site induction and toolbox talks to prevent, minimise and manage accidental spills.	Contractor	Construction
	Machinery will be inspected daily to ensure no oil, fuel or lubricants are leaking from the machinery. Machines will be maintained as per manufacturers specifications.	Contractor	Construction
	To avoid release to the environment, all hazardous materials (fuels, lubricants, herbicides, etc.) will be disposed of off-site in accordance with Environment Protection Authority guidelines.	Contractor	Construction
	Spill response procedures will follow existing or agreed NPWS procedures.	Contractor	Construction
	Mobile spill kits fully stocked with adequate spill prevention and absorbent materials (including absorbent pads, granular absorbent and disposal bags) will be maintained onsite and on construction vehicles carting hazardous materials.	Contractor	Construction
	Refuelling of all vehicles and mobile equipment will occur at least 20 m away from any drainage lines or waterways and with suitable bunding/controls.	Contractor	Construction
Unexpected soil contamination	If suspected soil contamination is encountered, the material should be segregated and placed in a designated	Contractor	Construction

Impact	Safeguard	Responsibility	Timing
	bunded stockpile covered in plastic sheeting to prevent rainfall infiltration and/or soil migration during windy conditions.		
Generation of construction waste	All waste material generated will be handled and disposed of carefully to minimise the risk of pollution.	Contractor	Construction
	All construction materials able to be recycled shall be separated and recycled at approved facilities or reused onsite.	Contractor	Construction
	Records of waste classification and disposal dockets will be maintained.	Contractor	Construction

6.14.4 Residual impacts

During the construction phase, only small quantities of construction waste primarily from green waste as a result of vegetation clearing would be generated.

There is the potential for accidental spills or leaks from vehicles, plant and equipment to cause localised soil and water contamination impacts during construction. However, given the safeguards in Sections 6.1.3, 6.2.3 and 6.14.3, the low level quantities of hydrocarbons and that the proposed works are located away from key perennial waterways, the risk is considered to be low.

Therefore, potential waste and contamination impacts associated with the construction of the Proposal are considered likely to have a low impact due to the small scale of the proposed works and safeguards detailed above. No potential waste and contamination impacts associated with the operation of the Proposal are anticipated.

6.15 Cumulative impacts

6.15.1 Existing environment

The Proposal forms part of the Yanga National Park Supply Project, which involves the replacement of existing flow regulators, the construction of new flow regulators, and construction of a pump hardstand and permanent pipeline along with the replacement of regulator gates at the existing Shaw's, Bruton's and Twin Bridges (North and South) regulators. The Proposal would improve construction vehicle access for a number of these proposed work sites. However, these additional works would occur following completion of the Proposal and are not expected to directly interface with the Proposal.

The Proposal is also adjacent to the Reconnecting River Country Program, which consists of easing flow constraints at a range of locations within the Nimmie-Caria system located immediately east of the Yanga National Park. The works are proposed to enable improved water management and

deliver better social, environmental, and cultural outcomes for communities along these creek systems. The benefits and outcomes assessed under this initiative are considered separate from the outcomes sought under this Proposal.

The broader Project is to be completed in parallel with the Murray Valley National Park SDLAM Project: Millewa Forest Supply Project, located at Millewa Forest in Murray Valley National Park and Regional Park, near Mathoura on the Murray River. The two proposed measures (Millewa Forest Supply Project and Yanga National Park Supply Project) have been developed under a single business case, which passed Phase 2 of the SDLAM assessment process outlined in the Intergovernmental Agreement on Implementing Water Reform in the Murray Darling Basin. The proposed measures were collectively known as the Murray and Murrumbidgee Valley National Parks SDL Adjustment Supply Measure Project.

Given the geographically separated nature of the proposed works at Yanga National Park and Millewa Forest, it has been considered appropriate that the permissibility of the two proposed measures is considered separately from one another.

As the Project is located within the South West Renewable Energy Zone, there are a number of proposed renewable developments in the surrounding region, with major projects within 50 km of the Area of Interest detailed in Table 6-20 below.

Table 6-20 Relevant projects within the 50 km

Project name	Development stage (As of 11/10/2024)	LGA	Approx. Distance to project	Potential for cumulative impacts
Sunraysia Solar Farm	In operation	Balranald Shire	40 km south	Minimal
Limondale Solar Farm	In operation	Balranald Shire	45 km south	Minimal
Baldon Wind Farm	Response to Submissions	Edward River, Hay Shire, Murray River	35 km south east	Minimal
Keri Keri Wind Farm	Response to Submissions	Hay Shire	35 km south east	Minimal
Keri Keri Solar Farm	Prepare EIS	Hay Shire	45 km south east	Minimal
Junction Rivers Wind Farm	Response to Submissions	Murray River, Balranald Shire	45 km south	Minimal
Wilan Wind Farm	Prepare EIS	Murray River, Hay Shire	20 km south east	Minimal

Project name	Development stage (As of 11/10/2024)	LGA	Approx. Distance to project	Potential for cumulative impacts
Project Energy Connect - Eastern Section	Approved (2022)	Edward River	65 km south east	Minimal

6.15.2 Impacts

Construction

Given the minor environmental impacts associated with the Proposal, and the remote locations of the Proposal and the other work proposed as part of the Yanga National Park Supply Project, any potential cumulative impacts during construction would be negligible. The Department, as the proponent of the Yanga National Park Supply Project, is able to manage the delivery of the works to avoid or minimise adverse cumulative impacts. Ongoing consultation would be carried out with NPWS and other project stakeholders regarding the timing of works and interface with other projects within the area.

