Review of Environmental Factors

Provision of overbridge at Wallendbeen

December 2021

Project Number: 21-590

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Acronyms and abbreviations

AHIMS	Aboriginal Heritage Information Management System
AHIP	Aboriginal Heritage Impact Permit
ASL	Above sea level
AWS	Automatic weather station
BC Act	*Biodiversity Conservation Act 2016* (NSW)
Biosecurity Act	*Biosecurity Act 2015* (NSW)
BOM	Australian Bureau of Meteorology
CEMP	Construction environmental management plan
Cwth	Commonwealth
DAWE	Department of Agriculture, Water and the Environment (Cwth) (formerly DoEE)
DECCW	(Former) Department of Environment, Climate Change and Water (NSW) (now DPIE)
DoEE	(Former) Department of the Environment and Energy (Cwth) (now DAWE)
DPIE	Department of Planning, Industry and Environment (NSW)
EEC	Endangered ecological community – as defined under relevant law applying to the proposal
EES	Environment, Energy and Science (NSW), Division of DPIE (formerly OEH, and, prior, DECCW)
EIS	Environmental impact statement
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Cwth)
EP&A Act	*Environmental Planning and Assessment Act 1979* (NSW)
ESD	Ecologically Sustainable Development
FM Act	*Fisheries Management Act 1994* (NSW)
ha	hectares
Heritage Act	*Heritage Act 1977* (NSW)
ISEPP	State Environmental Planning Policy (Infrastructure) 2007 (NSW)
JHR	John Holland Rail
KFH	Key Fish Habitat
km	kilometres
LEP	Local Environment Plan

m	metres
MNES	Matters of National Environmental Significance under the EPBC Act (*c.f.*)
NPW Act	*National Parks and Wildlife Act 1974* (NSW)
NV Act	*Native Vegetation Act 2003* (NSW)
OEH	(Former) Office of Environment and Heritage (NSW) (now EES)
REF	Review of Environmental Factors
REP	Regional Environmental Plan

1. Introduction

1.1 Background

NGH have been engaged by BG&E to prepare a Review of Environmental Factors (REF). John Holland Rail (JHR), on behalf of Transport for New South Wales (TfNSW), propose to replace the road over rail bridge on Burley Griffin Way at Wallendbeen, NSW. TfNSW propose to construct the new bridge on a new alignment, to the southwest of the former road over rail bridge (Figure 1-1). The new bridge would have an increased clearance to facilitate future double stacking of containers along the railway line.

Burley Griffin Way is a Main Road, consisting of a two-lane flexible pavement that provides an important link for Northern and Western Riverina connecting Griffith to Yass and Sydney via the Hume Highway. The corridor is 258 km long and extends from the Hume Highway (HW2) south of Bowning, via Binalong, Harden, Wallendbeen, Temora and Ariah Park to the Newell Highway near Mirrool, then from the Newell Highway near Ardlethan via Barellan and Yenda to Irrigation Way at Yoogali, east of Griffith.

Heavy rainfall in March 2021 damaged the existing overbridge at Wallendbeen, which was removed for safety reasons during emergency works. A temporary, single-lane overbridge has been constructed to allow road users to utilise Burley Griffin Way; however, traffic delays are still occurring as a result of necessary traffic controls.

Therefore, a permanent bridge (this Proposal) is required to allow traffic to travel in both directions, and to safely accommodate heavy vehicles.

1.2 Purpose of this REF

This REF under Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) has been prepared by NGH Pty Ltd (NGH) on behalf of Transport for New South Wales (TfNSW). For the purposes of these works, TfNSW is the proponent and the determining authority under Part 5 of the EP&A Act.

The purpose of the REF is to describe the Proposal and document the likely impacts of the Proposal on the environment, including natural, social, scenic and cultural, and to detail protective measures to be implemented.

The description of the Proposal and associated environmental impacts have been undertaken in context of clause 228 of the Environmental Planning and Assessment Regulation 2000, the *Biodiversity Conservation Act 2016* (BC Act), and the Australian Government's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). In doing so, the REF helps to fulfil the requirements of Subdivision 2 of the EP&A Act that YVC examines and takes into account to the fullest extent possible, all matters affecting or likely to affect the environment by reason of the activity.

The findings of the REF would be considered when assessing:

- The significance of any impact on threatened species (as defined by the BC Act and/or the *Fisheries Management Act 1994* (FM Act)) in Division 3.2 of the EP&A Act, and therefore the requirement for a Species Impact Statement (SIS).
- The potential for the Proposal to significantly impact a Matter of National Environmental Significance (MNES) or Commonwealth land, and the need to make a referral to the

Australian Government Department of Agriculture, Water and Environment (DAWE) for a decision by the Commonwealth Minister for the Environment on whether assessment and approval is required under the EPBC Act.

- Whether the Proposal is likely to have a significant impact on the environment and therefore the necessity for an Environmental Impact Statement (EIS) to be prepared and approval to be sought from the Minister for Planning and Public Spaces under Division 5.1 of the EP&A Act.

The following definitions are used in this REF:

Proposal: All works involved in the implementation and operation of the works described in this REF.

Development footprint: Area of land directly impacted by the Proposal, including the existing road (Burley Griffin Way), and proposed road and bridge alignments.

Proposal area: The entire road reserve along the approximately 600 metre (m) section of Burley Griffin Way to be upgraded.

Locality: The area within a 10 km radius of the Proposal area.

Survey area: The Proposal area.

Figure 1-1 Locality map.

2. The Proposal Needs and Considerations of Alternatives

2.1 Proposal Need

TfNSW propose to replace the road over rail bridge on Burley Griffin Way at Wallendbeen, NSW. TfNSW propose to construct the new bridge on a new alignment, to the southwest of the former road over rail bridge (Figure 2-1). The new bridge would have an increased clearance to facilitate future double stacking of containers along the railway line.

The original bridge was removed during emergency works after heavy rainfall in March 2021. The Burley Griffin Way represents a major thoroughfare within the region, providing a transportation link between the townships of Temora and Yass. Motorists are currently having to detour for approximately 40 minutes via the Olympic Highway and Goldfields Way, which has also led to increased freight costs, as well as a decrease in visitors and tourism within Wallendbeen (Bogle & Bryant, 2021).

A temporary, single-lane overbridge has been constructed to facilitate the transportation of motorists along the Burley Griffin Way. However, significant road congestion is expected until the two-lane, replacement bridge is constructed.

2.2 Proposal Objectives

The objectives of the Proposal are to:

- Reinstate road connectivity between local and regional roads.
- Facilitate the transportation of goods and services by rail.
- Restore access for the local community.
- Improve road safety.
- Strengthen local economies.
- Create stronger employment opportunities.
- Minimise impact on the environment.
- Minimise impact on the community.

Figure 2-1 Construction layout.

2.3 Consideration of Alternatives

The options considered and the reasons for the preferred option are detailed below.

Option 1 – Do nothing

This option involves not replacing the temporary overbridge. This option would not address road safety. This option would not restore connectivity between regional towns or address the future needs of the community. The 'Do Nothing' option would not have any new impacts on the environment.

Advantages

- No waste would be produced.
- No vegetation would be removed.
- No construction disturbance would occur to the environment or residential receivers.
- Construction funding and resources would not be expended.

Disadvantages

- This option would not meet the Proposal needs and objectives.
- Ongoing safety issues would continue at the overbridge.

Option 2 – Replacement of the overbridge on the existing alignment

This option involves the replacement of the temporary, single-lane overbridge on Burley Griffin Way with a two-lane bridge on the existing alignment. This option would restore connectivity between regional towns, improve road safety and provide access for heavy vehicles. However, this option would not allow for the temporary overbridge to be constructed. Therefore, during construction of the proposed overbridge, motorists and freight companies would be forced to detour for approximately 40 minutes, via the Olympic Highway and Goldfields Way. Therefore, this option would not address the present needs of the community. This option would not accommodate freight and transportation services within the area, nor would it facilitate economic growth within the region.

Advantages

- This option would meet the objectives of the Proposal to:
  - Improve road safety.
  - Restore connectivity between local and regional roads.
  - Restore access for the local community.
  - Strengthen local economies, by providing jobs and using local materials.
  - Minimise impacts on the environment.

Disadvantages

- Removal of native vegetation.
- Extended disturbances to the local community.
- Extended traffic delays would occur for local road users.
- Temporary noise impacts to adjacent receivers during construction.
- Construction funding and resources would be expended.
- Some construction wastes would be produced.

Option 3 – Replacement of the overbridge on a new alignment

This option involves the construction of a two-lane overbridge on a new alignment, located just south of the temporary overbridge. This option would restore connectivity between regional towns, improve road safety and provide access for heavy vehicles. This option would also provide access to the Burley Griffin Way, via the temporary bridge, while the replacement overbridge is constructed. This option would reduce disturbances to the local community, facilitate freight and transportation services and facilitate economic growth within the region.

Advantages

- This option would meet the objectives of the Proposal to:
  - Improve road safety.
  - Restore connectivity between local and regional roads.
  - Facilitate the transportation of goods and services by rail.
  - Restore access for the local community.
  - Strengthen local economies, by providing jobs and using local materials.
  - Minimise impacts on the environment.

Disadvantages

- Removal of native vegetation.
- Temporary disturbances to the community may occur.
- Temporary traffic delays would occur for local road users.
- Temporary noise impacts to adjacent receivers during construction.
- Construction funding and resources would be expended.
- Some construction wastes would be produced.

2.3.1 Selection of the preferred option

Option 3 meets the Proposal objectives and is the preferred option. The replacement of the overbridge on a new alignment would restore connectivity between local and regional roads. Maintaining the single-lane replacement overbridge during the construction phase would minimise impacts to the local community and facilitate freight and transportation services within the region.

Constructing the Proposal on a new alignment would, however, result in increased vegetation disturbance. During the site survey a large proportion (73%) of the vegetation within the Proposal area was observed to be exotic. Up to 0.24 ha of native vegetation, in the form of trees and shrubs, would be removed during the proposed works. The connectivity of vegetation within the landscape would be maintained. The Proposal has the potential for environmental risks, as described in Section 6, which would be avoided or mitigated with the appropriate mitigation measures.

3. The Proposal

3.1 Location and Site Description

The Proposal is located on Burley Griffin Way (Figure 1-1), in south eastern NSW, which lies within the Cootamundra-Gundagai Regional Council (CGRC) Local Government Area (LGA).

The Proposal would follow a new alignment and fall within the existing road reserve, as well as on Lot 2 DP1054376 and Lot 1 DP1090341. The Proposal would occur on land zoned as RU1 Primary Production. The Proposal contains areas of Terrestrial Biodiversity, as mapped within the Cootamundra LEP 2013 (Figure 3-1).

Impacts to Terrestrial Biodiversity are discussed in section 6.3 of this report.

Figure 3-1 Terrestrial biodiversity within the Proposal area.

The Proposal is located within the Inland Slopes subregion of the NSW South Western Slopes IBRA Bioregion. Biodiversity features within the region include:

- Cunningham Creek, located approximately 285 m east of the Proposal. A tributary of Cunningham Creek runs through the northern portion of the Proposal area.
- Jindalee National Park, located approximately 8.3 km west of the Proposal.

The Proposal area is bounded by the town of Wallendbeen, the main southern railway and agricultural land, utilised for cropping and grazing.

3.2 Description of the Activity

3.2.1 Construction methods

Construction of the proposal would involve the following:

- Establishment of laydown areas including amenities, temporary fencing and signage
- Establishment of traffic controls.
- Establishment of environmental controls (exclusion zones)
- Vegetation trimming or removal where required
- Strip and stockpile topsoil and any unsuitable soils from the abutments and roadway
- Construction of a single span, two-lane bridge:
    - Excavate for abutments
    - Drive bridge piles
    - Form and pour foundations either side of the railway
    - Construct the bridge headstocks/abutments
    - Place/construct the bridge beams/deck
    - Build the road approaches to the new bridge
    - Fix parapets and guardrail
- Construction of the new road:
    - Box-out, cut-and-fill, mill and re-sheet of road formation to construct upgraded road and adjusted alignment.
    - Preparation of road subgrade
    - Construction of associated drainage infrastructure
    - Construction of tie-ins with side roads and access to properties
    - Installation of road furniture along the new alignment
    - Line marking to delineate new lane configurations
- Site rehabilitation / revegetation activities
- Removal of site offices, amenities, and traffic controls

Ideally bridge pylons would be bored piers in firm earth or rock environments. Alternatively, piles may be driven if the geology consists of unconsolidated sediments of sufficient depth.

3.2.2 Proposed construction equipment

Plant and equipment needed for the proposal would be determined during the construction planning phase. Conventional civil construction equipment likely to be used during the works include the following:

- Light vehicles
- Chainsaws
- Mulcher
- Delivery trucks
- Excavator
- Rollers
- Dump truck
- Piling rig
- Mobile crane
- Compactors
- Water cart
- Backhoe
- Asphalt sprayer
- Line marking vehicles
- Grader

3.2.3 Timing and hours of work

Construction is expected to be completed by Second Quarter, 2022.

Work hours during construction would generally be limited to Standard Working Hours.

- Monday – Friday 7:00 am to 6:00 pm
- Saturday 8:00 am to 1:00 pm
- Sunday and Public Holidays No work

3.2.4 Road traffic management and access

Access to the Proposal area would be via a network of sealed public roads. Highways and local roads near the Proposal would be used as transport routes. Access to the Proposal is available from Cootamundra, via the Olympic Highway and Burley Griffin Way. Access to the Proposal from Temora and Yass is also available along the Burley Griffin Way.

3.2.5 Property acquisition

The Proposal would require the acquisition of parts of Lot 2 DP1054376 and Lot 1 DP1090341 (Figure 3-2).

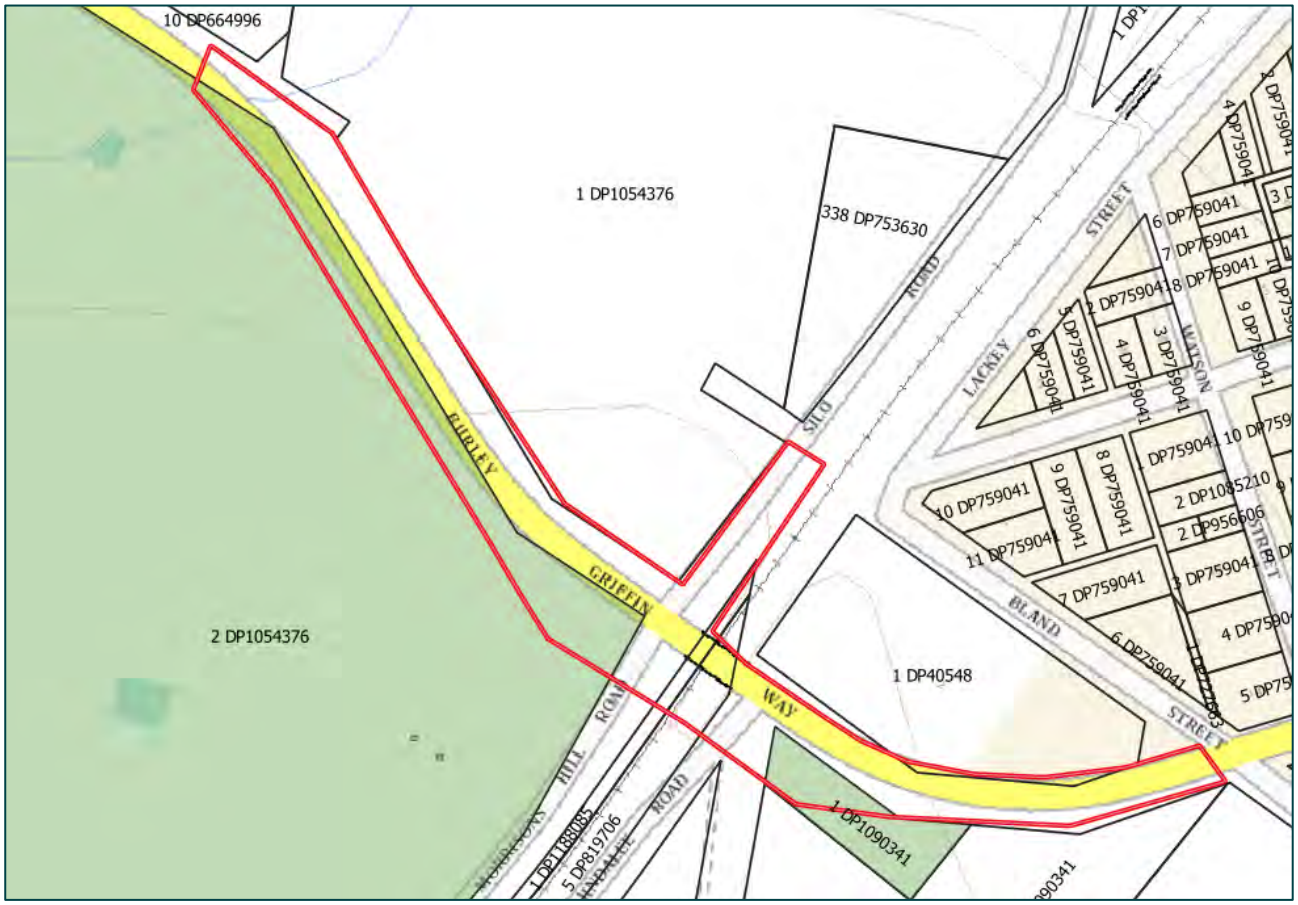


Figure 3-2 Land acquisition required for the Proposal.

3.2.6 Compound and stockpile site

A compound and laydown site has been established for the construction of the temporary overbridge (Figure 2-1 & Figure 3-3). It is recommended that the Proposal also utilise this

compound location, in order to minimise additional impacts associated with ground disturbance and compaction. If an alternative compound site is established, the additional assessment would be required.

Figure 3-3 Existing compound site located within the Proposal area.

4. Legal and Policy Requirements

4.1 Legal Permissibility

Legal requirements for the proposal are found below in Table 4-1.

Table 4-1 Legal requirements for the proposal.

Policy or Regulation	Objective	Requirement for the proposal
Commonwealth Law		
Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)	The objects of this Act are: a) To provide for the protection of the environment, especially those aspects of the environment that are matters of national environmental significance, b) To promote ecologically sustainable development through the conservation and ecologically sustainable use of natural resources, c) To promote the conservation of biodiversity, and d) To provide for the protection and conservation of heritage, e) To promote a cooperative approach to the protection and management of the environment, including governments, the community, land–holders and indigenous peoples, f) To assist in the co–operative implementation of Australia's international environmental responsibilities, g) To recognise the role of indigenous people in the conservation and ecologically sustainable use of Australia's biodiversity, and h) To promote the use of indigenous peoples' knowledge of biodiversity with the involvement of, and in co–operation with, the owners of the knowledge.	Approval by the Commonwealth environment minister is required if an action is likely to have a significant impact on a MNES or if it is listed as a matter of national significance. Refer to section 6.3.3 for the consideration of matters of national environmental significance. **No referral under the EPBC Act is required as part of the proposed works.**

Policy or Regulation	Objective	Requirement for the proposal
Native Title Act 1993	The Native Title Act 1993 provides a legislative framework for the recognition and protection of common law native title rights. Native title is the recognition by Australian law that Indigenous people had a system of law and ownership of their lands before European settlement. Where that traditional connection to land and waters has been maintained and where government acts have not removed it, the law recognises the persistence of native title..	**A search of the Native Title Tribunal Native Title Vision website was undertaken, with no Native Title holders/claimants were identified as outlined in section 6.8 of this REF**
State Law		
State Environmental Planning Policy (Infrastructure) 2007 (ISEPP)	The aim of this Policy is to facilitate the effective delivery of infrastructure across the State. ***Division 17 Roads and traffic*** ***Subdivision 1 Roads and road infrastructure facilities*** *94 Development permitted without consent—general* *(1) Development for the purpose of a road or road infrastructure facilities may be carried out by or on behalf of a public authority without consent on any land.* *(2) In this clause and clause 96, a reference to development for the purpose of road infrastructure facilities includes a reference to development for any of the following purposes if the development is in connection with a road or road infrastructure facilities—* *(a) construction works (whether or not in a heritage conservation area),* *3) If this Policy provides that development for a particular purpose that may be carried out without consent includes construction works, the following works or activities are (subject to and without limiting that provision) taken to be construction works if they are carried out for that*	Clause 94 of ISEPP permits development on any land for the purpose of a road or road infrastructure facilities to be carried out by or on behalf of a public authority without consent. According to clause 93 of the ISEPP, road infrastructure facilities also include vehicular bridges. The provisions of the ISEPP apply, and the proposal is permissible without development consent. The proposal would be assessed under Part 5 of the EP&A Act. Development consent from Council is not required. Part 2 of the ISEPP contains provisions for public authorities to consult with other public authorities and Council before

Policy or Regulation	Objective	Requirement for the proposal
	purpose— *(a) accessways,* *(b) temporary construction yards,* *(c) temporary lay-down areas for materials or equipment,* *(d) temporary structures,* *(e) investigations (including geotechnical and other testing, surveying and the placement of survey marks, and sampling),* *(f) clearing of vegetation (including any necessary cutting, pruning, ringbarking or removal of trees) and associated rectification and landscaping,* *(g) demolition,* *(h) relocation or removal of infrastructure,* *(i) extraction of extractive materials at the construction site solely for the purpose of the construction.*	commencement certain types of development. Consultation, as required by ISEPP (where applicable), is discussed in Section 5.1.
State Environmental Planning Policy (Koala SEPP) 2021	The Koala SEPP 2021 reinstates the policy framework of SEPP Koala Habitat Protection 2019 to 83 Local Government Areas (LGA) in NSW. The principles of the Koala SEPP 2021 are to help reverse the decline of koala populations by ensuring koala habitat is properly considered during the development assessment process and to provide a process for councils to strategically manage koala habitat through the development of koala plans of management.	The Koala SEPP 2021 is not applicable to activities assessed under Part 5 of the EP&A Act.
State Environmental Planning Policy (Koala SEPP) 2020	The Koala SEPP 2020 encourages the conservation and management of natural vegetation that provides habitat for Koalas. Although Koala SEPP 2021 has been introduced, Koala SEPP 2020 continues to apply for all RU1, RU2 and RU3 zoned land outside of the Sydney	The Koala SEPP 2020 is not applicable to activities assessed under Part 5 of the EP&A Act.

Policy or Regulation	Objective	Requirement for the proposal
	Metropolitan Area and the Central Coast.	
Environmental Planning and Assessment Act 1979 (EP&A Act)	The EP&A Act encourages proper management, development and conservation of natural and artificial resources, protection and conservation of the environment, including native plants and animals, threatened species, populations, ecological communities and their habitats and ecologically sustainable development. Section 5A, lists a number of factors to be taken into account when deciding if there is the likelihood of a significant impact on threatened species, populations and their habitat or on ecological communities. If there is a chance of an impact, then an Assessment of Significance is required to determine the significance of the impact. If there is a likelihood for a significant impact on threatened species, populations and their habitat or on ecological communities, then further assessment through an SIS is required.	This REF has been completed under Part 5 of the EP&A Act and aims to address the Proponent's duty to consider the proposal's environmental impact under Section 5.5 of the EP&A Act and Section 228 of the EP&A Regulation.
Biodiversity Conservation Act 2016	The purpose of this 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. This Act came into effect on 25 August 2017, replacing the *Threatened Species Conservation Act 1995*.	The *Biodiversity Conservation Act 2016* (BC Act) regulates the clearing of native vegetation in NSW. Under Part 7 of the Act, an assessment of the potential impacts of the proposed activity on threatened species, populations, ecological communities and critical habitat listed in the BC Act must be undertaken. This includes an assessment of the potential for a significant impact under section 7.3 (5 part test) and whether an impact is likely on an area of Outstanding Biodiversity

Policy or Regulation	Objective	Requirement for the proposal
		Value. **The REF has assessed impacts to threatened species and communities in Section 6.3 of this report.**
National Parks and Wildlife Act 1974 (NPW Act)	The *National Parks and Wildlife Act 1974* (NPW Act) promotes and regulates the management of national parks and historic sites or places of cultural value within the landscape and the conservation of certain fauna, native plants and Aboriginal objects and places. The NPW Act provides the basis for legal protection and management of Aboriginal sites in NSW. All Aboriginal objects within New South Wales are protected under Part 6 of the NPW Act. The implementation of the Aboriginal heritage provisions in the NPW Act is the Department of Primary Industry and Environments (DPIE) responsibility.	The NPW Act provides the basis for legal protection and management of Aboriginal sites in NSW. All Aboriginal objects within New South Wales are protected under Part 6 of the NPW Act. The implementation of the Aboriginal heritage provisions in the NPW Act is DPIE's responsibility. Consent from the Director-General of DPIE is required under Section 87 to investigate Aboriginal sites, or Section 90, to destroy an Aboriginal object or Aboriginal place. **An assessment of potential impacts to Aboriginal cultural heritage is provided in Section 6.8 of this report.**
Biosecurity Act 2015	The objects of this Act are the following: a) To promote biosecurity as a shared responsibility between government, industry and communities, b) To provide a framework for the timely and effective management of the following:	Any person who deals with biosecurity matter or a carrier and who knows, or ought reasonably to know, the biosecurity risk posed or likely to be posed by the biosecurity matter, carrier or dealing has a biosecurity duty to

Policy or Regulation	Objective	Requirement for the proposal
	i. Pests, disease, contaminants and other biosecurity matters that are economically significant for primary production industries. ii. threats to terrestrial and aquatic environments arising from pests, diseases, contaminants and other biosecurity matter, iii. public health and safety risks arising from contaminants, non–indigenous animals, bees, weeds and other biosecurity matter known to contribute to human health problems, iv. pests, diseases, contaminants and other biosecurity matter that may have an adverse effect on community activities and infrastructure, c) to provide a framework for risk-based decision–making in relation to biosecurity, d) to give effect to intergovernmental biosecurity agreements to which the State is a party, e) to provide the means by which biosecurity requirements in other jurisdictions can be met, so as to maintain market access for industry.	ensure that, so far as is reasonably practicable, the biosecurity risk is prevented, eliminated or minimised. **Biosecurity risks are discussed in Section 6.3 of this report.**
Heritage Act 1977	The objects of this Act are as follows: a) To promote an understanding of the State's heritage, b) To encourage the conservation of the State's heritage, c) To provide for the identification and registration of items of State Heritage Significance, d) To provide for the interim protection of items of State Heritage Significance,	Natural, cultural and built heritage is protected in NSW under the *Heritage Act 1977*. The Heritage Act allows for heritage items or places to be listed on the State Heritage Register or for interim heritage orders to be made to protect heritage items or places. Approval must be obtained from the Heritage Council or

Policy or Regulation	Objective	Requirement for the proposal
	e) To encourage the adaptive reuse of items of State Heritage Significance, f) To constitute the Heritage Council of New South Wales and confer on it functions relating to the State's heritage, and g) To assist owners with the conservation of items of State Heritage Significance.	local council before work can be done which might damage the item or place. A person who wishes to demolish, move, alter or in some way develop a place, building or land covered by an interim heritage order or a State Heritage Register listing (called "environmental heritage") must first obtain approval from the Heritage Council. Any activity which might damage or destroy a tree or other vegetation on land or within a precinct relating to a heritage item also requires approval. A person must not disturb or excavate land if they know, or have reasonable cause to suspect that they might discover, expose, move or damage a relic, unless they have an excavation permit. A "relic" means any deposit, artefact, object or material evidence that relates to the non–Aboriginal settlement of NSW and that is of State of local heritage significance. Excavation permits are issued by the Heritage Council. All discoveries of relics must be notified to the Heritage Council, whether or not the person has been issued with a permit, and the location of the relic disclosed. **Historic Heritage impacts are**

Policy or Regulation	Objective	Requirement for the proposal
		considered in Section 6.8.1 of this report.
Roads Act 1993	*The objectives of this Act are:* *(a) to set out the rights of members of the public to pass along public roads, and* *(b) to set out the rights of persons who own land adjoining a public road to have access to the public road, and* *(c) to establish the procedures for the opening and closing of a public road, and* *(d) to provide for the classification of roads, and* *(e) to provide for the declaration of RMS and other public authorities as roads authorities for both classified and unclassified roads, and* *(f) to confer certain functions (in particular, the function of carrying out road work) on RMS and on other roads authorities, and* *(g) to provide for the distribution of the functions conferred by this Act between RMS and other roads authorities, and* *(h) to regulate the carrying out of various activities on public roads.*	Section 138 of the Roads Act prohibits work on or over a public roadway without approval from the Roads Authority. **TfNSW is the proponent and determining authority for the Proposal.**
Fisheries Management Act 1994 (FM Act)	This Act provides conservation for fish and fish habitats and outlines approval processes for the activities that may impact threatened species and habitats.	A Strahler Stream Order (SSO) 2 tributary of Cunningham's Creek occurs within the Proposal area. No work is proposed to occur within 200 m of this watercourse. Therefore, no permits or notification to DPI Fisheries is required.

Policy or Regulation	Objective	Requirement for the proposal
		Mitigation measures have been provided in Section 6.2 of this report.
Local Legislation		
Cootamundra Local Environmental Plan LEP 2013	This Plan aims to make local environmental planning provisions for land in the Cootamundra-Gundagai LGA in accordance with the relevant standard environmental planning instrument under section 33A of the Act *(aa) to protect and promote the use and development of land for arts and cultural activity, including music and other performance arts,* *(a) to retain the distinctive character of Gundagai town in its riparian setting,* *(b) to protect Gundagai's crop and pasture lands and vineyards from adverse environmental impacts,* *(c) to protect environmentally sensitive land and important fauna and flora,* *(d) to protect, conserve and enhance Gundagai's rich indigenous and non-indigenous cultural heritage,* *(e) to encourage economic growth, employment creation and business opportunities in the rural, village and urban areas of Gundagai,* *(f) to maintain Sheridan Street as Gundagai town's primary area for business, civic and cultural uses and visitor services,* *(g) to encourage the renewal and consolidation of older residential areas close to the Gundagai town centre to provide appropriate housing that meets the needs of the community,* *(h) to ensure that all development in Gundagai is required to comply*	The development area is zoned SP2 Infrastructure and RU1 Primary Production under the Cootamundra LEP. According to cl. 8 of the ISEPP provisions of ISEPP prevail over the Cootamundra LEP 2013 to the extent of any inconsistency. The proposal is therefore permitted without consent under ISEPP.

Policy or Regulation	Objective	Requirement for the proposal
	with the principles of ecologically sustainable development.	

4.2 Confirmation of Part 5 Assessment

The proposal is categorised as development for the purpose of road infrastructure and is being carried out by or on behalf of a public authority. Under clause 94 of the ISEPP, the proposal is permissible without consent. The proposal is not State significant infrastructure or State significant development. The proposal can be assessed under section 5.1 of the EP&A Act.

The potential environmental impact of the proposal has been assessed under Part 5 of the EP&A Act. TfNSW is the proponent and the determining authority for the proposal. This REF fulfils TfNSW's obligation under section 5.5 of the EP&A Act, including examining and taking into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of the activity

5. Consultation

5.1 ISEPP Consultation

Part 2 of the State Environmental Planning Policy (Infrastructure) (ISEPP) contains provisions for public authorities to consult with local councils and other public authorities prior to the commencement of certain types of development. This is detailed below.

Is consultation with Council required under clauses 13–15 of the infrastructure SEPP?		
Are the works likely to have a substantial impact on the stormwater management services which are provided by Council?	☐ Yes	☒ No
Are the works likely to generate traffic to the extent that will strain the capacity of the existing road system in a local government area? The proposal would help to ease traffic congestion within Wallendbeen.	☐ Yes	☒ No*
Will the works involve connection to a Council owned sewerage system? If so, will this connection have a substantial impact on the capacity of the system?	☐ Yes	☒ No
Will the works involve connection to a Council owned water supply system? If so, will this require the use of a substantial volume of water?	☐ Yes	☒ No
Will the works involve installing a temporary structure on, or the enclosing of, a public place under local council management or control? If so, will this cause more than a minor or inconsequential disruption to pedestrian or vehicular flow?	☐ Yes	☒ No
Will the works involve more than a minor or inconsequential excavation of a road or adjacent footpath for which council is the roads authority and responsible for maintenance?	☐ Yes	☒ No
Is there a local heritage item (that is not also a state heritage item) or a heritage conservation area in the study area for the works? If yes, does a heritage assessment indicate that the potential impacts to the heritage significance of the item/area are more than minor or inconsequential?	☐ Yes	☒ No
Are the works located on flood liable land? If so, will the works change flooding patterns to more than a minor extent?	☐ Yes	☒ No

Is consultation with public authorities other than councils required under clause 16 of the infrastructure SEPP?		
Are the works adjacent to land reserved under the *National Parks and Wildlife Act 1974*, or to land acquired under Part 11 of that Act?	☐ Yes	☒ No
Are the works on land in Zone E1 National Parks and Nature Reserves or in a land use zone equivalent to that zone?	☐ Yes	☒ No

Is consultation with public authorities other than councils required under clause 16 of the infrastructure SEPP?		
Are the works adjacent to an aquatic reserve or a marine park declared under the *Marine Estate Management Act 2014*?	☐ Yes	☒ No
Is the proposal in the foreshore area as defined by the *Sydney Harbour Foreshore Authority Act 1998*	☐ Yes	☒ No
Would the works involve a fixed or floating structure in or over navigable waters?	☐ Yes	☒ No
Are the works for the purpose of a health services facility, correctional centre or group home, or for residential purposes, in an area that is bush fire prone land?	☐ Yes	☒ No
Would the works increase the amount of artificial light in the night sky and that is on land within the dark sky region as identified on the dark sky region map? (Note: the dark sky region is within 200 kilometres of the Siding Spring Observatory)	☐ Yes	☒ No
Are the works on buffer land around the defence communications facility buffer land within the meaning of clause 5.15 of the Standard Instrument?	☐ Yes	☒ No
Are the works on land in a mine subsidence district within the meaning of the *Mine Subsidence Compensation Act 1961*?	☐ Yes	☒ No

5.2 Stakeholder and agency consultation

Part 2 of the ISEPP contains provisions for public authorities to consult with other public authorities prior to the commencement of certain types of development. ISEPP Clauses 13—15 require consultation with Council, as outlined above. The works would not have a substantial impact on council assets or services and would not further restrict public access to the land. As such consultation with council is not required. Flood prone land and listed heritage items would not be affected by the proposal, which is not in a coastal area. As such further consultation with other authorities is not required under ISEPP.

No work is proposed within 200 m of the tributary of Cunningham's Creek, that intersects with the Proposal area. Mitigation measures have been provided, to protect the watercourse from impacts associated with sedimentation, in Section 6.2 of this report. Consultation with DPI Fisheries was not considered necessary for the Proposal.

The Proposal involves the partial acquisition of two parcels of land, namely Lot 2 DP1054376 and Lot 1 DP1090341. The Proponent would consult with affected landholders, prior to commencing construction.

5.3 Aboriginal Cultural Heritage Consultation

Under the Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW, consultation with the Aboriginal community is not a formal requirement. Due to the limited nature of works and potential for environmental impact, consultation was not deemed necessary.

5.4 Community Consultation

Community consultation with affected receivers would be undertaken by the proponent where required.

6. Environmental Assessment

6.1 Topography, Geology and Soils

6.1.1 Existing Environment

The Proposal occurs within the South Western Slopes IBRA Bioregion. A summary of the topography, geology and soils is detailed in Table 6-1 below.

Table 6-1 Summary of topographic, soil and landscape features within the study area.

Category	Study area
Topography	The site is situated within a relatively flat landscape with an elevation ranging from 470 to 475 m ASL. The site is gently sloping from the south-west to the north-east. Murrumburrah Hill is located 2 km east of the proposal area.
Geology	The Proposal area contains the following geology types (NSW Geology Plus, 2020): • Unconsolidated sedimentary rocks of Cainozoic age (0 – 66 million years old).
Soils	The proposal area falls within the Wallendbeen Soil Landscape (Appendix A). The soils in the Proposal area are characterised as Ferrosols, Kurosols, Dermosols and Chromosols. Ferrosol soils are friable and crumbly red soils that are prone to water erosion if left bare. Kurosol soils tend to be strongly acidic and are highly erodible once vegetation has been removed. Dermosol soils are well structured and have a moderate to high erosion risk depending on slope and groundcover. Chromosol soils can be susceptible to soil acidification and soil structure decline if left bare.
Acid sulphate soils	There is a low probability for acid sulphate soils (ASS) to occur throughout the proposal area (ASRIS 2020).

Contaminated land

A search of the NSW EPA's Contaminated Land Record and List of Contaminated Sites Notified to the EPA was carried out on 30th August 2021. There are no identified contaminated lands within or adjacent to the proposed works.

6.1.2 Potential Impacts

Potential impacts to soils during construction include:

- Soil erosion during construction until landforms are restabilised

- Disturbance of soils within the new road alignment, along the rail corridor and around vehicle and plant access points
- Tracking of soils onto surrounding roads causing potential hazards for road users and potential spread of weeds and pathogens
- Potential for soil and sediment contamination.

The proposal would involve earthworks during construction. Excavation of soil and vegetation along the road verge and rail corridor would be required to accommodate the alignment of the proposed bridge. This would potentially result in soil erosion and sedimentation of nearby waterways.

Relocation of services is not expected as part of the proposed works. Any unforeseen service location would have similar impacts to other processes discussed in this section and may be mitigated accordingly.

You could say something like. Operation of construction machinery within the road reserve would also disturb vegetation and the soil surface. Given the distance of the earthworks to the waterway, the risk of sedimentation impacting water quality is low but will be mitigated through the installation of appropriate erosion and sediment controls. Erosion and sediment controls would be implemented for the work during construction.

The proposal may result in several potential contamination sources being introduced to the site and surrounds during construction. Fuel and oil for construction plant and equipment are potential sources of pollution. Fuels and oils for refuelling would be stored in doubled bunded areas in the site compound and refuelling activities would occur in doubled bunded areas within the designated compound site.

Rehabilitation of disturbed areas would be staged to occur during and post construction. Where required, locally sourced native seeding, and mulching may be used to facilitate revegetation and establishment of the site. If concentrated flow paths for stormwater are expected across the rehabilitated areas, jute matting or similar may be used to minimise scouring as warranted.

6.1.3 Safeguards and Mitigation Measures

- If contaminated areas are encountered during construction, appropriate control measures will be implemented to manage the immediate risks of contamination. All other works that may impact on the contaminated area will cease until the nature and extent of the contamination has been confirmed and any necessary site-specific controls or further actions identified in consultation with JHR Environmental Manager/Officer and/or EPA
- A site-specific emergency spill plan will be developed and include spill management measures in accordance with relevant EPA guidelines. The plan will address measures to be implemented in the event of a spill, including initial response and containment, notification of emergency services and relevant authorities
- Spill kits would be available onsite, and all staff would be aware of their location and trained in their use
- Erosion and sediment control measures are to be implemented and maintained to:
    - Prevent sediment moving off-site and sediment laden water entering any watercourse, drainage lines, or drains inlets to reduce water velocity and capture sediment on site

  - Minimise the amount of material transported from site to surrounding pavement surfaces

- Divert clean water around the site (in accordance with the Landcom/Department of Housing Managing Urban Stormwater, Soils and Construction Guidelines (the Blue Book)
- Erosion and sedimentation controls are to be checked and maintained on a regular basis (including clearing of sediment from behind barriers) and records kept and provided on request
- Erosion and sediment control measures are not to be removed until the works are completed, and areas are stabilised
- Work areas are to be stabilised progressively during the works
- A progressive erosion and sediment control plan is to be prepared for the works.

6.2 Hydrology, Catchment Values and Water Quality

6.2.1 Existing Environment

The proposal area lies within the Lachlan catchment area and is regulated under the Water Sharing Plan for the NSW Murray Darling Basin Fractured Rock Groundwater Sources 2012.

A second Strahler Stream Order (SSO) tributary of Cunningham Creek occurs within the north western portion of the Proposal area (

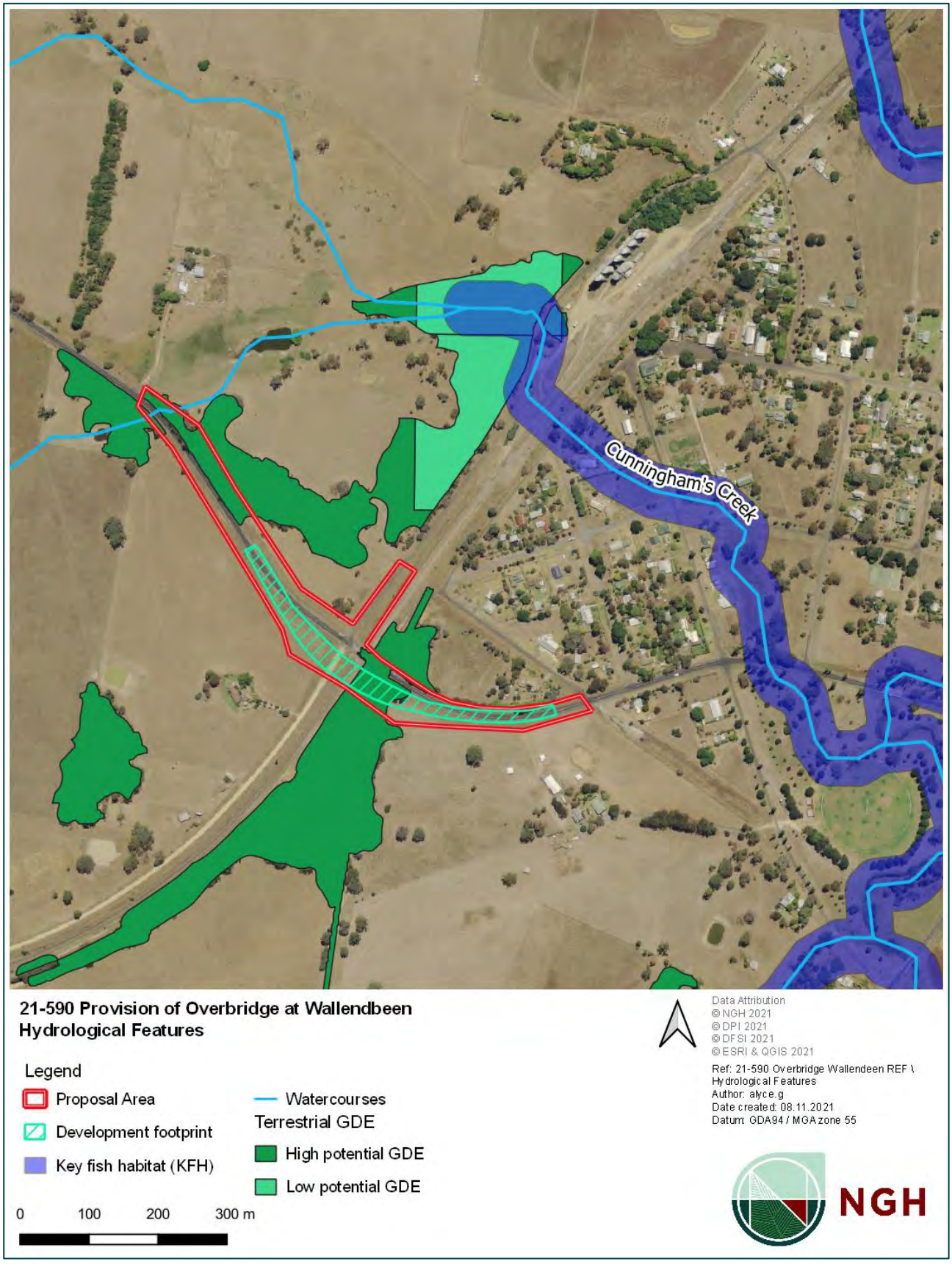


Figure 6-1). Cunningham Creek is also listed as Key Fish Habitat (KFH). No works have been proposed within 200 m of this tributary. With the implementation of the safeguards and mitigation

measures in Section 6.2.3 of this report, the Proposal is unlikely to have an impact on hydrological systems within or nearby to the Proposal area.

Groundwater dependent ecosystems (GDEs)

Aquatic Groundwater Dependant Ecosystems (GDE) are mainly associated with higher order drainage lines and creeks. No aquatic GDEs are mapped within the proposal area. The nearest mapped GDE is Cunningham Creek, located about 285m east of the proposal area.

There are also several areas of high to low terrestrial GDE mapped across the Proposal area (

Figure 6-1).

Flooding

The proposal area is not identified as flood prone land under the Cootamundra LEP 2013. However, short-term localised flooding may occur within the proposal area following extreme rainfall events.