Operation

The proposed works under the Yanga National Park Supply project, including the Proposal, have been designed as a package to optimise environmental outcomes for Yanga National Park. The works would have an overall positive impact on the safety and efficiency of environmental watering of the forest and would create opportunities for the site environmental water managers to better access key infrastructure and achieve ecological outcomes more easily than with the existing infrastructure in the Yanga National Park.

No cumulative impacts are anticipated between the Proposal and the Yanga National Park Supply Project.

6.15.3 Safeguards

Measures proposed to avoid, minimise or manage potential cumulative impacts as a result of the Proposal are detailed in Table 6-21.

Table 6-21 Safeguards for cumulative impacts

Impact	Safeguard	Responsibility	Timing
Cumulative impacts	Construction of the various components of the Yanga National Park Supply Project including proposed trail works would be coordinated by the Department to minimise any potential cumulative impacts.	The Department	Construction

6.15.4 Residual impacts

Given the minor environmental impacts associated with the Proposal, and the remote locations of the proposed project elements, any potential cumulative impacts during construction would be negligible.

7 Matters of national environmental significance under the EPBC Act

An assessment of the matters of national environmental significance under the EPBC Act that may be relevant to the Proposal is provided in Table 7-1.

Table 7-1 EPBC factors for consideration

MNES	Applicable?	Residual Impact level	Reasons	Safeguards/ mitigation measures
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Is the Proposal likely to impact on matters of national environmental significance as follows:

Listed threatened species or ecological communities	Yes	Low	No threatened ecological communities are considered likely to be impacted by the Proposal. A total of 21 EPBC listed flora and fauna species are considered to have a moderate or higher likelihood of occurring within the locality including five flora and 16 fauna species. While the habitat to be removed may be occasional utilised by threatened species, the area of vegetation to be removed is generally highly disturbed and in poor condition. The Proposal would seek to minimise vegetation removal and avoid removal of hollow bearing trees. The Proposal is unlikely to result in a significant impact on nationally listed threatened species or ecological communities.	Refer to Section 6.4.3 for safeguards for potential impacts to listed threatened species or ecological communities.
Listed migratory species	Yes	Low	While migratory bird species do use the habitats within the locality, the CAZ would not be classed as an 'important habitat' as defined under the <i>EPBC Act Policy Statement 1.1 Significant Impact Guidelines</i> (DoE, 2013), in that the CAZ do not contain: Habitat used by a migratory species occasionally or periodically within a region that supports an ecologically	Refer to Section 6.4.3 for safeguards for potential impacts to listed migratory species.

MNES	Applicable?	Residual Impact level	Reasons	Safeguards/ mitigation measures
			significant proportion of the population of the species - Habitat used by a migratory species which is at the limit of the species' range - Habitat within an area where the species is declining. Based on the above considerations, the Proposal is unlikely to have a significant effect on any of the listed migratory species predicted to occur within the locality.	
Wetland of international importance (Ramsar wetland)	No	Nil	The nearest RAMSAR wetland is Hattah-kulkyne Lakes approximately 50-100 km upstream from the Proposal. This area would not be impacted by Proposal.	N/A
World heritage values of world heritage properties	No	Nil	There are no world heritage areas in proximity to the Proposal.	N/A
The national heritage values of national heritage places	No	Nil	There are no national heritage places in proximity to the Proposal.	N/A
Commonwealth marine area	No	Nil	There are no Commonwealth marine areas in proximity to the Proposal.	N/A
Nuclear action	No	Nil	The Proposal does not involve a nuclear action (including uranium mining).	N/A
Commonwealth land	No	Nil	There is no Commonwealth land within the Area of interest or in proximity to the Proposal.	N/A
Impact on water resources, in relation to coal seam gas development and large coal mining development	No	Nil	The Proposal does not involve coal seam gas development and large coal mining development.	N/A

8 Summary of impacts

In accordance with sections 5.5 and 5.7 of the EP&A Act, the significance of impacts against each environmental factor listed in clause 171(2) of the EP&A Regulation have been considered in Table 8-1 to assess the likely impacts of the Proposal on the environment.

Table 8-1 Compliance with section 171(2) of the EP&A Regulation

Environmental Factor	Impact	Where addressed
(a) the environmental impact on the community	The key objective of the Proposal is to facilitate construction access for the Yanga National Park Supply Project which will deliver improved environmental outcomes for the Yanga National Park (refer to Section 1.1.2). The Proposal would also deliver positive outcomes for the local community, with negligible adverse socio-economic impacts, as described in Section 6.13.	Section 6.13
(b) the transformation of the locality	The Proposal is not expected to significantly affect land use in the region. The majority of works are to be carried out in publicly inaccessible areas of the Yanga National Park where the natural character of the area is already impacted by the existing trails. Potential visual impacts of the Proposal were assessed in Section 6.11 and found to be negligible.	Section 6.11
(c) the environmental impact on the ecosystems of the locality	A comprehensive assessment considering potential biodiversity impacts has been completed and found that the Proposal is unlikely to have a significant impact on threatened species, populations, ecological communities and migratory species, and residual biodiversity impacts are low.	Section 6.4 and Section 6.5
(d) reduction of the aesthetic, recreational, scientific or other environmental quality or value of the locality	This REF comprehensively assesses potential environmental impacts of the Proposal and has found them to be primarily positive. Potential adverse environmental impacts are minor or insignificant.	Chapter 6
(e) the effects on any locality, place or building that has — (i) aesthetic, anthropological, archaeological, architectural, cultural,	Potential impacts to Aboriginal heritage and historic heritage as a result of the Proposal have been assessed and are anticipated to be negligible.	Section 6.6 and Section 6.7