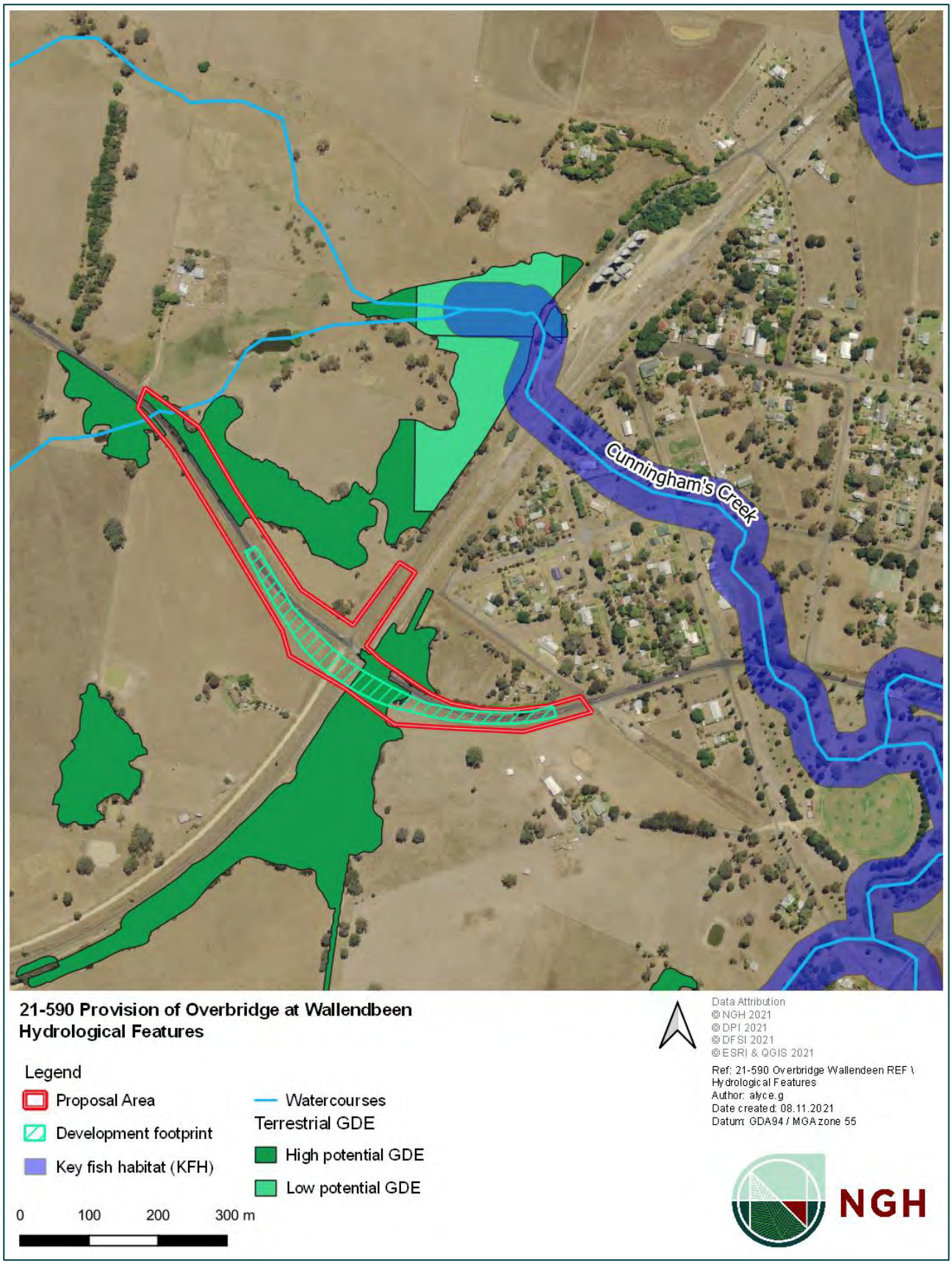


Figure 6-1 Hydrological features within proximity to the Proposal area.

6.2.2 Potential Impacts

No direct impacts to watercourses would occur as a result of the works.

Impacts to surface water quality during construction could occur as a result of excavation works and the removal of vegetation. During these activities there is potential for construction material, chemicals (from construction work, refuelling activities, concrete curing or plant failure), and sediment-laden runoff to leave the work site and adversely impact drainage lines and/or the waterway in the eastern part of the proposal area. The risk of this impact is low, however, given the distance of the waterway (at least 200 metres) from the disturbance works and the proposed mitigation measures which include installation of the erosion and sediment controls and progressive stabilisation and revegetation works.

Surface water flows may also be altered during these activities. Any changes to water flows would be minor and mostly for the purpose of redirecting any clean water around the site. Water flow regimes would be reinstated at completion of the works.

The proposal may require a number of potential contamination sources being present on the site during construction. Fuel and oil for construction plant and equipment are potential sources of contamination. If spilt, there is potential to leach into groundwater or pollute drainage lines or the waterway. Fuels and oils for refuelling would be stored in doubled bunded areas at the site compound, and refuelling activities would occur within the designated compound site at least 200m away from the watercourse. Plant and equipment would be routinely inspected and maintained for leaks during the works. Sewage levels from any toilets and ablutions would be monitored and removed from site regularly.

Flooding of the site during the work is possible after a high rainfall event. In the instance of a flood, a warning would be issued by the NSW State Emergency Service (SES) headquarters on current and expected impacts of flooding in the Murrumbidgee and Lachlan catchments (NSW SES 2019). The Bureau of Meteorology would also issue a severe thunderstorm or severe weather warnings for flash flooding when conditions are expected to be dangerous (NSW SES 2013). Flash flooding warnings are issued within 6 to 24 hours to provide time to move plant and equipment to be above the Probable Maximum Flood height (PMF) (NSW SES 2019).

Rehabilitation of disturbed areas would be staged to occur during and post construction. Operational risks to water quality would remain unchanged from the current conditions once stabilisation has been achieved.

6.2.3 Safeguards and Mitigation Measures

- A Soil and Water Management Plan (SWMP) will be prepared and implemented as part of the Construction Environment Management Plan (CEMP). The SWMP will identify all reasonably foreseeable risks relating to soil erosion and water pollution and describe how these risks will be addressed during construction
- A site-specific Erosion and Sediment Control Plan (ESCP) will be prepared and implemented as part of the Soil and Water Management Plan. The Plan will include arrangements for managing wet weather events, including monitoring of potential high-risk events (such as storms) and specific controls and follow-up measures to be applied in the event of wet weather
- Establish erosion control and sediment capture measures, and maintain them regularly, to divert offsite stormwater, manage onsite stormwater runoff and stabilise stockpiles

- Erosion and sedimentation controls are to be checked and maintained on a regular basis (including clearing of sediment from behind barriers) and records kept and provided on request
- An emergency spill kit is to be kept on site at all times. All staff are to be made aware of the location of the spill kit and trained in its use
- All fuels, chemicals and lubricants are to be stored in an impervious doubled bunded area within the site compound area and at least 200 m away from any watercourse.
- Refuelling of plant and equipment is to occur in impervious double bunded areas within the site compound
- Adequate incident management procedures will be incorporated into the CEMP, including requirement to notify EPA for incidents that cause material harm to the environment
- There is to be no release of dirty water into drainage lines and/or waterways
- Measures to control pollutants from stormwater and spills would be investigated and incorporated in the pavement drainage system at locations where it discharges to the receiving drainage lines. Measures aimed at reducing flow rates during rain events and potential scour would also be incorporated in the design of the pavement drainage system
- Monitor Bureau of Meteorology (BoM) forecast heavy rainfall events in order to allow sufficient time to vacate and prepare the site prior to the commencement of heavy rainfall and flood events.

6.3 Biodiversity

6.3.1 Approach

Threatened Species Evaluation

Database searches were completed for records of Commonwealth and State listed threatened species, populations, and ecological communities. Searches were conducted on the 30th of August 2021 and included the following:

- EPBC Protected Matters Search tool records within 10 km of the study area.
- NSW BioNet Atlas Search within 10 km of the study area.
- Office of Environment and Heritage (OEH) threatened species search by IBRA region.
- NSW Biodiversity Values Map and Threshold Tool.
- DPI Threatened Species Freshwater Indicative Distributions.
- DPI Key Fish Habitat.
- DPIE Vegetation Information System, State Vegetation Mapping.

Relevant literature was reviewed, which included OEH and EPBC Threatened Species Profiles.

No areas of declared outstanding biodiversity value as listed under the BC Act are present within the proposal area. The proposal area does not contain significant wetland communities.

An evaluation of the potential for threatened species to occur and be impacted by the Proposal is shown in Appendix C.

Site Inspection

A field survey was conducted on 16 September 2021 by two NGH ecologists. Floristic surveys were completed to determine the vegetation communities present. The study area was surveyed using the 'random meander' method, as documented by Cropper (1993). The survey included an assessment of the condition and composition of existing vegetation. Hollow bearing trees (HBTs) and potential threatened species habitat were assessed. Opportunistic fauna sightings were also recorded. Species were recorded progressively with abundance recorded within proposal area. Any priority weeds were recorded opportunistically.

State Vegetation Mapping (SVM) is available for the study area. The Riverina SVM (VIS ID_4469) was used to help determine potential Plant Community Types (PCTs) within the study area (DPIE, 2016). Based on the flora species identified during the field survey, vegetation within the proposal area was assigned to a Plant Community Type (PCT) in accordance with the Vegetation Information System Classification Database (OEH) (DPIE, 2016).

Threatened Ecological Communities (TEC) were confirmed based on the relevant Scientific Committee – final determinations for each TEC. Botanical nomenclature follows the PlantNet website (Plantnet, 2021).

6.3.2 Existing Environment

The Proposal area was observed to be largely exotic. Overstorey and midstorey species were absent throughout much of the proposal area, occurring only as isolated patches on either side of Burley Griffin Way. This was attributed to prior disturbance within the road corridor and would explain the high proportion of exotic groundcover species recorded during the site survey.

Isolated patches of woodland were observed within the proposal area. This woodland was found to be consistent with PCT 277: *Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion.*

Overstorey species within the proposal area predominantly consisted of Blakely's Red Gum (*Eucalyptus blakelyi*) and Yellow Box (*Eucalyptus melliodora*). A few isolated Kurrajongs (*Brachychiton populneus*) were also scattered throughout the proposal area. Scattered shrubs, including Hickory Wattle (*Acacia implexa*) and exotic Blackberry (**Rubus spp.*) species, were observed within the woodland patches. The groundcover was observed to be largely exotic. The proposal area contained fallen timber, partially buried rocks, hollow bearing trees and patches of bare ground, covered in leaf litter.

An existing compound site was observed within the Proposal area. The compound site had been cleared of vegetation. No further assessment of the compound site was conducted.

A full flora list is available in Appendix B.

Plant Community Types

The following plant community type was identified within the proposal area (

Figure 6-2):

- PCT 277 *Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion*

A description of this PCT and its condition at the time of survey is provided in Table 6-2.

Figure 6-2 Biodiversity features within the Proposal area.

Table 6-2 Plant community type description.

PCT 277 Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion	
Vegetation Formation	Grassy Woodlands.
Vegetation Class	Western Slopes Grassy Woodlands.
Description	Tall woodland to 20 m high, dominated by Blakely's Red Gum (*Eucalyptus blakelyi*). Yellow Box (*Eucalyptus melliodora*) was also present in lower densities. A sparse shrub layer was observed, containing Hickory Wattle (*Acacia implexa*) and Blackberry (**Rubus spp.*) species. A mid-dense or dense ground cover was observed, dominated by exotic species such as Lambs Tongue (**Plantago lanceolata*), Onion Grass (**Romulea rosea*), Capeweed (**Arctotheca calendula*), Variegated Thistle (**Silybum marianum*) and Common Sowthistle (**Sonchus oleraceus*). Native forbs, such as Fuzzweed (*Vittadinia spp.*), Stonecrop (*Crassula spp.*) and Mountain Burr-Daisy (*Calotis cuneata*) were also recorded. Exotic grasses, such as Phalaris (**Phalaris aquatica*) and Paspalum (**Paspalum dilatatum*) were dominant throughout the PCT. Native grasses, such as Kangaroo Grass (*Themeda triandra*), Windmill Grass (*Chloris truncata*) and *Rytidosperma spp.* were also observed. Overall, the understory of this PCT was observed to be highly exotic, with a very low (<15%) occurrence of native ground or shrub species present. Overstorey species within this PCT consisted of remnant native species.
Condition	Moderate condition. Remnant overstorey species were present; however, the ground and shrub layers were highly exotic (<15% native species).
Approximate extent within study area	Approximately 0.38 ha.
Conservation Status	This PCT is associated with: **BC Act** listed *White Box-Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions* **EPBC Act** listed *White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland* An assessment of this PCT against the BC/EPBC criteria has been provided below.

PCT 277 Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion

Threatened Flora Species

No threatened flora species were identified during the site survey. However, due to the timing of the site survey not all flora species present within the study area may have been visible at the time of survey.

A search of the EPBC PMST, NSW BioNet Atlas and OEH database found that 39 threatened flora species and 4 TECs have the potential to occur within the proposal area. Habitat condition within the road corridor was observed to be low. This was attributed to previous disturbance. Moderate condition woodland habitat was observed within isolated woodland patches in the proposal area. In addition to this, some threatened flora species have shown a preference for disturbed environments. Therefore, threatened flora species could occur within the proposal area.

An assessment of all threatened flora recorded within the locality was made to determine potential occurrence within the proposal area. A habitat evaluation was completed for these species (Appendix C).

Based on this assessment, habitat within the proposal area is considered suitable for the following:

- Groundcover species:
    - *Cullen parvum* Small Scurf-pea BC – E
    - *Swainsona recta* Small Purple–pea BC – E, EPBC– E

Assessments of significant impact have been conducted under the BC Act and EPBC Act (Appendix D and Appendix E). A significant impact was considered unlikely to occur as a result of the proposed works.

Threatened Ecological Communities

The presence of Blakely's Red Gum and Yellow Box tree species indicated the potential for the NSW listed Critically Endangered *White Box-Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions* (Box-gum Woodland) to occur within the proposal area.

Blakely's Red Gum trees are also associated with the federally listed TEC *White Box- Yellow Box – Blakely's Red Gum* grassy woodlands and derived native grassland listed as Critically Endangered.

PCT 277 *Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion* was assessed against the listing requirements under the BC and EPBC Act to determine if the woodland met the criteria for the TEC. The assessment process has been provided in Table 6-3 and Table 6-4. This PCT met the condition thresholds for listing under the NSW state BC Act. This PCT does not meet the EPBC Act listed Grey Box Woodland, due to the exotic nature of the groundcover.

Table 6-3 Assessment criteria for BC listed Box-Gum Woodland.

BC Requirement	Assessment
1. Is, or was previously, at least one of the most common overstorey species White Box, Yellow Box or Blakely's Red Gum?	Yes. Blakely's Red Gum and Yellow Box are common overstorey species.
2. The site is in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands or NSW South Western Slopes Bioregions.	Yes, the site is located within the NSW South Western Slopes.
3. There are no native species in the understorey, and the site is unlikely to respond to assisted natural regeneration.	Yes – native understorey species were observed within this PCT. The site is likely to respond to assisted natural regeneration.
Assessment outcome	**Yes – Box Gum woodland.** An Assessment of Significance (AoS) has been conducted for this TEC (Appendix D).

Table 6-4 Assessment criteria for EPBC listed Box-Gum Woodland.

EPBC Requirement	Assessment
Is, or was previously, at least one of the most common overstorey species White Box, Yellow	Yes, Blakley's Red Gum and Yellow Box are common in the overstorey.

EPBC Requirement	Assessment
Box or Blakely's Red Gum.	
Does the patch have a predominantly native understorey?	No – understorey species within the PCT were observed to be dominated by exotic perennial grasses.
Assessment outcome	**Not the listed ecological community.**

Priority Weeds

One priority weed, Blackberry (**Rubus spp.*), was identified within the proposal area.

The Biosecurity Act dictates that all priority weeds are regulated with a general biosecurity duty to prevent, eliminate or minimise any biosecurity risk they may pose. Any land managers or authorities who deal with any priority has a duty to ensure the risk is prevented, eliminated or minimised, so far as is reasonably practicable. Other exotic flora that were identified within the study area are common within the region and are often encountered within disturbed areas.

Mitigation measures have been recommended to control the spread of weed seed species by the proposed works.

Terrestrial Habitat

During the field surveys, 9 terrestrial birds, 1 terrestrial mammal species and 1 amphibian species were observed/heard within or directly adjacent to the proposal area.

A species list has been provided in Appendix B.

Terrestrial fauna habitat identified within the proposal area is detailed within Table 6-5.

Table 6-5 Terrestrial fauna habitat within the proposal area.

Habitat features	Description	
Box-Gum Woodland.	Remnant Box-Gum woodland occurs in patches throughout the proposal area. Box-Gum woodland provides valuable foraging and breeding habitat for native species.	

Habitat features	Description	
Fallen timber	Fallen timber occurred throughout the proposal area. Fallen timber provides shelter and foraging resources for several native fauna species including small reptiles and ground-foraging birds.	
HBTs	HBTs were recorded throughout the proposal area. HBTs provide nesting and/or roosting habitat for native fauna including microbats, birds and mammals. Many fauna species, including threatened fauna, are dependent on HBTs for breeding and roosting.	
Rocky habitat	Rocky habitat was recorded within the proposal area. Rocky habitat provides shelter for reptiles and small mammals.	

Threatened Fauna

One threatened species, the Superb Parrot (*Polytelis swainsonii*) was observed flying over the proposal area during the site inspection. Due to the extent, variability, and quality of habitat within the proposal area, alongside the timing and seasonality of the site survey, the presence of other threatened fauna cannot be ruled out.

A search of the EPBC PMST, NSW BioNet Atlas and OEH database found that 90 threatened (and/or migratory) fauna species have the potential to occur within 10 km of the proposal area.

A habitat evaluation was completed for these species (Appendix C).

Based on this assessment, the following species have been determined to potentially occur within the proposal area and have the potential to be impacted by the proposed works:

- Woodland birds:
  - *Petroica boodang* Scarlet Robin BC – V
  - *Daphoenositta chrysoptera* Varied Sittella BC – V
  - *Stagonopleura guttata* Diamond Firetail BC - V
  - *Polytelis swainsonii* Superb Parrot BC – V, EPBC – V
  - *Artamus cyanopterus cyanopterus* Dusky Woodswallow BC – V
  - *Climacteris picumnus victoriae* Brown Tree Creeper (Eastern Species) BC – V
  - *Epthianura albifrons* White-fronted Chat BC – V
- Birds of Prey:
  - *Hieraaetus morphnoides* Little Eagle BC – V

Assessments of Significance (AoS) have been completed in Appendix D and Appendix E for these species. A significant impact on these species was determined to be unlikely.

6.3.3 Summary of MNES Searches

MNES	Potential presence at Site
World Heritage Properties	None
National Heritage Places	None
Wetland of International Importance	Banrock station wetland complex 700 – 800 km upstream Hattah–kulkyne Lakes 500 - 600 km upstream. Riverland 600 - 700 km upstream. The Coorong, and Lakes Alexandria and Albert Wetlands 700 - 800 km upstream.
Great Barrier Reef Marine Park	None
Commonwealth Marine Area	None
Listed Threatened EECs	Grey Box Grassy Woodlands and Derived Native Grasslands of South-eastern Australia White Box–Yellow Box–Blakely's Red Gum Grassy Woodland and Derived Native Grassland
Listed Threatened Species	28
Listed Migratory Species	11

No EPBC listed Wetlands of International Importance, Listed Threatened Species or Listed Migratory species were recorded during the site survey.

6.3.4 Potential Impacts

Impacts associated with the work would be confined to the proposal area.

Potential impacts within the proposal area from the proposed works include:

- Native vegetation removal.
- Disturbance and removal of threatened species habitat.
- Erosion, sediment and pollution runoff into waterways.
- Ground disturbance.
- Increases to Key Threatening Processes.
- Spread of priority weeds.

Indirect impacts from the proposed works are likely to predominately include noise and dust. Indirect impacts are expected to be minimal, temporary and occur during daylight hours only.

No operational impacts from the proposed works are expected to occur.

Vegetation loss

Areas of remnant woodland within the proposal area may be subject to clearing and disturbance during the proposed works. Vegetation removal required for the proposal is provided in Table 6-6.

Table 6-6 Vegetation removal during the works.

Vegetation type	Amount within Proposal area (ha)	Amount to be cleared (ha)	Threatened Ecological Community
PCT 277	1.14	0.24	Box-Gum Woodland
Exotic	1.02	0.74	None
Total	**2.16**	**0.98**	**0.24**

The proposal would result in the removal of 0.24 ha of TEC from within the development footprint (Figure 6-3). No HBTs would be impacted by the proposed works.

Vegetation clearing can lead to the introduction and spread of exotic species within native plant communities through the movement of plant machinery and vehicles. Removal of native vegetation, including regenerating and derived communities within disturbed areas can result in:

- Increases in edge effects.
- Reduction of diversity of community stratum.
- Introduction and establishment of weeds.
- Reduction in native vegetation connectivity.
- Increased to fragmentation and isolation of vegetation communities.
- Reduction of availability and quality of habitat for fauna and flora species.

An Assessment of Significance (AoS) was conducted for threatened ecological communities with the potential to occur within the proposal area. A significant impact was considered unlikely, given that:

- The amount of habitat to be removed or disturbed by the proposal is relatively small within the local context. No remnant vegetation or HBTs would be impacted by the proposal.
- No further fragmentation or isolation of habitat would occur. As mentioned in REF the clearing is on the edge of woodland habitats, so no future fragmentation or isolation of habitat would occur.
- No substantial contribution to any Key Threatening Process are expected, if mitigation measures are followed.
- Mitigation measures have been recommended to further reduce impacts to biodiversity.

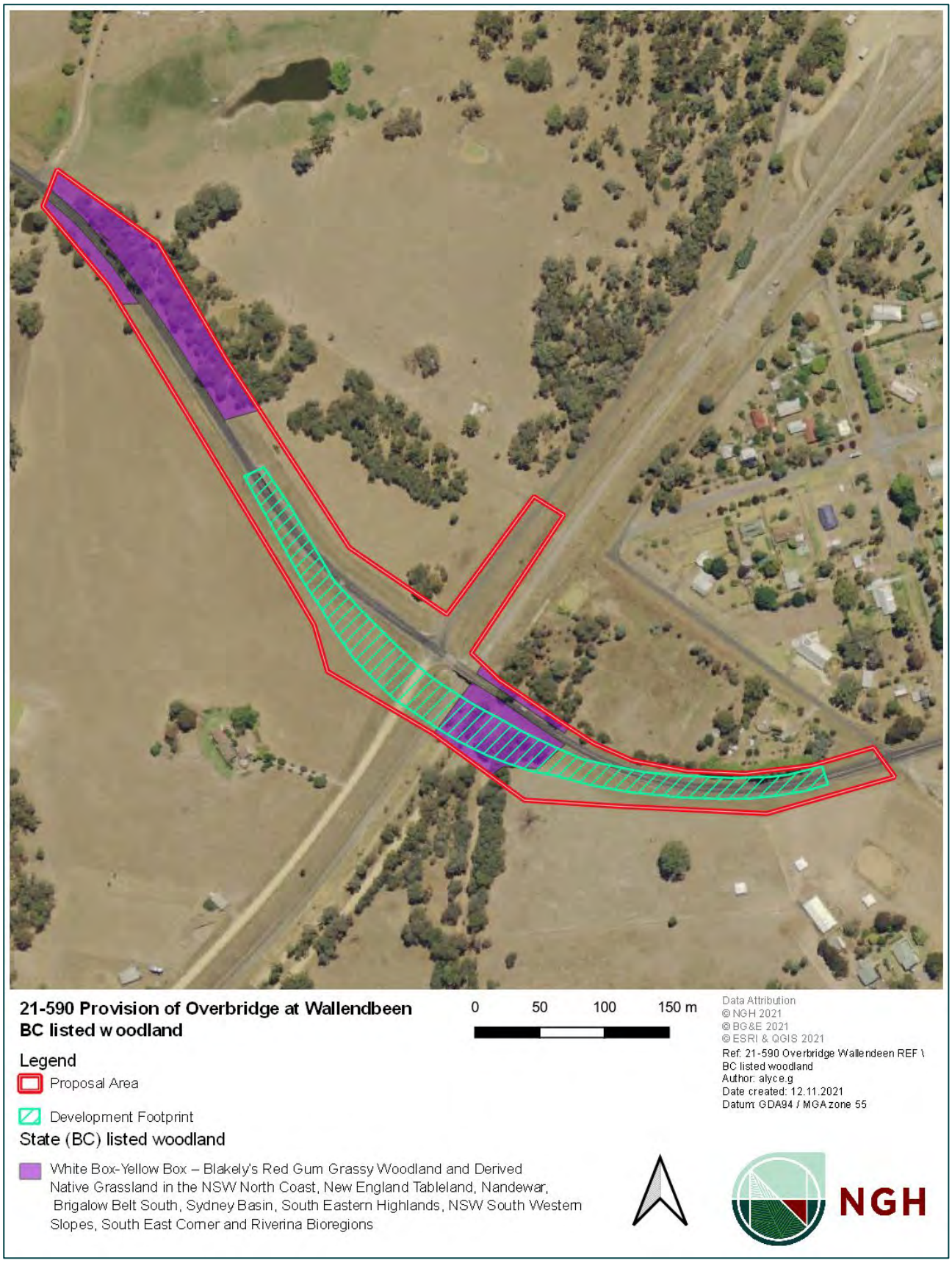


Figure 6-3 Threatened ecological communities (TECs) occurring within the proposal area.