Environmental Factor	Impact	Where addressed
historical, scientific or social significance, or (ii) other special value for present or future generations		
(f) the impact on the habitat of protected animals, within the meaning of the <i>Biodiversity Conservation Act 2016</i>	A comprehensive assessment considering potential biodiversity impacts has been completed and found that the Proposal is unlikely to have a significant impact on threatened species, populations, ecological communities and migratory species, and residual biodiversity impacts are low.	Section 6.4
(g) the endangering of a species of animal, plant or other form of life, whether living on land, in water or in the air	A comprehensive assessment considering potential biodiversity impacts has been completed and found that the Proposal is unlikely to have a significant impact on threatened species, populations, ecological communities and migratory species, and residual biodiversity impacts are low.	Section 6.4 and Section 6.5
(h) long-term effects on the environment	This REF comprehensively assesses potential environmental impacts of the Proposal and has found them to be primarily positive. Potential adverse environmental impacts are minor or insignificant.	Chapter 6
(i) degradation of the quality of the environment	This REF comprehensively assesses potential environmental impacts of the Proposal and has found them to be primarily positive. Potential adverse environmental impacts are minor or insignificant.	Chapter 6
(j) risk to the safety of the environment	The Proposal involves improving trail condition and durability for existing trails in the Yanga National Park that currently are in poor condition and unsafe for vehicles.	Section 2.2.2
(k) reduction in the range of beneficial uses of the environment	The Proposal is not expected to significantly affect land use in the region. The Proposal seeks to improve trail condition and durability of existing trails within and adjacent to Yanga National Park.	Section 2.1
(l) pollution of the environment	There is a low potential for minor impacts to water quality due to erosion and sedimentation during construction. This risk will be managed by standard construction practices and additional safeguards outlined in Table 6-4.	Section 6.2
(m) environmental problems associated with the disposal of waste	Waste management during construction of the Proposal is a minor risk and would be readily	Section 6.14

Environmental Factor	Impact	Where addressed
	controlled by construction practices and safeguards outlined in Table 6-19.	
(n) increased demands on natural or other resources that are, or are likely to become, in short supply	Materials required for construction of the Proposal are widely available and would deliver long-term beneficial environmental outcomes via operation of the Proposal. Re-use of materials is discussed in Section 6.14.	Section 6.14
(o) the cumulative environmental effect with other existing or likely future activities	Given the minor environmental impacts associated with the Proposal, and the remote locations of the proposed project elements, any potential cumulative impacts during construction would be negligible.	Section 6.15
(p) the impact on coastal processes and coastal hazards, including those under projected climate change conditions	Not applicable given the Proposal is not located near coastal environments.	N/A
(q) applicable local strategic planning statements, regional strategic plans or district strategic plans made under the Act, Division 3.1	For all existing trails, with the exception of Bronzewing Drive – Eastern Section (Trail ID04a), the Proposal is located on land reserved under the NPW Act. Clause 2.73(1)(a) of the TISEPP allows development for any purpose to be carried out without consent on land reserved under the NPW Act if the development is for a use authorised under the NPW Act or acquired under Part 11 of the NPW Act. For Bronzewing Drive – Eastern Section (located outside the National Park), clause 2.109(1) of the TISEPP allows for development for the purpose of a road may be carried out by a public authority without consent on any land. As such these works also be permissible without consent. The Proposal is to be assessed under Division 5.1 of the EP&A Act with the Department being the determining authority.	Section 4.1
(r) other relevant environmental factors.	This REF comprehensively assesses potential environmental impacts of the Proposal, including potential socio-economic impacts, and has found them to be primarily positive. Potential adverse environmental impacts are minor or insignificant.	Chapter 6

9 Environmental management

9.1 Construction environmental management

Safeguards have been proposed in this REF to avoid, minimise or manage potential environmental impacts of the Proposal. Should the Proposal proceed, these safeguards will be incorporated into the detailed design and applied during construction and operation of the Proposal.

The CEMP would include the safeguards identified in Chapter 6 of this REF and any additional measures required by licences, permits or approvals that are required to construct the Proposal. The CEMP would provide a framework for establishing how the safeguards would be implemented and who would be responsible for their implementation. It would include a procedure for managing and reporting environmental incidents where there is a breach of the requirements contained in the safeguards. The CEMP would be prepared prior to commencement of construction. At a minimum, the CEMP is anticipated to include the following subplans:

- Erosion and sediment control plan
- Site rehabilitation plan
- Traffic management plan.

A draft of the CEMP would be provided to NPWS for comment and any comments provided would be addressed in the final CEMP. The CEMP would be a working document that is subject to ongoing revisions and updates as necessary during the construction phase.

The key objective of the CEMP would be to deliver and implement the environmental commitments made in the REF throughout the construction period, together with conditions imposed by any licences and approvals. The CEMP would include the following information:

- Details of key project personnel and their contact details
- An audit and reporting program to ensure all of the safeguards are implemented
- Training requirements, including site induction requirements to ensure that all personnel understand the principles of environmental management
- Emergency and incident response procedures
- List of approvals to be obtained before construction commences
- Consultation requirements (government and community) and a complaint handling procedure
- Actions for meeting environmental objectives based on the safeguards identified in this REF and any statutory or regulatory obligations
- Details of the personnel responsible for the implementation of each safeguard.