Threatened fauna and flora

Vegetation trimming and removal, and ground disturbance from the movement of plant machinery and vehicles is expected to occur throughout the proposal area. The proposal has the potential to incur the following impacts:

- Disrupt breeding fauna.
- Disturb native vegetation and associated seedbanks, therefore inhibiting potential foraging and breeding habitat for fauna species.
- Incur the invasion and spread of weeds, pathogens and disease.
- Cause temporary indirect disturbance to wildlife during construction (noise, light, spill, vibration).

Remnant vegetation would be retained onsite wherever possible. No HBTs would be removed by the proposed works. Rehabilitation of disturbed areas post completion of works is recommended to facilitate habitat recovery.

Standard mitigation measures including vehicle hygiene, erosion and environmental controls and the implementation of an unexpected finds procedure would mitigate the risk to terrestrial fauna and flora.

Terrestrial Biodiversity

The Proposal is located on land mapped as containing Terrestrial Biodiversity under the Cootamundra LEP (refer to Figure 3-1). During the site survey, the Proposal area was observed to be largely disturbed, which is likely due to prior clearing and construction activities associated with the Burley Griffin Way and the Main Southern Railway line. Exotic groundcover species were observed to be dominant throughout the Proposal area. The proposed works would result in a minor decrease (0.24 ha) of native vegetation from within the Proposal area. Due to the current edge effects experienced by this woodland and its proximity to nearby roads and rail infrastructure, the Proposal is not considered an action that would further fragment or reduce the quality of terrestrial habitat within the Proposal area.

Priority weeds

The proposed works have the potential to introduce and/or spread priority weeds within and out of the proposal area. Mitigation measures have been recommended to control the spread of weed seed species by the proposed works.

6.3.5 Safeguards and Mitigation Measures

- Unexpected threatened species finds: The site induction should include measures to make employees aware of potential threatened flora and fauna during works and understand the procedures if threatened fauna are detected. This would be recorded as a part of the induction procedure and toolbox talks.
- All woodland to be removed is to be surveyed by an ecologist or suitably qualified person, to record and relocate the presence of any nesting fauna.
- No HBTs would be removed during the proposed works. If the proposed design changes to include mature or HBT removal, further assessment would be required prior to commencement of work.
- Vegetation to be retained within the proposal area is to be clearly marked.
- All fallen timber within the proposal area is to be relocated from the development footprint to an adjacent area.

- All weed material containing seed heads, weeds that contain toxins, and weeds that are able to reproduce vegetatively should be disposed of at an appropriate waste management facility or otherwise properly treated to prevent weed growth.
- All herbicides should be used in accordance with the requirements on the label. Any person undertaking pesticide (including herbicide) application should be trained to do so and have the proper certificate of completion/ competency or statement of attainment issued by a registered training organisation.
- Plant equipment and machinery should be cleaned of all biological matter prior to entering the site.

6.4 Waste Minimisation and Management

6.4.1 Policy

Waste management would occur in accordance with the *Waste Avoidance and Resource Recovery Act 2001*. The objectives of this Act are:

a) *To encourage the most efficient use of resources and to reduce environmental harm in accordance with the principles of ecologically sustainable development.*
b) *To ensure that resource management options are considered against a hierarchy of the following order:*
    i. *Avoidance of unnecessary resource consumption.*
    ii. *Resource recovery (including reuse, reprocessing, recycling, and energy recovery).*
    iii. *Disposal.*
c) *To provide for the continual reduction in waste generation.*
d) *To minimise the consumption of natural resources and the final disposal of waste by encouraging the avoidance of waste and the reuse and recycling of waste.*
e) *To ensure that industry shares with the community the responsibility for reducing and dealing with waste.*
f) *To ensure the efficient funding of waste and resource management planning, programs, and service delivery.*
g) *To achieve integrated waste and resource management planning, programs, and service delivery on a State–wide basis.*
h) *To assist in the achievement of the objectives of the Protection of the Environment Operations Act 1997*

6.4.2 Potential Impacts

During construction small quantities of waste are likely to be generated which includes general construction waste, spoil, metal, concrete and bitumen. These wastes would be reused during construction and rehabilitation where possible, or disposed of as building and demolition waste at a local approved waste facility.

Domestic rubbish and raw sewage will be generated by the construction personnel. Both would be contained and removed from site by appropriately licenced contractors. Uncontained rubbish has the potential to attract wildlife which may increase predation pressures on local native wildlife populations, pollute waterways and reduce visual amenity impacting those passing the site.

6.4.3 Safeguards and Mitigation Measures

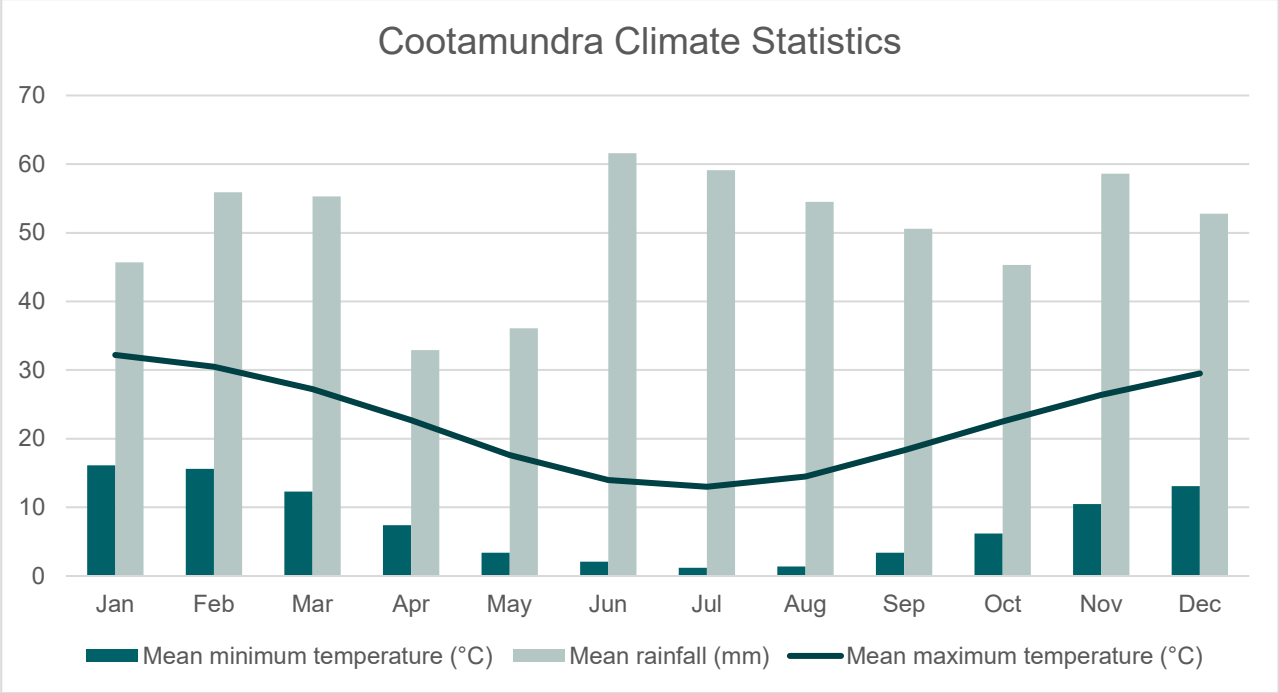
- Waste will be managed in accordance with the CEMP.
- Resource management hierarchy principles are to be followed:
    - Avoid unnecessary resource consumption as a priority.
    - Avoidance is followed by resource recovery (including reuse of materials, reprocessing, and recycling and energy recovery).
    - Disposal is undertaken as a last resort (in accordance with the *Waste Avoidance & Resource Recovery Act 2001*).
- All waste generated by the proposed work to be classified in accordance with the NSW Waste Classification Guidelines Part 1: Classifying Wastes (DECCW 2008).
- All waste generated on site is to be transported off site and disposed of at landfill site approved to accept General Solid Waste (non–putrescible).
- Working areas are to be maintained, kept free of rubbish and cleaned up at the end of each working day.
- Once the works have been completed, all waste material is to be removed from site and disposed of at a licenced facility. Waste is not to be buried on site.

6.5 Climate and Air Quality

6.5.1 Existing Environment

The NSW South Western Slopes Bioregion is dominated by a sub-humid climate characterised by hot summers and no dry season (OEH 2020). A temperate climate, with warm summers, occurs at higher elevations along the eastern boundary of the bioregion adjacent to the South Eastern Highlands Bioregion. Mean annual temperature increases across the bioregion from low temperatures in the south and east to higher temperatures in the north and west (OEH 2020). Rainfall is distributed across the South Western Slopes Bioregion with high (up to around 1200mm) mean annual rainfall in the east, and lower values (around 400mm) for mean annual rainfall in the west (OEH 2020).

The BOM (2021) temperature records available from the nearest climate station at Cootamundra (station number 073142) indicates a mean summer maximum of 32.2°C (January) and a mean winter minimum of 13 °C (July). The mean annual rainfall is 583.3 mm, with June receiving the highest monthly rainfall (31.6 mm).



Air quality in the Proposal area is typical of the surrounding rural region. In generally air quality is high. However, raised dust levels during the dryer months contributes to sporadic reductions in air quality. During autumn the level of particulate matter in the air increases due to the burning of agricultural residues and soil cultivation for cropping. In winter the burning of wood in solid fuel fires contributes to elevated levels of particulate matter in the atmosphere.

6.5.2 Potential Impacts

The proposed work has the potential to generate dust and emissions through construction activities. Excavation of dry soil, unprotected stockpiles, and vegetation removal could cause some dust impacts. However, these are expected to be minimal and short term.

Exhaust emissions from construction plant could similarly cause some minimal impact to air quality. Overall, any reduction in air quality would be highly localised and short in duration and would not cause undue impact on the public or on the surrounding environment. Emissions from construction plant and vehicles would be in accordance with Australian Standards.

Given the low level of dust likely to be generated from the works, no significant impact on potential sensitive receivers is expected. Potential air quality impacts can be readily managed with the implementation of appropriate safeguards and mitigation measures.

6.5.3 Safeguards and Mitigation Measures

- Works will be minimised during windy periods to minimise dust creation and ensure no dust impacts occur along public roads or at sensitive receivers.
- All plant and equipment would be ensured to comply with Part 4 of the Protection of the Environment Operations (Clean Air) Regulation 2002.
- Emissions would be kept within the standards and regulations under the *Protection of the Environment Operations Act 1997*.
- All delivery vehicles would be covered during transportation.
- Vegetation or other materials will not be burnt on site.

- Dust suppression techniques will be utilised in response to visible dust, such as watering dusty work areas and stockpile sites (using non-potable water where available).

6.6 Noise and Vibration

6.6.1 Approach

The proposal is likely to generate noise impacts during construction. No additional operational noise is expected as a result of the proposed works. Hence, no operational noise assessment is considered necessary.

The noise and vibration assessment have been prepared in accordance with the policies and guidance, administered by the Environment Protection Authority (EPA):

- Construction noise:
    - NSW *I*nterim Construction Noise Guideline (ICNG) 2009*.*
    - NSW Noise Policy for Industry (NPI) NSW EPA 2017.

The NSW Interim Construction Noise Guideline (ICNG) 2009 provides guidance on the measurement and management of construction noise impacts. The guideline requires, a quantitative assessment of noise impacts when works are likely to impact an individual or sensitive land use for more than three weeks in total. Whilst this is not the case for this project, a conservative approach to noise has been adopted and a quantitative noise assessment has been conducted.

The ICNG describes the 'noise management levels' (NMLs), for residences and other sensitive receivers. For works during standard working hours, residences are considered noise affected when construction noise is 10 dB(A) above the rating background level (RBL) and 'highly noise affected' when construction noise is above 75 dB(A). Works outside standard working hours affect sensitive receivers when construction noise is 5 dB(A) above the RBL (EPA, 2009).

The ICNG (EPA, 2009) recommend that works outside standard working hours only occur for the following reasons:

- The delivery of oversized plant or structures that police or other authorities determine require special arrangements to transport along public roads.
- Emergency work to avoid loss of life or damage to property or prevent environmental harm.
- Maintenance and repair of public infrastructure where disruption to essential services and/or considerations of worker safety do not allow work within standard hours.
- Public infrastructure works that shorten the length of the project and are supported by the affected community.
- Works where a proponent demonstrates and justifies a need to operate outside the recommended standard hours.

6.6.2 Existing Environment

The existing noise sources are typical of a rural environment. Noise sources include tractors, headers, quad bikes, light vehicles and heavy vehicles. Noise from farm activities including cultivation, sowing, spraying, grain harvest, haymaking and animal movement occur at peak times driven by seasonal conditions. Other noise sources include general residential noise from the township of Wallendbeen.

There are a number of sensitive receivers within 400 m of the proposal area (Figure 6-4). The closest sensitive receiver is located approximately 33 m from the proposal area.

6.6.3 Background Noise

Background noise monitoring has not been conducted for the proposal. NGH has adopted the recommended background levels from the NSW Noise Policy for Industry 2017 (NPI). Table 6-7 describes typical existing background Rural Residential noise levels. These background noise levels were adopted as the RBLs for the purpose of this noise assessment.

Table 6-7 Average background A-weighted sound pressure level (NSW NPI 2017)

	Daytime 0700-1800	Evening 1800-2200	Night-time 2200-0700
Rural Residential	40 dB(A)	35 dB(A)	30 dB(A)

Noise management levels for the proposed activity have been determined in accordance with the NSW ICNG described below and summarised in Table 6-8:

- Standard working hours - 10 dB above background levels.
- Outside standard working hours - 5 dB above background levels.
- Residences receiving noise levels over 75 dB(A) during standard working hours are considered highly noise affected irrespective of the RBL.

Table 6-8 Noise management levels for the proposal.

Daytime NML (dB(A)) (RBL +10 dB(A))	Evening NML (dB(A)) (RBL +5 dB(A))	Night NML (dB(A)) (RBL +5 dB(A))	Highly Noise Affected Level (dB(A))
50 dB(A)	**40 dB(A)**	**35 dB(A)**	**75 dB(A)**

6.6.4 Potential Construction Noise Impacts

The predicted noise level for the proposed work was calculated using the Roads and Maritime Services' Construction Noise Estimator. Construction equipment was modelled for each scenario (Table 6-9). Noise estimates were modelled (Table 6-10) for the noisiest scenario (vegetation removal) which is worst case' and assumes that all plant and machinery are operating continuously and concurrently.

Table 6-9 Construction equipment.

Construction equipment	Sound power level (dB(A))	No. of units
Scenario One: Vegetation Removal		
Light vehicles	105	2
Chainsaws	114	1

Construction equipment	Sound power level (dB(A))	No. of units
Grinder and Mulcher	116	1
Excavator	110	1
Dump trucks	110	1
Scenario Two: Bridge Construction		
Light vehicles	105	2
Water cart	108	1
Crane	113	1
Excavator	110	1
Dump trucks	110	1
Scenario Three: Road Formation Construction		
Light vehicles	105	2
Water cart	108	1
Excavator	110	1
Grader	110	1
Asphalt Sprayer	106	1
Roller	107	1
Dump trucks	110	1

Distance based attenuation was used to determine noise levels at each receiver within 1000 m of the proposed works. The predicted noise levels for the worst case construction scenario are provided in Table 6-10.

Table 6-10 Predicted construction noise levels (vegetation removal, worst case scenario).

Approximate distance (m) from the development	Predicted Noise Level dB(A) Green = no exceedance Yellow = Minor exceedance Orange = Substantial exceedance Red = highly noise effected	Daytime NML (dB(A))	NMLs Exceedance (dB(A))	Description Clearly audible = < 10 dB(A) above NML Moderately intrusive = 10 – 20 dB(A) above NML Highly intrusive = > 20 dB(A) above NML	Recommended additional mitigation measures*
50	74	50	24	Highly Intrusive	N, V, PC, RO
100	68	50	18	Moderately Intrusive	N, V
200	59	50	9	Clearly audible	-
300	54	50	4	Clearly audible	-
400	50	50	0	No exceedance	-

N = Notification, V = Verification, PC = Phone Calls, RO = Respite Officer
**Differences of 2 dB(A) are not audible to the human ear.*

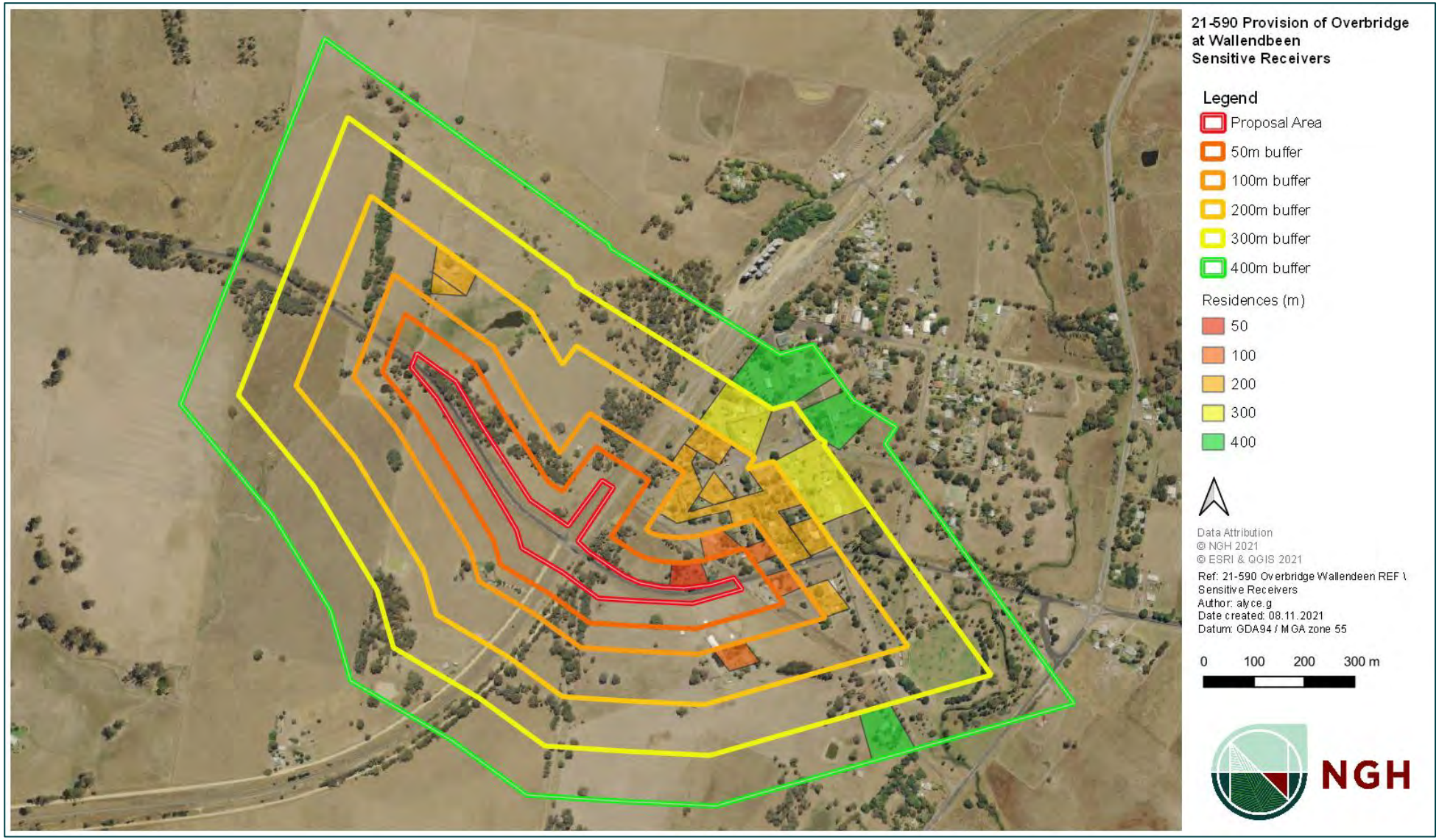


Figure 6-4 Sensitive receivers within proximity to the Proposal area.

Construction works for the proposal would be Monday – Friday between the hours of 7:00 am and 5:00 pm and Saturday 8:00 am-1:00 pm. Construction noise predictions assume all plant items would be operating simultaneously for construction of the proposal. Simultaneous operation is unlikely and as a result any predictions are conservative.

Receivers located within 50 m of the proposal area are predicted to experience exceedances of up to 24 dB(A) above the daytime NML (50) for the noisiest construction scenario, which is described as 'highly noise affected'. Additional mitigation measures have been recommended for these receivers in Section 6.6.5.

Receivers located approximately 100 m from the proposal area are predicted to experience exceedances of up to 18 dB(A) above the daytime NML for the noisiest construction scenario, which is described as 'moderately intrusive' noise. Mitigation measures have been recommended for these receivers in Section 6.6.5.

Receivers located approximately 200 m from the proposal area are predicted to experience slight exceedances of up to 9 dB(A) above the daytime NML. Receivers located 400 m or more from the proposal area would experience no exceedance.

No mitigation measures were considered necessary for receivers located 200 m or further from the Proposal.

Sensitive receivers would be impacted by the peak noise levels for a few days, until works move. Respite periods from construction noise would occur in the morning and afternoon, in accordance with worker mealtimes.