9.2 Operational environmental management

Operation and maintenance of the trails, replacement culvert and rock causeway would be the same as the current park operations. No additional environmental management is required.

9.3 Summary of safeguards

A summary of all measures proposed to avoid, minimise, or manage potential environmental impacts of the Proposal, as identified throughout Chapter 6, are detailed in Table 9-1.

Table 9-1 Summary of safeguards

Impacts	Safeguards	Responsibility	Timing
Soils			
Erosion and sediment	An erosion and sediment control plan will be prepared as part of the Contractor's CEMP. Site specific erosion and sediment control measures will be designed, implemented and maintained in accordance with relevant sections of <i>Managing Urban Stormwater: Soil and Construction Volume 1</i> (Landcom, 2004) (the Blue Book). The erosion and sediment control plan will provide details on the requirement for daily weather checks, stockpiling of materials and strategies that will be implemented to stabilise soils during the construction phase.	Contractor	Construction
Erosion and sediment	Work operations will cease during and immediately following rainfall events of more than 50 mm in 24 hours, or otherwise in accordance with NPWS access consent conditions requirements.	Contractor	Construction
Surface Water and Drainage			
Instream works	Control measures to manage potential pollution or sedimentation impacts from instream works will include but not be limited to undertaking work when flows are low/dry for a suitable duration to complete work. Control measures will be in place prior to commencement of any instream works.	Contractor	Detailed design Construction
Spills and leaks	An emergency spill response procedure will be prepared in accordance with the Department's incident management protocols to minimise the impact of accidental spillages of fuels, chemicals and fluids during construction. Hazardous materials such as oils, chemicals and refuelling activities will occur in bunded areas and as far from waterways as feasible.	Contractor	Detailed design Construction

Terrestrial Biodiversity

Impacts	Safeguards	Responsibility	Timing
Impact to surrounding vegetation	The limits of the CAZ and areas for parking and turning of vehicles and plant will be accurately and clearly communicated to site personnel prior to commencement of works. These areas will be located so that vegetation disturbance is minimised as much as possible, and the driplines of trees avoided.	Contractor	Prior to construction
	Materials, plant, equipment, work vehicles and stockpiles will be placed to avoid damage to surrounding vegetation and will be outside tree driplines.	Contractor	Construction
	All identified hollow-bearing trees within the CAZ will be prioritised for retainment with all potential impacts (including pruning and lopping of branches) to be avoided where practicable.	Contractor	Pre-construction / Construction
	If any damage occurs to vegetation outside of the CAZ, the Department and NPWS will be notified so that appropriate remediation strategies can be developed.	Contractor/ The Department	Construction
	Construction personnel will be informed of the environmentally sensitive aspects of the CAZ, including being shown plans of directly impacted and adjoining areas that identify vegetation communities; hollow-bearing trees; important flora and fauna habitat areas; and locations where threatened species, populations or ecological communities have been recorded.	Contractor	Construction
	Disturbance will be restricted to existing disturbance areas where possible.	Contractor	Construction

Impacts	Safeguards	Responsibility	Timing
Impact to native plants and animals including threatened species	A pre-clearing inspection will be undertaken 48 hours prior to any native vegetation clearing by a suitably qualified representative from the Department and/or NPWS along with the Contractor's Environmental Manager (or delegate). The pre-clearing inspection at each CAZ will include, as a minimum: • A check of the physical demarcation any areas subject to vegetation clearing within the CAZ (i.e., Trail ID03, Trail ID04b, Trail ID04c and Trail ID05b) • Identification of hollow bearing trees within areas of the CAZ subject to vegetation clearing to avoid unintended damage during the clearing and subsequent construction works • Identification of habitat features that may need to be relocated outside the CAZ • Identification of any threatened flora and fauna The completion of the pre-clearing inspection will form a hold point requiring sign-off from the Department.	Contractor / the Department	Construction
	Where feasible undertake brush cutting in preference to complete removal of vegetation to retain groundcover and topsoil.	Contractor	Construction
	Construction personnel will be made aware that any native fauna species encountered must be allowed to leave the CAZ without being harassed and NPWS called for assistance where necessary.	Contractor	Construction
	A procedure for dealing with unexpected presence of threatened species will be implemented during construction, including cessation of work and notification of the contractors appointed environmental representative, NPWS and the Department, determination of appropriate mitigation measures in consultation (i.e. relevant relocation measures) and updating of ecological monitoring requirements.	Contractor	Construction
Impacts to threatened species	Construction during Spring (September - November) will be avoided if possible. This time falls within the breeding periods of multiple species including: • Australasian Bittern (October - February) • Southern Whiteface (July - October) • White-bellied Sea-Eagle (June - September) • Southern Bell Frog (September - April).	Contractor	Construction

Impacts	Safeguards	Responsibility	Timing
Impacts to threatened species	The following safeguards will be implemented to minimise impacts to the Grey Snake: • Construction during the Grey Snake breeding period (January - March) will be avoided if possible. • Minimise disturbing suitable habitat, where practicable, (i.e., cracking soil and rocks, particularly in association with waterways) and consideration of placement of laydown areas will avoid potential suitable habitat. • Where avoidance of suitable habitat and breeding period cannot be achieved, a pre-clearance survey immediately prior to construction will be undertaken at Redbank East Trail (ID05b) by suitably qualified personnel to relocate any individuals identified. • For any soil excavations undertaken at Redbank East Trail, suitably qualified personnel must be present during the procedure to assess the presence of individuals in the soil. Minimise disruption of aquatic habitat and emergent aquatic vegetation to prevent affecting Grey Snake food sources (e.g., frogs).	Contractor	Construction