6.6.5 Safeguards and Mitigation Measures

- Works would be restricted to standard working hours. Any proposal to work outside of standard hours would require separate monitoring and approval.
- Avoid operating plant concurrently where possible.
- Briefing of the work team to raise awareness of the proximity of sensitive receivers and the importance of minimising noise emissions.
- Additional mitigation measures recommended for receivers within 100m include:
    - Notification: advanced warning of works and potential disruptions via letterbox drop a minimum of five working days prior to the start of works.
    - Verification: routine checks of noise levels following reasonable complaints.
- Additional mitigation measures for the receiver located within 50m include:
    - Phone calls: detailing relevant information made to identified/affected stakeholders within seven calendar days of proposed work. Where the resident cannot be telephoned, an alternative form of engagement should be used.
    - Respite offer: respite offers should be considered where there are high noise and vibration generating activities near receivers. As a guide, work should be carried out in continuous blocks that do not exceed three hours each, with a minimum respite period of one hour between each block. The actual duration of each block of work and respite should be flexible to accommodate the usage of and amenity at nearby receivers. The purpose of such an offer is to provide residents with respite from an ongoing impact. This measure is evaluated on a project-by-project basis and may not be applicable to all projects.
- The dominant noise sources would be:
    - Switched off when not required.

- Used only when necessary.

6.7 Traffic and Access

6.7.1 Existing Environment

The proposal area occurs just southwest of Wallendbeen, NSW. By road, the proposal area is approximately 147 km northwest of Canberra, via the Barton Highway and Burley Griffin Way. Barton Highway is classified as a state Highway (HW) under the RMS Road Classification hierarchy, while Burley Griffin Way is classified as a Main Road (MR).

Access to the proposal area would be largely via Burley Griffin Way.

6.7.2 Potential Impacts

Works would take place within the Burley Griffin Way Road reserve, acquired land and the rail corridor. During construction, local traffic may experience short delays along Burley Griffin Way during the delivery of plant equipment. Some additional light vehicle movements would occur due to staffing needs for the project. Increases in road traffic would be short term and occur during the construction period of the proposal.

Although the temporary, single-lane overbridge has been constructed, local traffic delays are anticipated to continue. The long-term traffic benefits of the proposed two-lane overbridge would outweigh any short-term traffic impacts associated with the construction phase of the proposal. No noticeable impacts would occur to traffic volumes on the local roads following the completion of the work and during operation.

Access for adjacent private residences, located at the southern end of the development, and emergency vehicles would be maintained throughout construction.

6.7.3 Safeguards and Mitigation Measures

- Existing access for adjoining properties and roads would be maintained at all times during the works, unless otherwise agreed to by the affected property owner.
- Local road users would be informed of any expected traffic or access changes and delays prior to construction commencing.
- All complaints are to be recorded on a Complaints Register and attended to promptly.

6.8 Indigenous Heritage

6.8.1 Approach

An Aboriginal heritage assessment in accordance with the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW* (DECCW 2010 – 'Due Diligence Code') has not been undertaken to inform the preparation of this REF, however reference is made to the Due Diligence Code herein as appropriate. The Due Diligence Code sets out the reasonable and practicable steps which individuals and organisations need to take in order to:

- Identify whether or not Aboriginal objects are, or are likely to be, present in the area
- Determine whether or not their activities are likely to harm Aboriginal objects (if present)
- Determine whether an Aboriginal Heritage Impact Permit (AHIP), application is required.

6.8.2 Database search

A search of relevant heritage registers for Aboriginal sites and places provides an indication of the presence of previously recorded sites. The search will indicate whether any sites are known within or adjacent to the locality. The Aboriginal Heritage Information Management System (AHIMS) is maintained by Heritage NSW and provides a database of previously recorded Aboriginal heritage sites. A search provides basic information about any sites previously identified within a search area. The results of the search are considered valid for 12 months for the purposes of a due diligence level assessment.

A basic search of the study area utilising the map feature of AHIMS was undertaken on 14 December 2021 as follows:

- Lat, Long From : -34.55, 148.09
- Lat, Long To : : -34.5, 148.22
- AHIMS Client Service ID: 647140
- Aboriginal sites: 6
- Aboriginal places: 0

The search results are provided in Appendix A. No registered AHMIS site occurs within the proposal area.

A search of the Native Title database did not identify any claims of native title within the proposal area.

6.8.3 Archaeologically Sensitive Landforms

The proposal area intersects a second Strahler Stream Order tributary of Cunningham Creek, a landform feature recognised under Due Diligence Code to have potential to contain Aboriginal objects and archaeological deposits.

6.8.4 Due Diligence Determination

The *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW* provides a framework for determining whether any Aboriginal heritage assessments are required. In accordance with Section 1 of the *Code*, an assessment was made to determine whether the *Code* applies.

Table 6-11 Determination of whether the Due Diligence Code applies

Item	Answer	Reasoning
Is the activity a Part 3A project declared under s.75B of the EP&A Act?	No	The project is assessed under Part 5.
Is the activity exempt from NPW Act or NPW Regulation?	No	
Will the activity involve harm that is trivial or negligible?	No	

Item	Answer	Reasoning
Do either or both of these apply: • Is the activity in an Aboriginal Place? • Have previous investigations that meet the requirements of this Code identified Aboriginal objects?	No	The AHIMS search identified that no registered site occurs within the proposal area.
Is the activity a low impact one for which there is a defence in the NPW Regulation?	No	Excavation with the use of heavy machinery is required to construct the bridge.
Do you want to use an industry specific code of practice, adopted by the NPW regulation or other due diligence process?	No	
The Due Diligence Code of Practice applies.		

6.8.5 Conclusion

The proposal area does not contain any registered AHIMS sites, intersects a known archaeologically sensitive landform and has potential to contain archaeological deposits. Further assessment in the form of a Due Diligence assessment or an ACHA is therefore required.

6.8.6 Safeguards and mitigation measures

The proposal area should be subject to a formal Aboriginal heritage assessment either under the Due Diligence Code of Practice or as part of an ACHA.

6.9 Historical Heritage

6.9.1 Approach

Heritage register searches were undertaken to identify any non-Indigenous heritage items or places in proximity to the proposal area, with a focus on the proposal area and its immediate surrounding landscape. The following resources were used as part of this assessment:

- The Australian Heritage Database, this includes items on the National and Commonwealth Heritage Lists, to identify any items that are currently listed within or adjacent to the proposal site.
- The NSW State Heritage Inventory (SHI), this includes items on the State Heritage Register and items listed by state agencies and the local heritage listings under the LEP, to identify any items currently listed within or adjacent to the proposal site.

A copy of these database search results is provided in Appendix A.

6.9.2 Database searches

Australian Heritage Database

A search of the Australian Heritage Database was undertaken on the 14 September 2021. There are fourteen items listed under the Cootamundra LGA. No items were located within or adjacent to the proposal area. The closest item was Linda and Ernie Betts Old House, which lies approximately 140 m northeast of the proposal area.

NSW State Heritage Inventory

The *NSW Heritage Act 1977* is a statutory tool designed to conserve the cultural heritage of NSW and regulate development impact on the state's heritage assets. The Act details the statutory requirements for protecting historic buildings and places and includes any place, building, work, relic, movable object, which may be of historic, scientific, cultural, social, archaeological, natural or aesthetic value.

A search of the NSW Heritage register was undertaken on 14th September 2021. A map of heritage items within proximity to the proposal area is provided in Appendix A. No Aboriginal Places, or items of heritage significance under the NSW State Heritage Register or Cootamundra LEP were identified within the proposal area.

Local Heritage

A search of the Cootamundra LEP 2013 was undertaken on 14th September 2021 under Schedule 5 Environmental Heritage. There were 101 items listed. No additional items to those discussed above, were identified within or adjacent to the proposal area. The closest item was a Slab Cottage (I98) located approximately 130 m northeast of the proposal area.

6.9.3 Potential Impacts

No items of historic heritage occur within the development site. The proposed work is unlikely to have an impact on any historic heritage items.

6.9.4 Safeguards and Mitigation Measures

- In the event that any unexpected heritage items, archaeological remains or potential relics of Non–Aboriginal origin are encountered during construction works, works would cease at the location. The find would be immediately reported to the city council, and the regulator in accordance with legislation. No work would commence in the vicinity of the find until any required approvals have been given by the regulator.

6.10 Socio-Economic Impacts

6.10.1 Existing Environment

The proposal area is located on the south western fringe of Wallendbeen, within the Riverina region. The population of the Riverina is estimated to be 169,856 people, accounting for approximately 12.7% of New South Wales agricultural output (RDA, 2018). The 'Transport, Postal and Warehousing' and 'Construction' sectors account for 4.29% and 6.98% of employment within the Riverina region, respectively (RDA, 2018). The emergency removal of the existing bridge has led to a 40-minute detour for commuters and transportation services. The detour has also led to a decrease in tourism within the area, representing a significant socio-economic impact to the town of Wallendbeen (Bogle & Bryant, 2021).

Although the temporary, single-lane overbridge has been constructed and is expected to ease congestion for local road users, traffic signals on either side of the bridge would contribute to increased delays until the proposed two-lane overbridge became operational.

6.10.2 Potential Impacts

Residents, motorists and industries (such as agriculture) within proximity to the works may experience some socioeconomic impacts as part of the proposal through the generation of traffic, noise, air emissions and visual impacts during construction. These would be minor and short term.

The proposed upgrade would facilitate the efficient transportation of motorists and transportation services within the Wallendbeen area, thereby boosting tourism and local economy within the region.

6.10.3 Safeguards and Mitigation Measures

No significant impacts from socio-economic impacts are considered likely. Additional safeguards and mitigation measures are not considered warranted.

6.11 Visual Amenity

6.11.1 Existing Environment

The dominant visual characteristics of the region include forested landscapes, agricultural land (dryland cropping, irrigation and grazing) and gently rolling hills. Dominant built features within the locality include the township of Wallendbeen, nearby farm buildings and sheds, the Main Southern Railway line and major roads such as the Burley Griffin Way.

6.11.2 Potential Impacts

Minor changes to the immediate visual amenity of the development area may occur during the construction period. Visual impacts relate to vegetation removal works, the presence of machinery and materials and the generation of dust on site. During construction, there is also potential for visual amenity to be impacted through construction litter and an untidy construction site (potentially). These impacts would be temporary and confined to the construction period.

The operation of the road post-proposed works is unlikely to lead to any long–term change in the visual amenity, as the existing road is being rehabilitated and not expanded or upgraded. Rehabilitation of the development area would occur upon the completion of the works.

6.11.3 Safeguards and Mitigation Measures

- Working areas and the compound site are to be kept tidy, free of rubbish and cleaned up at the end of each working day.
- Rehabilitation works will take place as soon as possible following the completion of construction.
- Remove temporary erosion and sediment controls from the site once landforms have been assessed as stable.

6.12 Cumulative Impacts

6.12.1 Existing Environment

Cumulative impacts are incremental environmental impacts caused by the combination of past, present, and reasonably foreseeable future actions. Cumulative impacts accumulate over time, from one or more sources. While impacts may be insignificant in isolation, significant impacts may occur when individual effects are considered in combination.

The assessment of cumulative impacts focused on the interaction of the proposed activity with other projects in the vicinity of the proposed activity, and where construction and/or operational timeframes are likely to be concurrent.

A review of the DPIE's Major Project Register conducted on 13 September 2021 identified 1 major project, Inland Rail – Illabo to Stockinbingal, within the LGA.

6.12.2 Potential Impacts

Given that the inland rail project is over 15 km west from the proposal and that the local road network for this proposal is not utilised as part of the construction route for the inland rail project, the cumulative impact is considered to be minimal.

6.12.3 Safeguards and Mitigation Measures

No additional safeguards were considered necessary.

7. Consideration of State and Commonwealth environmental factors

7.1 Environmental Planning and Assessment Regulation 2000 Checklist

In addition to the requirements of the *'Is an EIS required?*', the following factors listed in clause 228(2) of the Environmental Planning and Assessment Regulation 2000 have also been considered to assess the likely impacts of the Proposal on the natural and built environment. This consideration is required to comply with sections 5.5 and 5.7 of the EP&A Act. The clause 228 factors are provided in Appendix F.

7.2 Matters of National Environmental Significance

Under the environmental assessment provisions of the EPBC Act, the following MNES are required to be considered to assist in determining whether the proposal should be referred to Australian Government Department of the Environment.

Table 7-1 Matters of National Environmental Significance

Factor	Impact
Any impact on a World Heritage property? The proposed works would not impact on any World Heritage property.	Nil
Any impact on a National Heritage place? The proposed works would not impact on a National Heritage place.	Nil
Any impact on a wetland of international importance (often called 'Ramsar' wetlands)? The proposed works would not impact on any Ramsar wetlands.	Nil
Any impact on nationally threatened species and ecological communities? The proposed works would not impact on any national threatened species and ecological communities.	Nil
Any impacts on listed migratory species? The proposed works would not impact on any migratory species.	Nil
Any impact on a Commonwealth marine area? The proposed works would not impact on a Commonwealth marine area.	Nil
Any impact to the Great Barrier Reef Marine Park? The proposed works would not impact on the Great Barrier Reef Marine Park.	Nil
Does the proposal involve a nuclear action (including uranium mining)?	Nil

Factor	Impact
The proposed works do not involve any nuclear activities.	
Any impact on a water resource, in relation to coal seam gas development and large coal mining development? The proposed works would not impact on a water resource in relation to coal seam gas development and large coal mining development.	Nil
Additionally, any impact (direct or indirect) on Commonwealth land? The proposed works would not impact (directly or indirectly) on the environment of Commonwealth land.	Nil

8. Summary of Safeguards

Table 8-1 Summary of safeguards and mitigation measures.

Major Issues	Key Environmental Objectives
Topography, geology & soils	• If contaminated areas are encountered during construction, appropriate control measures will be implemented to manage the immediate risks of contamination. All other works that may impact on the contaminated area will cease until the nature and extent of the contamination has been confirmed and any necessary site-specific controls or further actions identified in consultation with JHR Environmental Manager/Officer and/or EPA • A site-specific emergency spill plan will be developed and include spill management measures in accordance with relevant EPA guidelines. The plan will address measures to be implemented in the event of a spill, including initial response and containment, notification of emergency services and relevant authorities • Spill kits would be available onsite, and all staff would be aware of their location and trained in their use • Erosion and sediment control measures are to be implemented and maintained to: o Prevent sediment moving off-site and sediment laden water entering any watercourse, drainage lines, or drains inlets to reduce water velocity and capture sediment on site o Minimise the amount of material transported from site to surrounding pavement surfaces • Divert clean water around the site (in accordance with the Landcom/Department of Housing Managing Urban Stormwater, Soils and Construction Guidelines (the Blue Book) • Erosion and sedimentation controls are to be checked and maintained on a regular basis (including clearing of sediment from behind barriers) and records kept and provided on request • Erosion and sediment control measures are not to be removed until the works are completed and areas are stabilised • Work areas are to be stabilised progressively during the works • A progressive erosion and sediment control plan is to be prepared for the works.
Hydrology, catchment values & water quality	• A Soil and Water Management Plan (SWMP) will be prepared and implemented as part of the Construction Environment Management Plan (CEMP). The SWMP will identify all reasonably foreseeable risks relating to soil erosion and water pollution and describe how

Major Issues	Key Environmental Objectives
	these risks will be addressed during construction • A site-specific Erosion and Sediment Control Plan (ESCP) will be prepared and implemented as part of the Soil and Water Management Plan. The Plan will include arrangements for managing wet weather events, including monitoring of potential high-risk events (such as storms) and specific controls and follow-up measures to be applied in the event of wet weather • Establish erosion control and sediment capture measures, and maintain them regularly, to divert offsite stormwater, manage onsite stormwater runoff and stabilise stockpiles • Erosion and sedimentation controls are to be checked and maintained on a regular basis (including clearing of sediment from behind barriers) and records kept and provided on request • An emergency spill kit is to be kept on site at all times. All staff are to be made aware of the location of the spill kit and trained in its use • All fuels, chemicals and lubricants are to be stored in an impervious doubled bunded area within the site compound area and at least 200 m away from any watercourse. • Refuelling of plant and equipment is to occur in impervious double bunded areas within the site compound • Adequate incident management procedures will be incorporated into the CEMP, including requirement to notify EPA for incidents that cause material harm to the environment • There is to be no release of dirty water into drainage lines and/or waterways • Measures to control pollutants from stormwater and spills would be investigated and incorporated in the pavement drainage system at locations where it discharges to the receiving drainage lines. Measures aimed at reducing flow rates during rain events and potential scour would also be incorporated in the design of the pavement drainage system • Monitor Bureau of Meteorology (BoM) forecast heavy rainfall events in order to allow sufficient time to vacate and prepare the site prior to the commencement of heavy rainfall and flood events.
Biodiversity	• Unexpected threatened species finds: The site induction should include measures to make employees aware of potential threatened flora and fauna during works and understand the procedures if threatened fauna are detected. This would be recorded as a part of the induction procedure and toolbox talks. • All woodland to be removed is to be surveyed by an ecologist or suitably qualified person, to record and relocate the presence of any nesting fauna. • No HBTs would be removed during the proposed works. If the

Major Issues	Key Environmental Objectives
	proposed design changes to include mature or HBT removal, further assessment would be required prior to commencement of work. • Vegetation to be retained within the proposal area is to be clearly marked. • All fallen timber within the proposal area is to be relocated from the development footprint to an adjacent area. • All weed material containing seed heads, weeds that contain toxins, and weeds that are able to reproduce vegetatively should be disposed of at an appropriate waste management facility or otherwise properly treated to prevent weed growth. • All herbicides should be used in accordance with the requirements on the label. Any person undertaking pesticide (including herbicide) application should be trained to do so and have the proper certificate of completion/ competency or statement of attainment issued by a registered training organisation. • Plant equipment and machinery should be cleaned of all biological matter prior to entering the site.
Waste Minimisation & Management	• Waste will be managed in accordance with the Construction Environmental Management Plan. • Resource management hierarchy principles are to be followed: o Avoid unnecessary resource consumption as a priority. o Avoidance is followed by resource recovery (including reuse of materials, reprocessing, and recycling and energy recovery). o Disposal is undertaken as a last resort (in accordance with the *Waste Avoidance & Resource Recovery Act 2001*). • All waste generated by the proposed work to be classified in accordance with the NSW Waste Classification Guidelines Part 1: Classifying Wastes (DECCW 2008). • All waste generated on site is to be transported off site and disposed of at landfill site approved to accept General Solid Waste (non–putrescible). • Working areas are to be maintained, kept free of rubbish and cleaned up at the end of each working day. • Once the works have been completed, all waste material is to be removed from site and disposed of at a licenced facility. Waste is not to be buried on site.
Climate & Air Quality	• Works will be minimised during windy periods to minimise dust creation and ensure no dust impacts occur along public roads or at sensitive receivers. • All plant and equipment would be ensured to comply with Part 4 of the Protection of the Environment Operations (Clean Air) Regulation

Major Issues	Key Environmental Objectives
	2002. • Emissions would be kept within the standards and regulations under the *Protection of the Environment Operations Act 1997*. • All delivery vehicles would be covered during transportation. • Vegetation or other materials will not be burnt on site. • Dust suppression techniques will be utilised in response to visible dust, such as watering dusty work areas and stockpile sites (using non-potable water where available).
Noise & Vibration	• Works would be restricted to standard working hours. Any proposal to work outside of standard hours would require separate monitoring and approval. • Avoid operating plant concurrently. • Briefing of the work team to raise awareness of the proximity of sensitive receivers and the importance of minimising noise emissions. • Additional mitigation measures recommended for receivers within 100m include: o Notification: advanced warming of works and potential disruptions via letterbox drop a minimum of 5 working days prior to the start of works. o Verification: routine checks of noise levels following reasonable complaints. • Additional mitigation measures for the receiver located within 50m include: o Phone Calls: detailing relevant information made to identified/affected stakeholders within seven calendar days of proposed work. Where the resident cannot be telephoned then an alternative form of engagement should be used. o Respite Officer: Respite Offers should be considered made where there are high noise and vibration generating activities near receivers. As a guide work should be carried out in continuous blocks that do not exceed 3 hours each, with a minimum respite period of one hour between each block. The actual duration of each block of work and respite should be flexible to accommodate the usage of and amenity at nearby receivers. The purpose of such an offer is to provide residents with respite from an ongoing impact. This measure is evaluated on a project-by-project basis, and may not be applicable to all projects. • The dominant noise sources would be: o Switched off when not required. o Used only when necessary.
Traffic & Access	• Existing access for adjoining properties and roads would be maintained at all times during the works, unless otherwise agreed to

Major Issues	Key Environmental Objectives
	by the affected property owner. • Local road users would be informed of any expected traffic or access changes and delays prior to construction commencing. • All complaints are to be recorded on a Complaints Register and attended to promptly.
Historic Heritage	• In the event that any unexpected heritage items, archaeological remains or potential relics of Non–Aboriginal origin are encountered during construction works, works would cease at the location. The find would be immediately reported to the city council, and the regulator in accordance with legislation. No work would commence in the vicinity of the find until any required approvals have been given by the regulator.
Aboriginal Heritage	The proposal area should be subject to a formal Aboriginal heritage assessment either under the Due Diligence Code of Practice or as part of an ACHA.
Socioeconomic Impacts	No additional safeguards were considered necessary.
Visual Impacts	• Working areas and the compound site are to be kept tidy, free of rubbish and cleaned up at the end of each working day. • Rehabilitation works will take place as soon as possible following the completion of construction. • Remove temporary erosion and sediment controls from the site once landforms have been assessed as stable.
Cumulative Impacts	No additional safeguards were considered necessary.

Table 8-2 Summary of licences and approvals required

Legal Instrument	Licence or Approval
Roads Act 1993	Road Occupancy Licence from the TfNSW This work would only take place with approval from the Transport Management Centre under the terms of a road occupancy licence. Licence takes up to 10 days to be approved so must apply at least 10 days before works are to commence.

9. Conclusion

9.1.1 The precautionary principle

According to the precautionary principle, if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.

This REF has been prepared utilising the precautionary principle. That is, if threats are perceived as possibly leading to serious or irreversible environmental damage, then either the proposed works would not go-ahead, or the development would be modified to ensure that such serious threats do not exist. The assessment of potential risks associated with the proposed works assessed in this REF are considered to be adequately manageable.

9.1.2 Inter-generational equity

Intergenerational and intra-generational equity requires that the present generation will ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of the present and future generations. The present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.

The impacts of the proposed works are likely to be localised and temporary and would not significantly diminish resources and nature conservation values available for the use by future generations. The Proposal would provide improved safety, access and connectivity along Freemans Drive and surrounding areas. It is unlikely that the proposed works would impact on natural features to a level that would impact on the health, diversity or productivity of the environment to a level that would impact on future generations.

9.1.3 Conservation of biological diversity and ecological integrity

Conversation of biological diversity and ecological integrity are fundamental consideration of ESD.

An assessment of the existing local environment has been undertaken in order to identify and manage any potential impacts of the proposal on local biodiversity. The impacts of the Proposal on local populations of threatened species, threatened communities and their habitats have been assessed in detail in section 6.3.

The proposed works would result in the removal of approximately 0.03ha of vegetation in total. This includes native vegetation classified as PCT 1915 (Blue Gum - Bangalay – Turpentine/Cheese Tree – Lilly Pilly tall moist forest on coastal flats of the northern Sydney Basin). No hollow bearing trees would be required to be removed for the construction of the Proposal.

The Proposal would not have a significant impact on the PCT or any threatened flora species.

9.1.4 Appropriate valuation of environmental factors

This principle requires that “costs to the environment should be factored into the economic costs of a proposal”.

9.2 Justification of the Proposal

This REF has examined the environmental consequences of the proposal and identified mitigation measures for factors which have the potential to experience adverse impacts. Requirements imposed terms of implementation of these mitigation measures would increase both the capital and operating costs of the proposal. This signifies that environmental resources have been given appropriate valuation.

The proposed replacement of the overbridge along Burley Griffin Way is subject to assessment under Part 5 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 proposed activity. This has included consideration of conservation agreements and plans of management under the NPW Act, critical habitat, impacts on threatened species, populations and ecological communities and their habitats and other protected fauna and native plants. It has also considered potential impacts to matters of national environmental significance listed under the Federal EPBC Act.

No significant impact on state or federally listed threatened biota is considered likely. A Species Impact Statement is not required. A Referral to the federal Environment minister is not considered necessary.

All predicted environmental impacts can be avoided, mitigated and/or managed such that the proposal would not lead to significant impacts on the environment.

The proposal is unlikely to have a significant impact on the environment. Temporary and minor noise and traffic impacts are likely to arise as a result of the proposal. The identified safeguards and management measures for potential environmental impacts ensure that these impacts associated with the proposal do not have a significant impact on the environment and biodiversity within the proposal area.

The long–term benefits of the proposal are considered to outweigh the likely environmental impacts. On balance, the proposal is considered justified.

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Appendix A Background Searches

A.1 Bionet results

Threatened species recorded within 10km of the Proposal Area (Bionet, 2021)

Scientific	Common Name
Macrotis lagotis	Bilby
Melithreptus gularis gularis	Black-chinned Honeyeater (eastern subspecies)
Climacteris picumnus victoriae	Brown Treecreeper (eastern subspecies)
Stagonopleura guttata	Diamond Firetail
Artamus cyanopterus cyanopterus	Dusky Woodswallow
Melanodryas cucullata cucullata	Hooded Robin (south-eastern form)
Hieraaetus morphnoides	Little Eagle
Anthochaera phrygia	Regent Honeyeater
Chthonicola sagittata	Speckled Warbler
Petaurus norfolcensis	Squirrel Glider
Polytelis swainsonii	Superb Parrot
Lathamus discolor	Swift Parrot
Daphoenositta chrysoptera	Varied Sittella
Epthianura albifrons	White-fronted Chat

Australian Government

Department of Agriculture, Water and the Environment

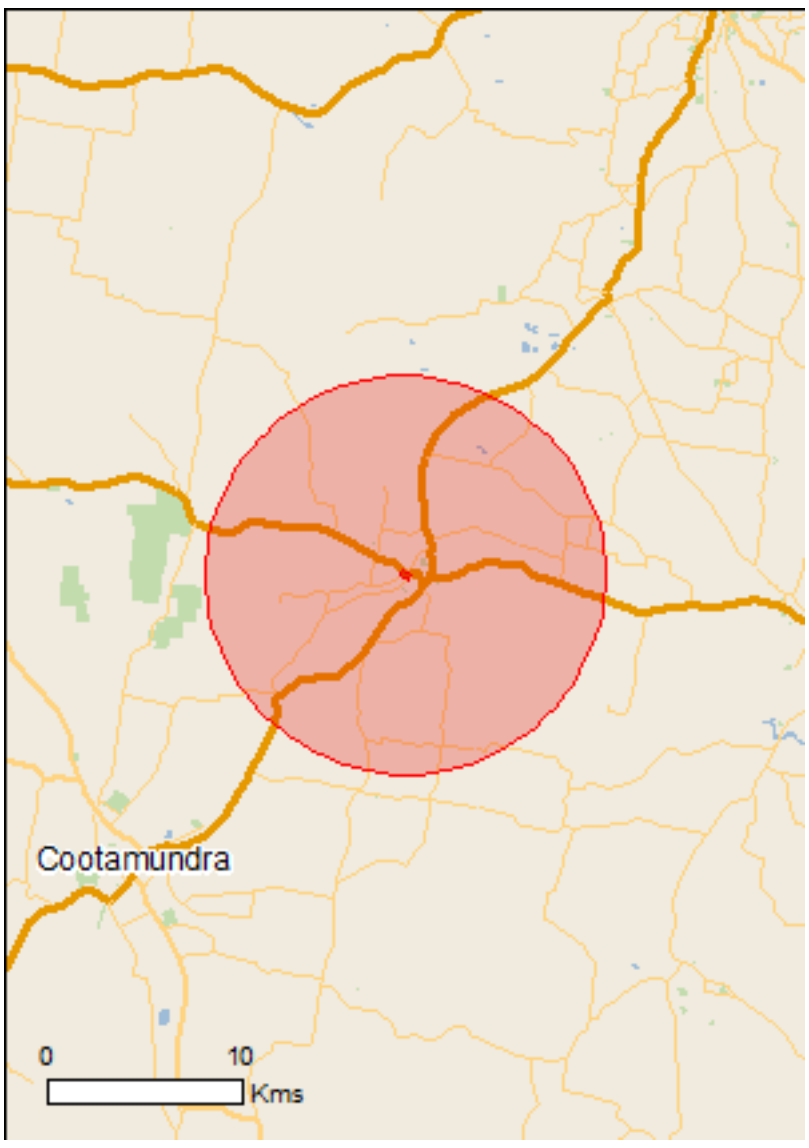
EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

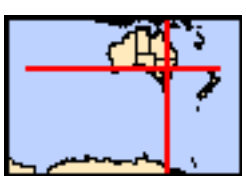
Information is available about Environment Assessments and the EPBC Act including significance guidelines, forms and application process details.

Report created: 30/08/21 15:42:49



Coordinates

Buffer: 10.0Km



Summary

Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	4
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	2
Listed Threatened Species:	28
Listed Migratory Species:	11

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at http://www.environment.gov.au/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Land:	1
Commonwealth Heritage Places:	None
Listed Marine Species:	17
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

State and Territory Reserves:	1
Regional Forest Agreements:	None
Invasive Species:	25
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar) [Resource Information]

Name	Proximity
Banrock station wetland complex	700 - 800km upstream
Hattah-kulkyne lakes	500 - 600km upstream
Riverland	600 - 700km upstream
The coorong, and lakes alexandrina and albert wetland	700 - 800km upstream

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Name	Status	Type of Presence
Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	Endangered	Community likely to occur within area
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community likely to occur within area

Listed Threatened Species [Resource Information]

Name	Status	Type of Presence
Birds		
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Species or species habitat known to occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat known to occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species

Name	Status	Type of Presence
		habitat may occur within area
Polytelis swainsonii Superb Parrot [738]	Vulnerable	Species or species habitat known to occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Fish		
Maccullochella macquariensis Trout Cod [26171]	Endangered	Species or species habitat may occur within area
Maccullochella peelii Murray Cod [66633]	Vulnerable	Species or species habitat may occur within area
Macquaria australasica Macquarie Perch [66632]	Endangered	Species or species habitat may occur within area
Frogs		
Litoria raniformis Growling Grass Frog, Southern Bell Frog, Green and Golden Frog, Warty Swamp Frog, Golden Bell Frog [1828]	Vulnerable	Species or species habitat may occur within area
Insects		
Synemon plana Golden Sun Moth [25234]	Critically Endangered	Species or species habitat may occur within area
Mammals		
Chalinolobus dwyeri Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	Species or species habitat may occur within area
Dasyurus maculatus maculatus (SE mainland population) Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat may occur within area
Nyctophilus corbeni Corben's Long-eared Bat, South-eastern Long-eared Bat [83395]	Vulnerable	Species or species habitat likely to occur within area
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT) Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Vulnerable	Species or species habitat likely to occur within area
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour may occur within area
Plants		
Ammobium craspedioides Yass Daisy [20758]	Vulnerable	Species or species habitat may occur within area
Leucochrysum albicans subsp. tricolor Hoary Sunray, Grassland Paper-daisy [89104]	Endangered	Species or species habitat may occur within area
Prasophyllum petilum Tarengo Leek Orchid [55144]	Endangered	Species or species habitat may occur within area
Senecio macrocarpus Large-fruit Fireweed, Large-fruit Groundsel [16333]	Vulnerable	Species or species habitat may occur within area

Name	Status	Type of Presence
Swainsona recta		
Small Purple-pea, Mountain Swainson-pea, Small Purple Pea [7580]	Endangered	Species or species habitat may occur within area
Reptiles		
Aprasia parapulchella		
Pink-tailed Worm-lizard, Pink-tailed Legless Lizard [1665]	Vulnerable	Species or species habitat likely to occur within area
Delma impar		
Striped Legless Lizard, Striped Snake-lizard [1649]	Vulnerable	Species or species habitat may occur within area

Listed Migratory Species [Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Migratory Marine Birds		
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Hirundapus caudacutus		
White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Motacilla flava		
Yellow Wagtail [644]		Species or species habitat may occur within area
Myiagra cyanoleuca		
Satin Flycatcher [612]		Species or species habitat likely to occur within area
Rhipidura rufifrons		
Rufous Fantail [592]		Species or species habitat may occur within area
Migratory Wetlands Species		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat may occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos		
Pectoral Sandpiper [858]		Species or species habitat may occur within area
Gallinago hardwickii		
Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Numenius madagascariensis		
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Commonwealth Land [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Name
Commonwealth Land - Telstra Corporation Limited

Listed Marine Species [Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Chrysococcyx osculans Black-eared Cuckoo [705]		Species or species habitat likely to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat may occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat likely to occur within area

Name	Threatened	Type of Presence
Numenius madagascariensis		
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Rhipidura rufifrons		
Rufous Fantail [592]		Species or species habitat may occur within area
Rostratula benghalensis (sensu lato)		
Painted Snipe [889]	Endangered*	Species or species habitat likely to occur within area

Extra Information

State and Territory Reserves [Resource Information]

Name	State
Jindalee	NSW

Invasive Species [Resource Information]

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resouces Audit, 2001.

Name	Status	Type of Presence
Birds		
Alauda arvensis		
Skylark [656]		Species or species habitat likely to occur within area
Carduelis carduelis		
European Goldfinch [403]		Species or species habitat likely to occur within area
Columba livia		
Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Passer domesticus		
House Sparrow [405]		Species or species habitat likely to occur within area
Passer montanus		
Eurasian Tree Sparrow [406]		Species or species habitat likely to occur within area
Sturnus vulgaris		
Common Starling [389]		Species or species habitat likely to occur within area
Turdus merula		
Common Blackbird, Eurasian Blackbird [596]		Species or species habitat likely to occur within area
Mammals		
Bos taurus		
Domestic Cattle [16]		Species or species habitat likely to occur within area

Name	Status	Type of Presence
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Lepus capensis Brown Hare [127]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Asparagus asparagoides Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]		Species or species habitat likely to occur within area
Austrocylindropuntia spp. Prickly Pears [85132]		Species or species habitat likely to occur within area
Cytisus scoparius Broom, English Broom, Scotch Broom, Common Broom, Scottish Broom, Spanish Broom [5934]		Species or species habitat likely to occur within area
Genista monspessulana Montpellier Broom, Cape Broom, Canary Broom, Common Broom, French Broom, Soft Broom [20126]		Species or species habitat likely to occur within area
Lycium ferocissimum African Boxthorn, Boxthorn [19235]		Species or species habitat likely to occur within area
Nassella neesiana Chilean Needle grass [67699]		Species or species habitat likely to occur within area
Nassella trichotoma Serrated Tussock, Yass River Tussock, Yass Tussock, Nassella Tussock (NZ) [18884]		Species or species habitat likely to occur within area
Pinus radiata Radiata Pine Monterey Pine, Insignis Pine, Wilding Pine [20780]		Species or species habitat may occur within area
Rubus fruticosus aggregate Blackberry, European Blackberry [68406]		Species or species habitat likely to occur within area
Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497]		Species or species habitat likely to occur within area
Solanum elaeagnifolium Silver Nightshade, Silver-leaved Nightshade, White Horse Nettle, Silver-leaf Nightshade, Tomato Weed, White Nightshade, Bull-nettle, Prairie-berry, Satansbos, Silver-leaf Bitter-apple, Silverleaf-nettle, Trompillo [12323]		Species or species habitat likely to occur within area

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species distributions have been derived through a variety of methods. Where distributions are well known and if time permits, maps are derived using either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc) together with point locations and described habitat; or environmental modelling (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where very little information is available for species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc). In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Coordinates

-34.52643 148.151744,-34.527994 148.154791,-34.527994 148.154791,-34.529762 148.153181,-34.528003 148.150102,-34.52643 148.151744

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact Us page.

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wj	WALLENDBEEN	Erosional

Landscape—80.7 km^2, undulating rises and low hills formed on Cambrian volcanics. Elevation 440–531 m, local relief 20–60 m, slopes 3–10%. Extensively cleared mid-high Eucalypt woodlands over improved pastures.

Soils—moderately deep (<100 cm), moderately well-drained Haplic Eutrophic Red Chromosols (Non-calcic Brown Soils) and Dermosols (Euchrozems) on upper slopes and crests. Deep (<150 cm), well-drained Haplic Eutrophic Red Dermosols (Euchrozems) on mid to upper slopes. Moderately deep to deep (50–150 cm), imperfectly drained Mottled Mesotrophic Brown Chromosols (Brown Podzolic Soils) on lower slopes. Moderately deep to deep (50–150 cm), poorly drained Bleached-Mottled Mesotrophic Brown Sodosols (Solodics) in drainage depressions. Moderately deep (<100 cm), imperfectly drained Stratic Rudosols (Alluvial Soils) along some drainage lines.

Landscape Variant—wja—15.8 km^2, undulating landscape with chemically poor soils from predominantly ultramafic parent materials.

Qualities and Limitations—minor rock outcrop (localised), potential recharge and discharge (localised) area, salinity hazard (localised), engineering hazard (localised). Low wet bearing strength–subsoil (localised), high organic matter–topsoil (localised), high plasticity–subsoil (localised).

LOCATION AND SIGNIFICANCE

This soil landscape is found over 96.5 km^2 of undulating low hills and rises north-east of Cootamundra, within the Jindalee physiographic region. It is highly productive agricultural land. The type location is 5 km west of Wallendbeen towards Stockinbingal near Te-aro Station (Map reference: 6 **01** 000 E, 61 **81** 000 N).

LANDSCAPE

Geology

Soils have formed on Cambrian volcanic rocks associated with the Jindalee Group. This group consists of metamorphosed sedimentary and basaltic rocks, amphibolites and ultramafic rocks. Parent materials include mafic metavolcanics, metaquartzite, black and grey chert, quartz magnetite rocks, banded iron formation, quartz mica schist, serpentinite, harzburgite, pyroxenite, plagioclase-pyroxene porphyry, talc carbonate rocks, gabbro and metabasalt. Windblown clay addition (parna) may also have contributed and been incorporated into the soil materials.

Landform/topography

Undulating rises and low hills with slopes <3% on waxing crests, from 3–10% on waxing hillslopes, and <3% on lower slopes and footslopes. Elevation ranges from 440–531 m with local relief from 20–60 m. Slope lengths are typically 700–1500 m. Minor rock outcrop (2–10%) occurs on some upper slopes and crests. Stream channels are erosional, tributary and very widely spaced. Variant **wja** occurs on similar undulating country north of Wallendbeen.

Climate

Climatic zone 2C.

Vegetation

Extensively cleared mid-high Eucalypt woodlands over sparse shrubs and improved pastures.

The majority of the native vegetation has been cleared and only remnants remain. *Eucalyptus blakelyi* (Blakely's red gum) and *E. melliodora* (yellow box) communities dominate this landscape. *E. bridgesiana* (apple box) occurs on upper hillslopes.

The understorey consists of a sparse shrub layer along road corridors over improved pastures and annual forbs. Species include *Acacia* spp. (wattle) over tussock grasses which include *Phalaris aquatica* (phalaris), *Lolium rigidum* (wimmera ryegrass), *Elymus scaber var. scaber* (common wheatgrass) and annual forbs.

Land use

Mostly used for growing winter cereals and oilseed crops, and for sheep and cattle grazing on improved pastures.

Land degradation

Very resilient soil landscape. Rising watertables along some drainage lines have resulted in saline outbreaks and tree dieback. Complex regional geology also contributes to salinity problems by influencing groundwater flow. Minor rill and sheet erosion have been observed on some cultivated lands.

SOILS

Type Profiles

Type Profile 1: Upper slope.
Dominance: 60% of landscape.
Soil Classification: Haplic Eutrophic Red Dermosol; medium, non-gravelly, clay loamy, clayey, very deep, 1 (Euchrozem).
Drainage: Well-drained.
Measured Depth: 150 cm.
Estimated Rooting Depth: >150 cm.
Location: 5 km west of Wallendbeen towards Stockinbingal (Map reference: 6 **00** 945 E, 61 **80** 566 N).
Land use: Voluntary/native pasture.
Surface Condition: Firm, coarse fragments are not evident.
Lab Testing: Yes.
SALIS Data Card: 645.

Soil material	Description
Layer 1, A_1 horizon, depth 0–0.1 m, **wj1**.	Dark reddish-brown fine sandy clay loam, weak pedality, 5–10 mm polyhedral smooth-faced peds, moderately firm force, field pH 6.5, moderately moist, coarse fragments not evident, gradual (50–100 mm) boundary to...
Layer 2, B_1 horizon, depth 0.1–0.3 m, **wj2**.	Dark reddish-brown clay loam, moderate pedality, 50–100 mm prismatic smooth-faced peds, moderately firm force, field pH 7.0, moderately moist, coarse fragments not evident, gradual (50–100 mm) boundary to...
Layer 3, B_{21} horizon, depth 0.3–0.6 m, **wj3**.	Red light clay, moderate pedality, 50–100 mm prismatic smooth-faced peds, very firm force, field pH 7.0, moderately moist, coarse fragments not evident, gradual (50–100 mm) boundary to...
Layer 4, B_{22} horizon, depth 0.6–1 m, **wj3**.	Dark red light medium clay, moderate pedality, 50–100 mm prismatic smooth-faced peds, very firm force, field pH 7.0, moderately moist, coarse fragments not evident, gradual (50–100 mm) boundary to...
Layer 5, B_{23} horizon, depth 1 to 1.5 m, **wj3**.	Dark reddish-brown medium clay, 50–100 mm prismatic smooth-faced peds, very firm force, field pH 7.0, moderately moist, coarse fragments not evident, layer continues.

Notes on laboratory testing

Moderate cation exchange capacity with moderate levels of exchangeable calcium and magnesium and high levels of potassium. Cation balance may result in low supply of calcium and magnesium. Available phosphorous is very low, and acidity is slight with a moderate to high buffering capacity. Infiltration is moderately high through well-structured soils, and available waterholding capacity is very high.

Type Profile 2: Lower slope.
Dominance: 30% of landscape.
Soil Classification: Mottled Mesotrophic Brown Chromosol; thick, non-gravelly, loamy, clayey, moderate, 3 (Brown Podzolic Soil).
Drainage: Imperfect.
Measured Depth: 90 cm.
Estimated Rooting Depth: >90 cm.
Location: 4 km south-west of Wallendbeen (Map reference: 6 **04** 071 E, 61 **75** 382 N).
Land use: Timber/scrub/unused.
Surface Condition: Firm, coarse fragments are not evident.
Lab Testing: No.
SALIS Data Card: 303.

Soil material	Description
Layer 1, A_{11} horizon, depth 0–0.05 m, **wj1**.	Brown fine sandy loam, weak pedality, smooth-faced peds, field pH 5.5, moist, coarse fragments not evident, gradual (50–100 mm) boundary to...
Layer 2, A_{12} horizon, depth 0.05–0.3 m, **wj1**.	Brown fine light sandy clay loam, weak pedality, smooth-faced peds, field pH 6.5, moist, coarse fragments not evident, clear (20–50 mm) boundary to...
Layer 3, B_{21} horizon, depth 0.3–0.5 m, **wj4**.	Dark yellowish-brown (with <2% yellow mottles) light medium clay, moderate pedality, smooth-faced peds, field pH 6.0, moist, coarse fragments not evident, gradual (50–100 mm) boundary to...
Layer 4, B_{22} horizon, depth 0.5–0.9 m, **wj4**.	Yellowish-brown (with 2–10% orange mottles) medium clay, strong pedality, smooth-faced peds, field pH 6.5, moderately moist, coarse fragments not evident, soil continues.

Soil variation

Haplic Red Dermosols tend towards Mottled Brown Chromosols on lower slopes. Soils in poorly drained areas tend to be sodic. The remaining 10% of the landscape is made up of Haplic Red Chromosols (Non-calcic Brown Soils) and rock outcrop on upper slopes, and minor occurrences of Sodosols and Rudosols in lower lying drainage areas. Landscape variants occur on predominantly ultramafic parent materials, though these materials do occur elsewhere in the landscape. Variant **wja** occurs on undulating country similar to the larger unit.

QUALITIES AND LIMITATIONS

Landscape

Minor rock outcrop (localised), potential recharge and discharge (localised) area, salinity hazard (localised), engineering hazard (localised).

Fertility assessment

High generally. Areas of lower fertility associated with ultramafic parent materials.

Erodibility and erosion hazard

Low to moderate erodibility with moderate hazard.