Impacts	Safeguards	Responsibility	Timing
Impacts to threatened species	Avoidance and mitigation measures are recommended to prevent impacts to the Southern Bell Frog including: • Implement hygiene and disinfection protocols for chytrid fungus by ensuring all equipment, footwear, and vehicles are disinfected before entering and after leaving frog habitats to prevent its spread, following the Department of Environment and Climate Change (NSW) (2008) guidelines <i>Hygiene Protocol for the Control of Disease in Frogs</i>. • Schedule construction works outside of the breeding season, between September and April, to minimise disturbance. If this cannot be achieved, pre-clearing surveys will occur immediately prior to ground disturbance at key identified CAZ (Redbank East trail ID05b) to minimise potential impacts. • Consider weather conditions and avoid construction works during wet conditions when frogs are more active and vulnerable. • Minimize and avoid handling frogs whenever possible. If handling is necessary, use clean, disposable gloves to prevent disease transmission. Any required handling or removal should be performed by suitably qualified personnel. Any handling of frogs will be consistent with the Department of Environment and Climate Change (NSW) (2008) guidelines <i>Hygiene Protocol for the Control of Disease in Frogs</i>. • To address any incidental impacts outside the CAZ on mapped key habitats, restore wetland habitats while ensuring water quality and controlling invasive species. Identify and map key habitat areas to avoid any residual or indirect impacts during construction.	Contractor	Construction
Impacts to habitat features	Relocation of habitat features (e.g., fallen timber, hollow logs) outside the CAZ will occur in accordance with an approved project-specific procedure to be included in the CEMP.	Contractor	Construction
Impacts from introduction and spread of weeds	Weed management will be undertaken in consultation with NPWS in areas affected by construction prior to any clearing works in accordance with the <i>Biosecurity Act 2015</i> to minimise the risk of weeds being spread to the surrounding environment; including during transport of waste off-site to a licenced waste disposal facility.	Contractor	Construction

Impacts	Safeguards	Responsibility	Timing
	All weeds, propagules, other plant parts and/or excavated topsoil material that is likely to be infested with weed propagules will be treated on site or bagged, removed from site, and disposed of at a suitably licensed waste facility. If pesticide use is proposed it must occur in accordance with NPWS's requirements including the <i>Pesticide Use Notification Plan</i> (NPWS, 2022).	Contractor	Construction
Impacts from introduction and spread of plant pathogens	All vehicles and machinery engaged in earthworks and vegetation clearance activities will follow the Myrtle Rust hygiene protocol for vehicles and heavy machinery in Table 5 of the <i>Hygiene Guidelines</i> (DPIE, 2020).	Contractor	Construction
Wildlife impacts from vehicle strike	Drivers must stay vigilant for fauna during machinery operation and vehicle movements.	Contractor	Construction
Aquatic Biodiversity			
Removal of aquatic & riparian vegetation	Rehabilitation of disturbed channel and bank areas subject to vegetation clearing (including passing bays, turnaround bays, rock causeways, trail levee and the replacement culvert) will be undertaken as soon as practicable, progressively and in accordance with the CEMP and in consultation with NPWS.	Contractor	Construction
Aboriginal Heritage			

Impacts	Safeguards	Responsibility	Timing
Unexpected finds	Unexpected Aboriginal cultural heritage finds will be managed in accordance with NPWS's Unexpected Finds Protocol – Aboriginal Cultural Heritage, which is provided as an appendix to Attachment B and summarised below. Aboriginal objects If an Aboriginal object is discovered during construction, all works in this location must stop and no further harm must occur to the area. The find must be left in place and protected from any further harm. Notify the Department Project Manager of the find, who in turn will notify NPWS, the Department's representative, Heritage NSW, and the Environment Line (13 15 55) and arrange for a qualified archaeologist and representatives of the registered Aboriginal parties to inspect the find. If they confirm that the find is an Aboriginal object, the item will be recorded on AHIMS, agreement reached on its management, and an application made for an Aboriginal heritage impact permit. Aboriginal human/ancestral skeletal remains If Aboriginal human/ancestral skeletal remains are discovered, all work in the vicinity of the remains must stop. Notify the Department Project Manager of the find, who in turn will notify NSW Police if the material is determined to be of human origin and less than 100 years old, or NPWS Aboriginal Partnerships and Heritage Unit, WaterNSW's heritage officer, Heritage NSW and the Environment Line (13 15 55) if the remains are believed to be Aboriginal. If in doubt or required by NSW Police, the Department will obtain specialist advice from a forensic anthropologist or bioarchaeologist to confirm that the bones are human, their age and whether they are Aboriginal or not. The remains must be left in place and protected from further harm or damage or unauthorised access until further advice states otherwise. If the remains are confirmed to be Aboriginal, the Department will notify the RAPs. Aboriginal ancestral remains will be recorded in a culturally appropriate manner in collaboration with Heritage NSW and the RAPs. Work will not recommence at the location until authorised in writing by Heritage NSW if the remains are considered by the NSW Police and Heritage NSW to be Aboriginal.	Contractor/ The Department	Construction

Impacts	Safeguards	Responsibility	Timing
Accidental impacts to Aboriginal items	No ground-disturbing works are to occur in the canopy dripline of any modified trees in proximity to the CAZ including Steve Bank Trail Modified Tree 1 (AHIMS ID: [Redacted]) and Twin Bridges Bank Modified Tree 2 (AHIMS ID: [Redacted]) adjoining Redbank East Trail. Temporary fencing, using bollards and high visibility mesh, tape and/or flag string must be used to indicate the dripline of the canopy.	Contractor	Construction
Unexpected finds	All personnel working on site are to be provided site specific cultural heritage induction to highlight the cultural sensitivities of the area, identified cultural heritage sites in proximity to the CAZ and are to be made aware of the procedures for the management of Aboriginal cultural heritage during construction, such as the discovery of Aboriginal artefacts or other cultural material.	Contractor	Construction
Historic Heritage			
Unexpected finds	If historical archaeological relics are discovered during construction, all work will cease in the area. The Contractor will notify the Department Project Manager, who in turn will notify NPWS and the WaterNSW heritage officer as required.	Contractor/ The Department	Construction
Air Quality			
Dust generation during construction	Work methods will be modified during high wind conditions if excessive dust is generated.	Contractor	Construction
	All vehicles on site will be confined to designated routes.	Contractor	Construction
	Control measures will be included in the CEMP to limit vehicle speeds to minimise dust emissions.	Contractor	Construction
	Manage stockpiles as per the Erosion Sediment Control Plan (ESCP).	Contractor	Construction
Impacts on air quality during construction	Visual monitoring for dust will be implemented during the works. Where required, a hose or water cart would be used to regularly wet down haulage trails, CAZ and laydown areas.	Contractor	Construction

Impacts	Safeguards	Responsibility	Timing
Vehicle emissions	Trips and trip distances will be controlled and reduced where possible, for example by coordinating delivery and removal of materials to avoid unnecessary trips.	Contractor	Construction
	Minimise engine idling and ensure vehicle engines are switched off when stationary or parked within ancillary facilities or CAZs.	Contractor	Construction
Noise and Vibration			
Construction noise and vibration	Unless otherwise approved by the Department through an out of hours application process, construction hours will be limited to: - Monday to Friday: 7 am to 6 pm - Saturday: 8 am to 5 pm. No construction work on Sundays or public holidays.	Contractor	Construction
	All machinery will be well maintained and in good working order. All vehicles and equipment will be fitted with silencing devices, where applicable.	Contractor	Construction
Traffic and access			
Construction traffic	A traffic management plan will be prepared as part of the CEMP. The plan will include: - A driver code of conduct - Confirmation of haulage routes and access locations - Measures to maintain access and capacity to existing roads where possible - Traffic control measures including signage at appropriate locations to notify road users of increased traffic volumes and construction vehicles - Management of oversized vehicles. A response plan for any construction-related traffic incidents.	Contractor	Construction
	Three weeks' notice will be provided to NPWS and WaterNSW prior to construction commencement.	Contractor	Prior to Construction
	Consultation with NPWS and the Department (Water group) will be undertaken to minimise the impacts on park operations during construction including temporary trails or road closures.	Contractor	Construction

Impacts	Safeguards	Responsibility	Timing
	Where appropriate, consultation with Murray River Council will be undertaken to minimise the impacts to the surrounding road network during construction including temporary trails or road closures. Any agreed traffic management measures will be incorporated into the construction traffic management plan.	Contractor	Construction
Visual			
Visibility of construction works	All construction equipment will be removed from the Yanga National Park and adjoining land as soon as it is not required, including any material and refuse related to the works. Following construction, all areas subject to disturbance outside the permanent infrastructure footprint (i.e. existing trail, culvert and rock causeway) would be rehabilitated as soon as practicable, progressively and in accordance with the CEMP and in consultation with NPWS.	Contractor	Construction
Hazards			
Bushfire risk during construction	The following controls will be implemented to mitigate potential for fires and increased bush fire risk during construction: • No stockpiling or burning of waste vegetation to occur onsite • Daily weather checks will be undertaken during the pre-start meeting to note for potential fire danger • Any notices erected, displayed or issued by NPWS regulating the use of fire in the Yanga National Park will be complied with • Machinery which may result in sparking or ignition must not be used on a Total Fire Ban Day without an exemption from the NSW RFS • Fuel and other similar flammable materials, such as gas cylinders and paint, will be stored in appropriate fire-resistant storage containers • Appropriate firefighting equipment (e.g., water pump, extinguisher and hand tools) should be available on site along with trained staff • Stationary plant will be parked in cleared areas. No smoking on site in accordance with clause 19 of the NPW Regulation.	Contractor	Construction