Urban capability

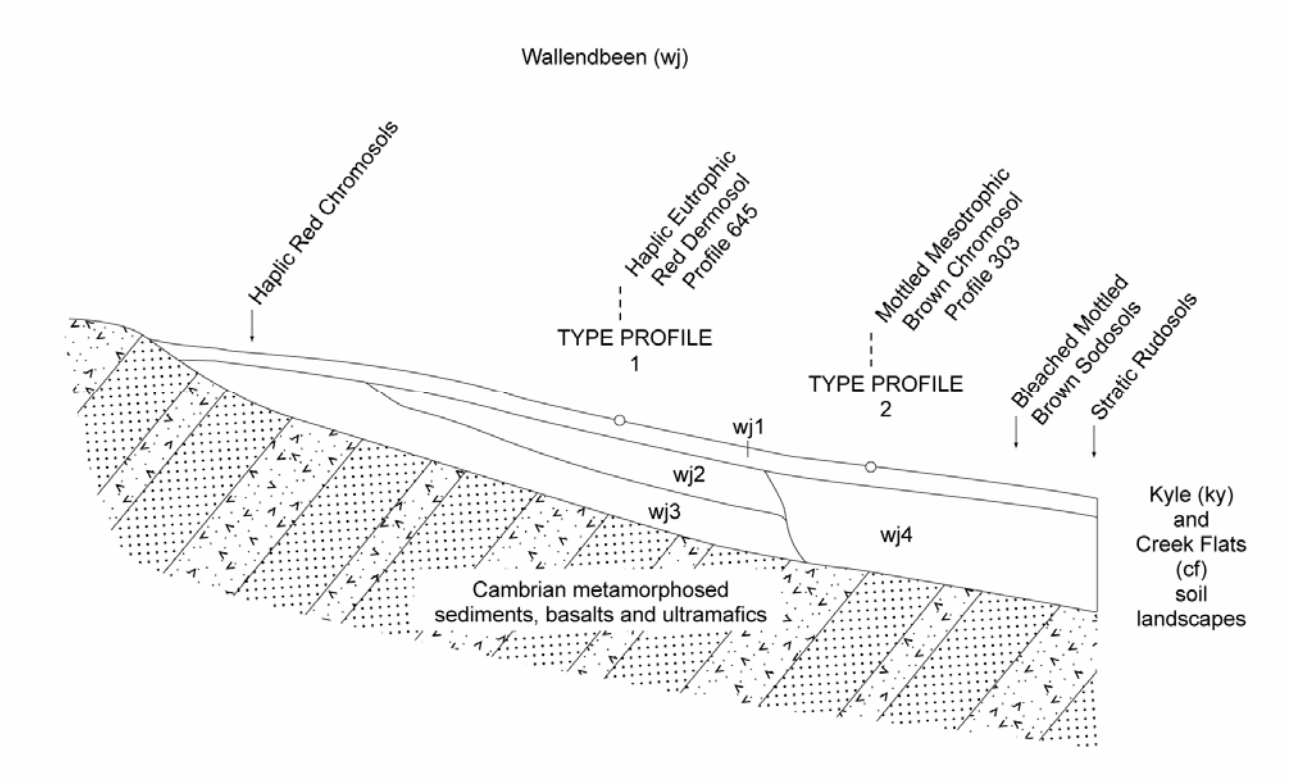
Low limitations for urban development, although moderate limitations exist associated with recharge resulting in discharge and saline outbreaks in low-lying areas. These can pose problems for road and building foundation stability. Some subsoils of the adjacent soil landscape Muttama Creek (**mc**) are sodic/dispersive. Care should be taken not to allow excessive recharge to watertables in this landscape. Septic absorption potential for tested materials is very low.

Rural capability and sustainable land use recommendations

Rural Land Capability class III, with some class IV on upper slopes. This landscape is generally suitable for grazing and cropping, but cultivation is expected to result in degradation of soil structure without appropriate management. Crop rotation and the periodic establishment of deep-rooted perennial pastures are encouraged. Areas affected by sheet erosion may benefit from the establishment of contour banks. Saline discharge areas are best fenced off and planted with salt-tolerant species. SoilWorks codes for materials tested were J for the topsoil and C for subsoils. Soil materials influenced by windblown clay maybe saline, and groundwater flow can be unpredictable. Conservative stocking rates are encouraged to maintain groundcover and reduce the risk of sheet erosion.

Dominant soil materials

wj1: dark reddish-brown weakly structured sandy clay loam (topsoil—A_1 horizon).
wj2: dark reddish-brown moderately structured clay loam (subsoil—B_1 horizon).
wj3: red moderately structured clay (subsoil—B_2 horizon).
wj4: mottled yellowish-brown strongly structured clay (subsoil—B_2 horizon).



Distribution diagram of Wallendbeen soil landscape illustrating the occurrence and relationship of dominant soil materials.

AHIMS Web Services (AWS)
Search Result

Your Ref/PO Number : 21-590 Provision of overb

Client Service ID : 647140

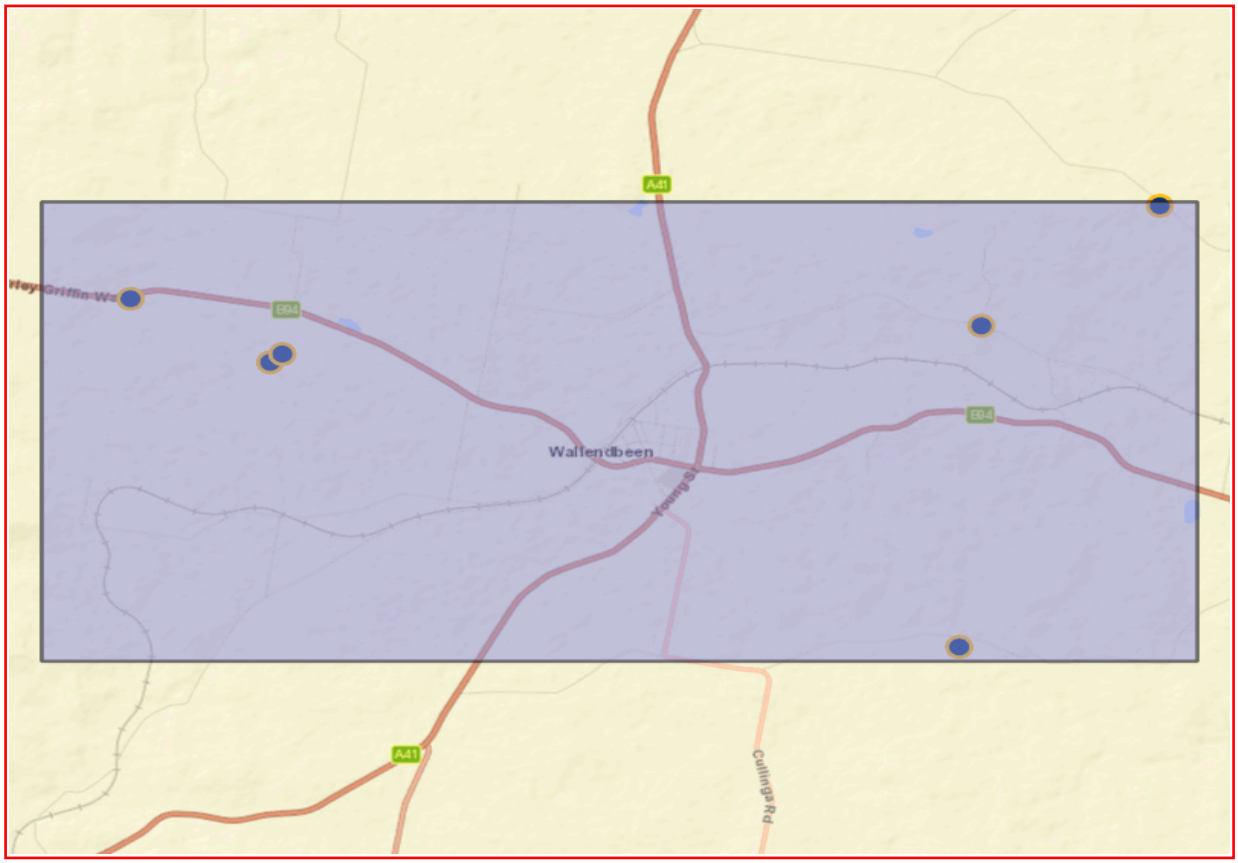
NGH Heritage - Fyshwick
17/27 Yallourn St
Fyshwick Australian Capital Territory 2609
Attention: Rhiannon Stammers
Email: rhiannon.s@nghconsulting.com.au

Date: 14 December 2021

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lat, Long From : -34.55, 148.09 - Lat, Long To : -34.5, 148.22, conducted by Rhiannon Stammers on 14 December 2021.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

6	**Aboriginal sites are recorded in or near the above location.**
0	**Aboriginal places have been declared in or near the above location. ***

If your search shows Aboriginal sites or places what should you do?

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the NSW Government Gazette (https://www.legislation.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Heritage NSW upon request

Important information about your AHIMS search

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Heritage NSW and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date. Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.

Level 6, 10 Valentine Ave, Parramatta 2150
Locked Bag 5020 Parramatta NSW 2124
Tel: (02) 9585 6345

ABN 34 945 244 274
Email: ahims@environment.nsw.gov.au
Web: www.heritage.nsw.gov.au

Search Results

14 results found.

Bimbadeen Bible College Rinkin Street	Cootamundra, NSW, Australia	(Registered) Register of the National Estate (Non-statutory archive)
Bradmans Birthplace 89 Adams St	Cootamundra, NSW, Australia	(Place not included in NHL) National Heritage List
Bradmans Birthplace Museum 89 Adams St	Cootamundra, NSW, Australia	(Registered) Register of the National Estate (Non-statutory archive)
CBC Bank (former) Wallendoon St	Cootamundra, NSW, Australia	(Registered) Register of the National Estate (Non-statutory archive)
Cootamundra Courthouse Parker St	Cootamundra, NSW, Australia	(Registered) Register of the National Estate (Non-statutory archive)
Cootamundra Drill Hall Parker St	Cootamundra, NSW, Australia	(Rejected Place) Register of the National Estate (Non-statutory archive)
Cootamundra Post Office Cooper St	Cootamundra, NSW, Australia	(Registered) Register of the National Estate (Non-statutory archive)
Cootamundra Post Office Group Cooper St	Cootamundra, NSW, Australia	(Registered) Register of the National Estate (Non-statutory archive)
Cootamundra Railway Station Hovell St	Cootamundra, NSW, Australia	(Registered) Register of the National Estate (Non-statutory archive)
Cullinga Mines Cullinga Mines Rd	Cullinga via Wallendbeen, NSW, Australia	(Indicative Place) Register of the National Estate (Non-statutory archive)

Flagstaff Memorial Nature Reserve	Stockinbingal, NSW, Australia	(Registered) Register of the National Estate (Non-statutory archive)
Linda and Ernie Betts Old House 12 Hoskins St	Wallendbeen, NSW, Australia	(Nominated place) National Heritage List
Ulandra Nature Reserve	Bethungra, NSW, Australia	(Registered) Register of the National Estate (Non-statutory archive)
Westpac Bank 250 - 252 Parker St	Cootamundra, NSW, Australia	(Registered) Register of the National Estate (Non-statutory archive)

Report Produced: Tue Sep 14 12:01:33 2021

Your Organization | NSW State Heritage Register

Legend

- State Heritage Register
- Aboriginal Place
- Local Environmental Plan
  - Cluster (label denotes number)
- Aboriginal Place
  - Cluster (label denotes number)
- State Heritage Register
  - Cluster (label denotes number)
- Interim Heritage Order
  - Cluster (label denotes number)

Notes

917.2 0 458.62 917.2 Meters

WGS_1984_Web_Mercator_Auxiliary_Sphere

This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.

THIS MAP IS NOT TO BE USED FOR NAVIGATION

Schedule 5 Environmental heritage

(Clause 5.10)

Part 1 Heritage items

Locality	Item name	Address	Property description	Significance	Item no
Brawlin	Brawlin School (former)	Muttama Road	Lot 168, DP 753603	Local	I102
Cootamundra	Fire station	14–16 Adams Street	Lot 1, DP 929948	Local	I1
Cootamundra	Bradman's Birthplace Museum	89 Adams Street	Lot 15, Section C, DP 2203	Local	I2
Cootamundra	Lone Pine Albert Park	Corner of Bourke and Thompson Streets	Lot 1, DP 1120670	Local	I3
Cootamundra	Austral Chambers	21 Bourke Street	Lot D, DP 396068	Local	I5
Cootamundra	Cootamundra West Railway Station group	Bullecourt Street	Lot 1, DP 1080119	State	I62
Cootamundra	Lemon-scented gum	Cooper Street	Lot 333, DP 1144917	Local	I7
Cootamundra	Public school—original buildings	Cooper Street	Lot 4, DP 1158484	Local	I6
Cootamundra	Gaol group	101 Cooper Street	Lot 9, DP 1140506	Local	I9
Cootamundra	Slab cottage interior	7 Cowong Street	Lot 11, Section F, DP 1975	Local	I10
Cootamundra	Hardy's Folly—water supply reservoir	Dirnaseer Road	Lot 2, DP 585846; Lot 3, DP 802927	Local	I111
Cootamundra	Martins Stone and brick ruin	Dirnaseer Road	Lot 8, DP 795578	Local	I115
Cootamundra	Cootamundra Railway Station and Yard group	Hovell Street	Rail corridor	State	I63
Cootamundra	Heritage centre	Hovell Street	Rail corridor	Local	I11
Cootamundra	North gantry	Hovell Street	Rail corridor	Local	I64
Cootamundra	Mercy Hospital—original buildings	148 Mackay Street	Lot 1, DP 1091155	Local	I12
Cootamundra	Catholic presbytery	Morris Street	Lots 1A and 1C, DP 412	Local	I15
Cootamundra	De La Salle Brothers School	Morris Street	Lots 2 and 3, Section 9, DP 691	Local	I14

Cootamundra	Sacred Heart Catholic Church	Morris Street	Lot 1, DP 691; Lots 1A and 1C, DP 412	Local	I13
Cootamundra	Tempe House	46 O'Donnell Street	Part Lots 7 and 8, Section C, DP 2203	Local	I18
Cootamundra	Cootamundra General Cemetery	Olympic Highway	Lot 1, DP 256885; Lot 1, DP 315944; Lot 1, DP 624380; Lots 1–3, 6 and 7, DP 927513; Lot 7029, DP 1021593; Lots 7001 and 7002, DP 1021594; Lot 7, DP 7030; Lot 7030, DP 1029430; Lot 5, DP 1086821; Lot 1, DP 726602 and Lot 1, DP 726605	Local	I20
Cootamundra	Cootamundra Water Supply Well	"Hurleyville", Olympic Highway	Lot 1, DP 196008	Local	I105
Cootamundra	Hurley Springs Reservoir and pipes	"Hurleyville", Olympic Highway	Lot 1, DP 196008	Local	I112
Cootamundra	Lebanese Graves, Cootamundra Cemetery	Olympic Highway	Lot 1, DP 726605	Local	I19
Cootamundra	Courthouse	Parker Street	Lot 331, DP 1144917	Local	I32
Cootamundra	Drill Hall	Parker Street	Lot 21, DP 1036030	Local	I33
Cootamundra	Remnant sandstone kerb	Parker Street	Road reserve	Local	I34
Cootamundra	St Columba's Catholic Church	Parker Street	Lot 1C, DP 412	Local	I16
Cootamundra	Sacred Heart Primary School	Parker Street	Lot 1C, DP 412	Local	I17
Cootamundra	Stratton Bridge	Parker Street	Road reserve	Local	I30
Cootamundra	Inter-war period shop —Red Cross House	123–125 Parker Street	Lot B, DP 389831	Local	I22
Cootamundra	Victorian period shop	144 Parker Street	Lot Y, DP 412094	Local	I23
Cootamundra	Federation period shop	159 Parker Street	Lot A, DP 440420	Local	I24
Cootamundra	Victorian period shop	208 Parker Street	Lot 1, DP 230330	Local	I25
Cootamundra	Art deco shop	213 Parker Street	Lot B, DP 398213	Local	I26
Cootamundra	Morgan and Morgan Solicitors (former)	251 Parker Street	Lot 3C, DP 104539	Local	I27
Cootamundra	ANZ Bank	253–257 Parker Street	Lot 1, DP 781899; Lot 3B, DP 104539	Local	I31

Cootamundra	Westpac Bank	254 Parker Street	Lot 2, DP 208852	Local	I28
Cootamundra	The Coralee Shop	266 Parker Street	Lot C, DP 162088	Local	I29
Cootamundra	State Bank (former)	274 Parker Street	Lot 1, DP 781898	Local	I57
Cootamundra	Showground Bar building	Pinkerton Road	Lot 125, DP 753601	Local	I4
Cootamundra	Milton Homestead	1 Pinkerton Road	Lot 1, DP 726601	Local	I35
Cootamundra	House	14 Queen Street	Lot 1, DP 725135	Local	I36
Cootamundra	Aboriginal Girls' Home (former)	39 Rinkin Street	Lots 351 and 502, DP 753601	State	I37
Cootamundra	Bauloora Lead and Silver Mine site	Off Stockinbingal Road	Lot 253, DP 750636	Local	I101
Cootamundra	Petrol tanks	Sutton Street	Lot 112, DP 136005	Local	I39
Cootamundra	Flour mill—brick buildings	212 Sutton Street	Lots 2 and 3, DP 229988; Lots 7 and 8, Section 38, DP 758287	Local	I38
Cootamundra	Catholic convent (former)	Temora Street	Lot 1C, DP 412	Local	I41
Cootamundra	Catholic convent	Temora Street	Local 1C, DP 412	Local	I42
Cootamundra	Classroom annex (Catholic school)	Temora Street	Lot 1B, DP 412	Local	I43
Cootamundra	District hospital (former)	Thompson Street	Lot 2, DP 857294	Local	I48
Cootamundra	Nurses quarters (former)	Thompson Street	Lot 2, DP 857294	Local	I47
Cootamundra	"The Vicarage"	37 Thompson Street	Lot C, DP 401530	Local	I44
Cootamundra	Captains' Walk, Jubilee Park	Wallendoon Street	Lot 701, DP 1021380	Local	I59
Cootamundra	Morgan Memorial	Wallendoon Street	Road reserve	Local	I58
Cootamundra	Federation period factory	18–20 Wallendoon Street	Lot 1, DP 735175	Local	I49
Cootamundra	Federation period shop	23 Wallendoon Street	Lot E, DP 27370	Local	I50
Cootamundra	Federation/ Inter-war period shop	25 Wallendoon Street	Lot E, DP 27370	Local	I51
Cootamundra	Art deco style garage	30 Wallendoon Street	Lot A, DP 335493 and Lot 2, DP 341774	Local	I52
Cootamundra	Inter-war period shop	80 Wallendoon Street	Lot 1, DP 332420	Local	I53

Cootamundra	CBC Bank (former, now NAB)	88 Wallendoon Street	Lot 16, DP 456936	Local	I54
Cootamundra	Post office	92 Wallendoon Street	Lot 3, Section 33, DP 758287	Local	I56
Cootamundra	Norfolk Building (109 Wallendoon Street only)	109 Wallendoon Street	Lot A, DP 354717	Local	I55
Cootamundra	Incinerator, former RAAF base	Yass Road	Lot 39, DP 1100346	Local	I60
Cootamundra	Horse and dog water trough	Yass Road	Road reserve	Local	I61
Cullinga	Christmas Gift Mine —relics and village	Cullinga Mines Road	Lots 228 and 229, DP 753604	Local	I104
Cullinga	Cullinga Extended Mine relics	Cullinga Mines Road	Lots 228 and 229, DP 753604	Local	I106
Jindalee	Jindalee Church (former)	902 Olympic Highway	Lot 1, DP 1071508	Local	I113
Stockinbingal	Public school—original buildings	Britannia Street	Lot 3, Section 7, DP 758928	Local	I65
Stockinbingal	Post Office and residence	11–13 Dudauman Street	Lot 1, Section 8, DP 758928	Local	I66
Stockinbingal	St Ita’s Convent	Geraldra Street	Lot 1, DP 504837	Local	I68
Stockinbingal	St Ita’s Convent School	3 Geraldra Street	Lot 2, DP 504837	Local	I69
Stockinbingal	Stockinbingal Cemetery	Grogan Road	Lot 7011, DP 94426	Local	I70
Stockinbingal	Kurrajong trees	Hibernia Street	Road reserve	Local	I77
Stockinbingal	Stockinbingal Railway Station	Hibernia Street	Rail corridor	Local	I78
Stockinbingal	Cohen’s Trade Palace, CWA Rooms	22–24 Hibernia Street	Lot 2, DP 335659	Local	I71
Stockinbingal	Federation period shop	26 Hibernia Street	Lot 1, DP 335659	Local	I72
Stockinbingal	Bank of NSW and residence	28 Hibernia Street	Lot 1, DP 335659	Local	I73
Stockinbingal	Baker, William Fallon	32 Hibernia Street	Lot 1, DP 1080025	Local	I75
Stockinbingal	Stock and Station (former Powderhorn Museum)	44 Hibernia Street	Lot 2, DP 1096788	Local	I76
Stockinbingal	Courthouse	6 Hoskins Street	Lot 7300, DP 1130493	Local	I80

Stockinbingal	Police residence	6 Hoskins Street	Lot 7300, DP 1130493	Local	I79
Stockinbingal	Stockinbingal Hotel (former)	2 Martin Street	Lot 1, Section 6, DP 758928	Local	I81
Stockinbingal	Ellwood's Hall	30 Martin Street	Lot 2, DP 558728	Local	I82
Stockinbingal	Soldier's War Memorial Hospital	2 O'Brien Street	Lot 264, DP 750619	Local	I83
Wallendbeen	Cemetery	Off Burley Griffin Way	Lot 1, DP 668301; Lot 1, DP 668460; Lot 1, DP 668461; Lots 7300 and 7301, DP 1133373	Local	I99
Wallendbeen	"Cambewarra", Federation period brick house	10 George Street	Lot 3, DP 7640	Local	I84
Wallendbeen	Federation period brick house, fence and trees	12 George Street	Lots 1 and 2, DP 7640	Local	I85
Wallendbeen	Mackay Park, Barry Grace Oval, trees (not buildings)	Hoskins Street	Lot 1, DP 759041	Local	I88
Wallendbeen	War Memorial Obelisk	King Street (corner Lackey Street)	Road reserve	Local	I93
Wallendbeen	St Columba's Catholic Church	2 King Street	Lot B, DP 419853	Local	I89
Wallendbeen	Public school (original buildings) on Wallendoon Street, cottage and bell	7 King Street	Lot 1, Section 18, DP 75904	Local	I90
Wallendbeen	Memorial Hall	14 King Street	Lot 6, DP 6331	Local	I91
Wallendbeen	Methodist Church	16 King Street	Lot 5, DP 6331	Local	I92
Wallendbeen	Railway subway	Lackey Street		Local	I94
Wallendbeen	Presbyterian church (former)	Olympic Highway (corner with Cullinga Road)	Lot 2, DP 759041	Local	I116
Wallendbeen	Railway station (second)	Silo Road	Lot 4, DP 819076	Local	I96
Wallendbeen	Railway underbridge	Silo Road	Rail corridor	Local	I97
Wallendbeen	Wallendbeen Station Homestead	Wallendoon Lane	Lot 2, DP 1044376	Local	I120
Wallendbeen	Slab cottage	13 Watson Street	Lot 8, Section 22, DP 759041	Local	I98

Yeo Yeo	Public school	Burley Griffin Way	Lot 1, DP 1091263	Local	I122

Appendix B Species List

B.1 Fauna

Common Name	Scientific Name	Observed (O)/Heard (H)	Conservation Status
Red Wattlebird	*Anthochaera carunculata*	O	
White-winged chough	*Corcorax melanorhamphos*	O	
Australian Raven	*Corvus coronoides*	O	
Laughing Kookaburra	*Dacelo novaeguineae*	O	
Galah	*Eolophus roseicapilla*	O	
Australian Magpie	*Gymnorhina tibicen*	O	
Noisy Miner	*Manorina melanocephala*	O	
Superb Parrot	*Polytelis swainsonii*	O	Vulnerable (BC Act) Vulnerable (EPBC Act)
Pied Currawong	*Strepera graculina*	O	
Mammals			
Eastern Grey Kangaroo	*Macropus giganteus*	O	
Amphibians			
Eastern Sign Bearing Froglet	*Crinia parinsignifera*	H	

B.2 Flora

Exotic	Scientific Name	Common Name
Trees and Shrubs		
	Eucalyptus blakelyi	Blakely's Red Gum
	Eucalyptus melliodora	Yellow Box
	Brachychiton populneus	Kurrajong
*	*Pinus spp.*	
	Eucalyptus spp.	
*	*Rubus spp.*	Blackberry
	Acacia baileyana	Cootamundra Wattle
	Acacia implexa	Hickory Wattle
*	*Chamaecytisus palmensis*	Tree Lucerne
*	*Photinia spp.*	
Forbs		
*	*Arctotheca calendula*	Capeweed
*	*Briza minor*	Shivery Grass
	Calotis cuneata	Mountain Burr-Daisy
*	*Conyza bonariensis*	Flaxleaf Fleabane
	Crassula sp.	Stonecrop
*	*Echium plantagineum*	Patterson's Curse
*	*Erodium spp.*	Crowfoot
*	*Fumaria officinalis*	Common Fumitory
*	*Galium spp.*	
	Hardenbergia violacea	
	Hypochaeris radicata	Catsear
*	*Onopordum acanthium subsp. acanthium*	Scotch Thistle
	Oxalis spp.	
*	*Plantago lanceolata*	Lamb's Tongues
*	*Romulea rosea*	Onion grass
*	*Rumex acetosella*	Sheel Sheep Sorrel
*	*Rumex spp.*	Dock
*	*Salvia spp.*	
*	*Sanguisorba minor*	Sheep's Burnet

Exotic	Scientific Name	Common Name
*	*Silybum marianum*	Variegated Thistle
*	*Sonchus oleraceus*	Common Sowthistle
*	*Stellaria media*	Common Chickweed
*	*Trifolium*	Saffron Thistle
*	*Trifolium arvense*	Haresfoot Clover
*	*Trifolium repens*	White Clover
*	*Verbena bonariensis*	Purpletop
	Vittadinia spp.	Fuzzweed
Grasses		
	Austrostipa scabra	Speargrass
*	*Avena fatua*	Wild Oats
	Chloris truncata	Windmill Grass
	Cynodon dactylon	Common Couch
*	*Dactylis glomerata*	Cocksfoot
*	*Eragrostis spp.*	A Lovegrass
*	*Paspalum dilatatum*	Paspalum
*	*Phalaris aquatica*	Phalaris
	Rytidosperma spp.	
	Themeda triandra	Kangaroo Grass
*	*Vulpia myuros*	Rat's Tail Fescue
Graminoids		
	Juncus spp.	A Rush
	Dianella spp.	
	Cyperus spp.	