Impacts	Safeguards	Responsibility	Timing
	All works will be undertaken in accordance with the operational guidelines under the <i>Murrumbidgee Valley National Park National and Park Fire Management Strategy</i> which includes provisions pertaining to operation of earthmoving equipment and visitor management.	Contractor	Construction
Emergency response	Emergency contacts including NPWS's Duty Officer and response procedures will form part of the CEMP and site inductions.	Contractor	Construction
Waste, contamination, Natural resources and hazardous materials			
Spoil generation	All suitable topsoil and spoil material would be reused as part of the trail works. Any suitable surplus material would be stockpiled onsite and where feasible, reused onsite as backfill and/or for construction of cofferdams for other works proposed under the Yanga National Park Supply Project.	Contractor	Construction
	Any topsoil and spoil material that cannot be reused onsite would be removed and recycled or disposed of at a suitably licensed facility.	Contractor	Construction
Beneficial reuse onsite	Cleared vegetation suitable for use in the rehabilitation works (e.g. fallen logs that could provide habitat) would be retained on site for later reuse. Other cleared vegetation would be mulched and either disposed off-site at a suitably licenced waste facility or, if requested by and agreed with NPWS, made available for NPWS to reuse within Yanga National Park. Earth removed that is surplus to the requirements of the site where it was excavated and which can be classified as virgin excavated natural material or excavated natural material could be used for other works proposed in the Yanga National Park as part of the Yanga National Park Supply Project, or otherwise disposed off-site at an appropriately licenced waste facility.	Contractor	Construction
Hazardous materials	Any hazardous materials will be stored in accordance with existing or agreed NPWS procedures.	Contractor	Construction
Accidental spill	All contractors and staff will be appropriately trained through a site induction and toolbox talks to prevent, minimise and manage accidental spills.	Contractor	Construction
	Machinery will be inspected daily to ensure no oil, fuel or lubricants are leaking from the machinery. Machines will be maintained as per manufacturers specifications.	Contractor	Construction

Impacts	Safeguards	Responsibility	Timing
	To avoid release to the environment, all hazardous materials (fuels, lubricants, herbicides, etc.) will be disposed of off-site in accordance with Environment Protection Authority guidelines.	Contractor	Construction
	Spill response procedures will follow existing or agreed NPWS procedures.	Contractor	Construction
	Mobile spill kits fully stocked with adequate spill prevention and absorbent materials (including absorbent pads, granular absorbent and disposal bags) will be maintained onsite and on construction vehicles carting hazardous materials.	Contractor	Construction
	Refuelling of all vehicles and mobile equipment will occur at least 20 metres away from any drainage lines or waterways and with suitable bunding/controls.	Contractor	Construction
Soil contamination	If suspected soil contamination is encountered, the suspect materials should be segregated and placed in a designated bunded stockpile covered in plastic sheeting to prevent rainfall infiltration and/or soil migration during windy conditions.	Contractor	Construction
Generation of construction waste	All waste material generated will be handled and disposed of carefully to minimise the risk of pollution.	Contractor	Construction
	All construction materials able to be recycled shall be separated and recycled at approved facilities or reused onsite.	Contractor	Construction
	Records of waste classification and disposal dockets will be maintained.	Contractor	Construction
Cumulative impacts			
Cumulative impacts	Construction of the various components of the Yanga National Park Supply Project would be coordinated by the Department to minimise any potential cumulative impacts.	The Department	Construction

10 Conclusion

10.1 Justification

A number of key existing trails within and adjacent to the Yanga National Park are in poor condition. Further, high river flows and rainfall can cut-off access along and to these trails for extended periods, causing significant damage and preventing access for maintenance and operation of NPWS and WaterNSW assets such as flow-regulating structures.

The Department are proposing to repair, upgrade and maintain a number of existing unsealed trails to improve access for light and heavy vehicles to undertake key park management activities, improve road user safety, minimise further damage to existing trails and improve trail durability.

The Proposal would also facilitate construction access to a number of sites identified within the scope of the Yanga National Park Supply Project which forms part of the SDLAM program designed to achieve similar or improved environmental outcomes for rivers, wetlands and wildlife in the Murray-Darling Basin using less water.

Potential environmental impacts of the Proposal have been identified and assessed in Chapter 6 and found to be minor or insignificant. The majority of the proposed works would be limited to the existing trail corridor and native vegetation removal would be minimal. The Proposal is unlikely to significantly impact threatened species, populations, ecological communities, or migratory species.

Safeguards specific to the Proposal have been developed to avoid, minimise, or manage these potential impacts. The minor potential environmental impacts of the Proposal are outweighed by the broader, long-term benefits of the Proposal and the Proposal is considered to be in the public interest.

10.2 Ecological sustainable development

Ecologically sustainable development is development that improves the total quality of life, both now and in the future. Section 193 of the EP&A Regulation identifies four principles of ecologically sustainable development that are presented in Table 10-1. The table also identifies how the Proposal aligns with each of the principles. Section 2A (2) of the NPW Act requires that the objects of the NPW Act are to be achieved by applying the principles of ecologically sustainable development. The consistency of the Proposal with the objects of the NPW Act is presented in Table 4-1. The alignment of the Proposal with both section 193 of the EP&A Regulation and the objects of the NPW Act means that the requirement of section 2A (2) of the NPW Act is also satisfied.

Table 10-1 Consideration of the EP&A Regulation principles of ecologically sustainable development

EP&A Regulation principles of ecologically sustainable development	Proposal response
The precautionary principle This principle states: ‘if there are threats of serious or irreversible damage, lack of scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.’	The direct and indirect impacts of the Proposal are known. The majority of the proposed works would be limited to the existing trail corridor and native vegetation removal would be minimal.
Intergenerational equity This principle states: ‘the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.’	This REF comprehensively assesses the potential environmental impacts of the Proposal, including potential socio-economic impacts, and has found them to be primarily positive. Potential adverse impacts are minor or insignificant.
Conservation of biological diversity and ecological integrity This principle states: ‘the diversity of genes, species, populations and communities, as well as the ecosystems and habitats to which they belong, must be maintained and improved to ensure their survival.’	A comprehensive biodiversity assessment considering aquatic and terrestrial biodiversity has been completed (refer to Section 6.4, Section 6.5 and Attachment A) and found that the Proposal is unlikely to have a significant impact on threatened species, populations, ecological communities and migratory species, and residual biodiversity impacts are minimal.
Improved valuation, pricing, and incentive mechanism This principle is defined as: ‘Improved valuation, pricing and incentive mechanisms, namely, that environmental factors should be included in the valuation of assets and services, such as: i. polluter pays, that is, those who generate pollution and waste should bear the cost of containment, avoidance or abatement, ii. the users of goods and services should pay prices based on the full life cycle of costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste, iii. environmental goals, having been established, should be pursued in the most cost-effective way, by establishing incentive structures, including market mechanisms that enable those best placed to maximise benefits or minimise costs to develop their own solutions and responses to environmental problems’.	As discussed in Section Error! Reference source not found., several options were developed and assessed for the Proposal. The preferred option was selected due to the ability to minimise operation and maintenance risks and costs and environmental impacts in comparison to the alternatives considered. Furthermore, this REF has examined the potential environmental impacts of the Proposal (including on air, water, land and living things) and identified safeguards where there is the potential for adverse impacts. The implementation of safeguards to protect environmental resources is considered to represent the internalisation of environmental costs by the Department as a result of the Proposal.

10.3 Conclusion

The Proposal is subject to assessment under Division 5.1 of the EP&A Act. This REF has examined and taken into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of the Proposal.

The site selection, options assessment and design development of the Proposal aimed to minimise environmental impacts, and the proposed works as described in this REF align with the Proposal objectives. However, the Proposal would still result in minor environmental impacts as identified in this REF. Safeguards outlined in this REF would avoid, minimise or manage these potential impacts to ensure that the residual impacts of the Proposal would be minimal.

The Proposal would provide broader, long-term environmental benefits to the Yanga National Park through improving trail condition, durability and access for key park management activities and, on balance, the Proposal is considered justified.

The Proposal is unlikely to cause a significant impact on the environment. Therefore, an environmental impact statement and approval from the Minister for Planning under Division 5.2 of the EP&A Act is not required. In addition, the Proposal is not considered likely to have a significant impact on matters of national environmental significance or the environment of Commonwealth land within the meaning of the EPBC Act. A biodiversity development assessment report or species impact statement is also not required.

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12Terms and abbreviations

Abbreviation	Term
AHIMS	Aboriginal Heritage Information Management System
AHIP	Aboriginal Heritage Impact Permit
ASS	Acid Sulfate Soils
Basin Plan	The Basin Plan as developed by the Murray-Darling Basin Authority under the <i>Water Act 2007</i>
BC Act	<i>Biodiversity Conservation Act 2016 (NSW)</i>
BCSEPP	State Environmental Planning Policy (Biodiversity and Conservation) 2021
Blue Book	<i>Managing Urban Stormwater – Soils and Construction Volume 1 and Volume 2C</i>
CAZs	Contractor activity zones
CEMP	Construction environmental management plan
CLM Act	<i>Crown Lands Management Act 2016</i>
CLM Regulation	<i>Crown Lands Management Regulation 2018</i>
DCCEEW	Department of Climate Change, Energy, the Environment and Water (Australian Government)
DECCW	Department of Environment, Climate Change and Water (NSW)
DoE	Department of the Environment (Australian Government)
DPE	Department of Planning and Environment (NSW)
DPI	Department of Primary Industries (NSW)
DPIE	Department of Planning, Industry and Environment (NSW)
DPIRD	Department of Primary Industries and Regional Development (NSW)
EP&A Regulation	<i>Environmental Planning and Assessment Regulation 2021 (NSW)</i>
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
ESCP	Erosion and Sediment Control Plan
FAFT	Fire Access and Fire Trail
FM Act	<i>Fisheries Management Act 1999 (NSW)</i>

Abbreviation	Term
ha	hectares
km	Kilometres
LEP	Local environmental plan
LGA	Local Government Area
LSPS	Local Strategic Planning Statement
m	Metres
mm	Millimetres
m AHD	Metres Australian height datum
m BGL	Metres below ground level
MNES	Matters of National Environmental Significance
NPW Act	<i>National Parks and Wildlife Act 1974 (NSW)</i>
NPWS	NSW National Parks and Wildlife Services
NSW	New South Wales
NSW RFS	NSW Rural Fire Services
Park	Yanga National Park
PCT	Plant community type
REF	Review of environmental factors
SDL	Sustainable Diversion Limit
SDLAM	NSW Sustainable Diversion Limit Adjustment Mechanism Program
SEPP	State Environmental Planning Policy
The Basin	The Murray Darling Basin
The Department	NSW Department of Climate Change, Energy, the Environment and Water
The Project	The Yanga National Park Supply Project
The Proposal	The proposed works subject to this REF
TISEPP	State Environmental Planning Policy (Transport and Infrastructure) 2021
Trail corridor	Refers to the full extent of the cleared (disturbed) corridor for a trail and includes cut and fill batters, catch drains, mitre drains, turning opportunities and passing bays.
WM Act	<i>Water Management Act 2000 (NSW)</i>

Abbreviation	Term
Yanga PoM	Yanga National Park, Yanga State Conservation Area and Yanga Nature Reserve Plan of Management
Yanga Precinct	Yanga National Park, Yanga State Conservation Area and Yanga Nature Reserve collectively referred to as the 'Yanga Precinct'

Appendix A. Attachment A Biodiversity assessment report

Attachment B Aboriginal cultural heritage assessment report