Appendix C Threatened Species Evaluations

The tables in this Appendix present the habitat evaluation for threatened species, ecological communities and endangered populations listed for Wagga Wagga in the *Bionet Atlas* and those identified as potentially occurring in the area according to the Commonwealth EPBC *Protected Matters Search Tool*[1].

The likelihood of occurrence is based on presence of habitat, proximity of nearest records and mobility of the species (where relevant). The assessment of potential impact is based on the nature of the proposal, the ecology of the species and its likelihood of occurrence. The following classifications are used:

Presence of habitat:

Present: Potential or known habitat is present within the study area

Absent: No potential or known habitat is present within the study area

Likelihood of occurrence

Unlikely: Species known or predicted within the locality but unlikely to occur in the study area

Possible: Species could occur in the study area

Present: Species was recorded during the field investigations

Possible to be impacted

No: The proposal would not impact this species or its habitats. No Assessment of Significance (AoS) is necessary for this species

Yes: The proposal could impact this species or its habitats. An AoS has been applied to these entities.

C.1 Evaluation of the likelihood and extent of impact on threatened flora species

Species	Description of habitat[2]	No. of Records	Presence of habitat	Likelihood of occurrence	Possible impact?
Trees and Shrubs					
Eucalyptus robertsonii subsp. hemisphaerica Robertson's Peppermint BC – V, EPBC - V	Locally frequent in grassy or dry sclerophyll woodland or forest, on lighter soils and often on granite. Usually found in closed grassy woodlands in locally sheltered sites. Associated vegetation includes variously mixed woodlands of *Eucalyptus piperita, E. goniocalyx, E. dalrympleana, E. dives, E. mannifera* and *E. rossii*.	**0**	**Absent** No associated species present within the proposal area.	**Unlikely** No records within the locality.	**No** Species was not recorded within the proposal area.
Eucalyptus aggregata Black Gum BC – V, EPBC - V	Grows in the lowest parts of the landscape. Grows on alluvial soils, on cold, poorly-drained flats and hollows adjacent to creeks and small rivers. Often grows with other cold-adapted eucalypts, such as Snow Gum or White Sallee (*Eucalyptus pauciflora*), Manna or Ribbon Gum (*E. viminalis*), Candlebark (*E. rubida*), Black Sallee (*E. stellulata*) and Swamp Gum (*E. ovata*). Black Gum usually occurs in an open woodland formation with a grassy groundlayer dominated either by River Tussock (*Poa labillardierei*) or Kangaroo Grass (*Themeda australis*), but with few shrubs.	**0**	**Absent** No associated overstorey species present within the proposal area.	**Unlikely** No records within the locality.	**No** Species was not recorded within the proposal area.
Eucalyptus alligatrix subsp. alligatrix BC – V, EPBC – V	Only known from a single location south-west of Rylstone; however, the species has reportedly been widely propagated and planted in the Rylstone area. Grows in dry sclerophyll woodland on shallow relatively infertile soils (grey-brown loam with ironstone). Associated trees include *Eucalyptus macrorhyncha, Eucalyptus blakelyi, Eucalyptus viminalis, Eucalyptus bridgesiana, Eucalyptus melliodora, Eucalyptus rossii* and *Angophora floribunda*.	**0**	**Present** Associated vegetation present within the proposal area.	**Unlikely** Species is known from a single location south-west of Rylstone.	**No** No records within the locality. Species unlikely to occur.

Species	Description of habitat[2]	No. of Records	Presence of habitat	Likelihood of occurrence	Possible impact?
Eucalyptus cannonii Capertree Stringybark BC - V	Capertee Stringybark has a broad altitudinal range, from around 450m to 1,050m. Within this range, the species appears to tolerate most situations except the valley floors. Associated eucalypt species are diverse: *Eucalyptus viminalis, Eucalyptus mannifera, Eucalyptus polyanthemos, Eucalyptus rossii, Eucalyptus blakelyi, Eucalyptus oblonga, Eucalyptus sparsifolia, Eucalyptus bridgesiana, Eucalyptus dalrympleana, Eucalyptus melliodora, Eucalyptus dives* and *Angophora floribunda*.	**0**	**Present** Associated vegetation present within the proposal area.	**Unlikely** No records within the locality. Was not observed on site.	**No** Species unlikely to occur.
Grevillea wilkinsonii Tumut Grevillea BC – CE, EPBC, E	The Tumut Grevillea has a highly restricted distribution in the NSW South-west Slopes region. Its main occurrence is along a 6 km stretch of the Goobarragandra River approximately 20 km east of Tumut where about 1,000 plants are known. The other occurrence is a small population that straddles the boundary of two private properties at Gundagai where only eight mature plants survive. Associated vegetation includes Blakely's Red Gum (*Eucalyptus blakelyi*), Apple Box (*E. bridgesiana*), Yellow Box (*E. melliodora*), and Red Stringybark (*E. macrorhyncha*) and with Kurrajongs (*Brachychiton populneus)* sometimes growing in nearby paddocks.	**0**	**Present** Associated vegetation present within the proposal area.	**Unlikely** This species has a highly restricted distribution. Species was not observed during site visit.	**No** Species unlikely to occur.
Acacia ausfeldii Ausfeld's Wattle BC – V	Found to the east of Dubbo in the Mudgee-Ulan-Gulgong area of the NSW South Western Slopes bioregion, with some records in the adjoining Brigalow Belt South, South Eastern Highlands and the Sydney Basin bioregions. Populations are recorded from Yarrobil National Park, Goodiman State Conservation Area and there is a 1963 record from Munghorn Gap Nature Reserve. A large population is also known from Tuckland State Forest to the northwest of Gulgong. Associated species include *Eucalyptus albens*, *E. blakelyi* and *Callitris sp.,* with an understorey dominated by *Cassinia sp*. and grasses.	**0**	**Present** Associated vegetation present within the proposal area.	**Unlikely** No records within the locality. Species was not observed during site visit.	**No** Species unlikely to occur.

Species	Description of habitat[2]	No. of Records	Presence of habitat	Likelihood of occurrence	Possible impact?
Acacia meiantha BC – E, EPBC – E	It is found in three disjunct populations, all within the Central Tablelands and within 100kms of each other. These populations include Clarence, which covers an area of approximately 1 hectare; Mullions Range, covering approximately 5 hectares; and Aarons Pass, which is confined to 2.5km of road easements.	**0**	**Present** Species known to grow on road easements.	**Unlikely** No records within the locality. Species was not observed during site visit.	**No** Species unlikely to occur.
Acacia phasmoides Phantom Wattle BC – V, EPBC - V	The species is only known from one location in NSW: Woomagarma National Park in Greater Hume Shire. Grows in shrubby woodland on sandy, granitic soil near creeks or in rocky crevices.	**0**	**Present** Creeks occur within the proposal area.	**Unlikely** No records within the locality. Was not observed on site.	**No** Species unlikely to occur.
Bossiaea fragrans BC – CE, EPBC - CE	Currently only known from the Abercrombie Karst Conservation Reserve, south of Bathurst on the NSW central tablelands. It is highly restricted, with only a small number of known sub-populations. Occurs on spilite, rhyolite or slate and volcanic substrates and is often associated with Red Stringybark (*Eucalyptus macrorhyncha*) - Red Box (*Eucalyptus polyanthemos*) woodland +/- White Box (*Eucalyptus albens*).	**0**	**Absent** No associated species occur within the proposal area.	**Unlikely** This species has a very restricted population.	**No** Species unlikely to occur.
Zieria ingramii Keith's Zieria BC – E, EPBC – E	Grows in dry sclerophyll forest on light sandy soils. All known populations have been recorded in *Eucalyptus-Callitris* woodland or open forest with a shrubby to heathy understorey. Mostly from gentle slopes in red-brown and yellow-brown sandy loams, often with a rocky surface.	**0**	**Absent** Lack of shrubby/heathy midstorey within the proposal area.	**Unlikely** The species has a very restricted distribution. No records within the locality.	**No** Species unlikely to occur.

Species	Description of habitat[2]	No. of Records	Presence of habitat	Likelihood of occurrence	Possible impact?
Zieria obcordata Granite Zieria BC – E, EPBC – E	Grows in eucalypt woodland or shrubland dominated by species of Acacia on rocky hillsides. Also occurs in Eucalyptus and Callitris dominated woodland with an open, low shrub understorey, on moderately steep, mainly west to north-facing slopes in sandy loam amongst granite boulders. The altitude range of sites is 500 to 830 metres. In wild populations, plants tend to grow in crevices between granite boulders, often in lines running downslope. Associated vegetation includes *Eucalyptus blakelyi, Brachychiton populneus* and *Acacia implexa* woodland with pockets of low shrub understorey. Also in *E. goniocalyx, E. blakelyi, E. macrorhyncha, A. doratoxylon, A. vestita* and *Callitris glaucophylla* woodland with a shrubby understorey.	**0**	**Present** Associated vegetation occurs within the proposal area.	**Unlikely** This species has a restricted distribution. No records within the locality.	**No** Species unlikely to occur.
Pomaderris cotoneaster Cotoneaster Pomaderris BC – E, EPBC – E	Cotoneaster Pomaderris has been recorded in a range of habitats in predominantly forested country. The habitats include forest with deep, friable soil, amongst rock beside a creek, on rocky forested slopes and in steep gullies between sandstone cliffs.	**0**	**Absent** Preferred habitat does not occur within the proposal area.	**Unlikely** No records within the locality.	**No** Species unlikely to occur.
Pomaderris queenslandica Scant Pomaderris BC - E	Found in moist eucalypt forest or sheltered woodlands with a shrubby understorey, and occasionally along creeks.	**0**	**Absent** Lack of shrubby/heathy midstorey within the proposal area.	**Unlikely** No records within the locality.	**No** Species unlikely to occur.
Pultenaea humilis Dwarf Bush-pea BC – V	*Pultenaea humilis* is rare in NSW; found in isolated remnants of native woodland and forest communities that occur in extensively cleared agricultural landscapes. Occurs on a variety of soils ranging from sandy loams to clays.	**0**	**Present** The proposal ae falls within a cleared landscape.	**Unlikely** No records within the locality. Rare in NSW. Species was not observed	**No** Species unlikely to occur.

Species	Description of habitat[2]	No. of Records	Presence of habitat	Likelihood of occurrence	Possible impact?
				during the site survey.	
Persoonia marginate Clandulla Geebung BC – V, EPBC – V	Grows in dry sclerophyll forest and woodland communities on sandstone. The Clandulla Geebung occurs between Kandos and Clarence in the western Blue Mountains. Recorded flowering period varies and includes December and Winter.	**0**	**Absent** Sandstone does not occur within the proposal area.	**Unlikely** The proposal area is outside of this species known distribution.	**No** Species unlikely to occur.
Indigofera efoliata Leafless Indigo BC – E, EPBC – E	Recorded in *Eucalyptus crebra* and *Callitris glaucophylla* dry sclerophyll forest, and in *Eucalyptus microcarpa* and *Callitris glaucophylla* tall woodland.	**0**	**Absent** Associated vegetation is not present within the proposal area.	**Unlikely** This species is known only from a few collections in Dubbo.	**No** Species unlikely to occur.
Homoranthus darwinoides Fairy Bells BC – V, EPBC - V	Grows in in various woodland habitats with shrubby understoreys, usually in gravely sandy soils. Landforms the species has been recorded growing on include flat sunny ridge tops with scrubby woodland, sloping ridges, gentle south-facing slopes, and a slight depression on a roadside with loamy sand. Associated species include *Callitris endlicheri*, *Eucalyptus crebra, E. fibrosa, C. trachyphloia, E. beyeri subsp. illaquens, E. dwyeri, E. rossii, Leptospermum divaricatum, Melaleuca uncinata, Calytrix tetragona, Allocasuarina spp.* and *Micromyrtus spp.*	**0**	**Absent** Associated vegetation is not present within the proposal area.	**Unlikely** No records within the locality.	**No** Species unlikely to occur.
Herbs & Forbs					
Pilularia novae-hollandiae Austral Pilwort	Austral Pillwort grows in shallow swamps and waterways, often among grasses and sedges. It is most often recorded in drying mud as this is when it is most conspicuous.	**0**	**Present** Watercourses occur within the proposal area.	**Unlikely** No records within the locality.	**No** Species is unlikely to occur.

Species	Description of habitat[2]	No. of Records	Presence of habitat	Likelihood of occurrence	Possible impact?
BC – E					
Austrostipa wakoolica A Spear-grass BC – E, EPBC – E	Grows on floodplains of the Murray River tributaries, in open woodland on grey, silty clay or sandy loam soils; habitats include the edges of a lignum swamp with box and mallee; creek banks in grey, silty clay; mallee and lignum sandy-loam flat; open Cypress-Pine forest on low sandy range; and a low, rocky rise.	**0**	**Absent** Lignum habitat/ Cypress Pine woodland not present within the proposal area.	**Unlikely** No records within the locality.	**No** Species is unlikely to occur.
Carex raleighii Raleigh Sedge BC – E	In NSW Raleigh Sedge is found only in areas above about 1000 metres on the Southern Tablelands. Grows in sphagnum bogs and high mountain wetlands, as well as damp grasslands and stream-edges of sub-alpine plains. Most populations are in Kosciuzsko National Park (eg. Charlottes Pass area, Muellers Pass, Tantangara area and the upper Tooma and Tumut valleys).	**0**	**Absent** The proposal area is below the required altitude for this species.	**Unlikely** No records within the locality.	**No** Species is unlikely to occur.
Pimelea bracteate Threlfall BC – CE	*Pimelea bracteata* typically grows along creek lines, and a population may have a linear distribution along a creek for many kilometres. Occurs in wet heath and along creek banks at higher altitudes in the Kiandra area.	**0**	**Present** Watercourses occur within the proposal area.	**Unlikely** The proposal area occurs at lower altitudes.	**No** Species is unlikely to occur.
Euphrasia arguta BC – CE, EPBC – CE	Plants from the Nundle area have been reported from eucalypt forest with a mixed grass and shrub understorey; here, plants were most dense in an open disturbed area and along the roadside, indicating the species had regenerated following disturbance. *Euphrasia arguta* has an annual habit and has been observed to die off over the winter months, with active growth and flowering occurring between January and April.	**0**	**Present** The proposal area has a history of disturbance.	**Unlikely** The species is only known to occur within the Nundle area.	**No** Species is unlikely to occur.
Euphrasia collina subsp. muelleri Mueller's Eyebright BC – E, EPBC - E	Little is known about the habitat this species prefers, although there is a reference to "damp places" in an early von Mueller collection. Extant populations in Victoria occur in heathy woodland. In NSW it was recorded more than 100 years ago in the upper Murray and McIntyre Rivers and near Dorrigo and Cootamundra. The only NSW collections in the past 50 years	**0**	**Present** Damp areas occur at the site.	**Unlikely** This species has a restricted distribution. No records	**No** Species unlikely to occur.

Species	Description of habitat[2]	No. of Records	Presence of habitat	Likelihood of occurrence	Possible impact?
	were made in the vicinity of the Tinderry Range between Canberra and Cooma (1970) and between Uralla and Tamworth (1987).			occur within the locality.	
Cullen parvum Small Scurf-pea BC – E	In known populations in Victoria and NSW, plants are found in grassland, River Red Gum (*Eucalyptus camaldulensis*) Woodland or Box-Gum Woodland, sometimes on grazed land and usually on table drains or adjacent to drainage lines or watercourses, in areas with rainfall of between 450 and 700 mm.	**0**	**Present** Box-Gum woodland occurs at the site.	**Possible** This species is a disturbance specialist.	**Yes** AoS completed
Caesia parviflora var. minor Small Pale Grass-lily BC – E	Found in damp places in open forest on sandstone.	**0**	**Not Present** Sandstone does not occur within the proposal area.	**Unlikely** No records occur within the locality.	**No** Species unlikely to occur.
Dichanthium setosum Bluegrass BC – V, EPBC – V	Associated with heavy basaltic black soils and red-brown loams with clay subsoil. Often found in moderately disturbed areas such as cleared woodland, grassy roadside remnants and highly disturbed pasture.	**0**	**Present** The proposal area has a history of disturbance.	**Unlikely** No records within the locality.	**No** Species unlikely to occur.
Ammobium craspedioides Yass Daisy BC–V; EPBC – V	Yass Daisies are found in most dry forest communities, Box–Gum woodland, and secondary grassland derived from clearing of these communities. They grow in association with a large range of eucalypts, including Blakely's Red Gum and Yellow Box. Populations can persist in some lightly grazed sites. Found in a number of TSRs.	**0**	**Present** Box-Gum woodland present in study area. Proposal area disturbed.	**Unlikely** No records within the locality.	**No** Species unlikely to occur.
Swainsona recta Small Purple–pea BC–E, EPBC– E	It has been recorded previously at Carcoar, Culcairn and Wagga Wagga but is thought to be extinct from these areas. Populations are still present in Queenbeyan, the ACT and Wellington–Mudgee areas. Plants are commonly found on railway easements. It occurs in the grassy understory of woodlands, and open–forests dominated by Blakely's Red Gum *Eucalyptus blakelyi*, Yellow Box *E. melliodora*, Candlebark Gum *E. rubida* and Long–	**0**	**Present** Box-Gum woodland with Blakely's Red Gum and Yellow	**Possible** This species is a disturbance specialist.	**Yes** AoS completed

Species	Description of habitat[2]	No. of Records	Presence of habitat	Likelihood of occurrence	Possible impact?
	leaf Box *E. goniocalyx. They are found in dry sclerophyll forests, grasslands, and grassy woodlands.*		Box. Proposal area has a history of disturbance.		
Swainsona sericea Silky Swainson–pea BC – V	This species has been found from the Northern Tablelands to the Southern Tablelands and further inland. It is found in Natural Temperate Grassland and Snow Gum *Eucalyptus pauciflora* Woodland, as well as in Box–Gum Woodland and with cypress–pines. It is also found in arid shrublands, Riverine Chenopod Shrublands, dry and wet sclerophyll forests, woodlands and grasslands.	**0**	**Present** Box-Gum woodland present within the proposal area.	**Unlikely** No records within the locality. Species was not observed during the site survey.	**No** Species unlikely to occur.
Thesium australe Austral toadflax BC – V, EPBC – V	Occurs in grassland on coastal heathlands or grassland and grassy woodland away from coastal areas. Often occurs in association with Kangaroo Grass (*Themeda australis*). This species is a root parasite that takes water and some nutrients from other plants, especially Kangaroo Grass.	**0**	**Present** Kangaroo Grass was present within the proposal area.	**Unlikely** No records within the locality.	**No** Species is not known to occur in the Wallendbeen area.
Leucochrysum albicans subsp. tricolor Hoary Sunray EPBC - E	Occurs in a wide variety of grassland, woodland and forest habitats, generally on relatively heavy soils. Can occur in modified habitats such as semi-urban areas and roadsides. Highly dependent on the presence of bare ground for germination. In some areas, disturbance is required for successful establishment.	**0**	**Present** Bare ground was present within the proposal area.	**Unlikely** No records within the locality. Species was flowering at time of survey – was not detected.	**No** Species unlikely to occur.
Senecio macrocarpus Large-fruit Fireweed	In NSW, Large-fruit Fireweed occurs in partly cleared dry forests and box-gum woodlands which transition to Brittle Gum Forest with a relatively undisturbed understorey of native grasses, forbs and subshrubs (Fallding	**0**	**Present** Box-Gum woodland present within the	**Unlikely** Proposal area has a history of	**No** Species unlikely to occur.

Species	Description of habitat[2]	No. of Records	Presence of habitat	Likelihood of occurrence	Possible impact?
EPBC - V	2002; R. Rehwinkel 2008, pers. comm.).		proposal area.	disturbance. No records within the locality.	
Orchids					
Prasophyllum petilum Tarengo Leek Orchid EPBC – E; BC – E	Grows in open sites within Natural Temperate Grassland at the Boorowa and Delegate sites. Also grows in grassy woodland in association with River Tussock *Poa labillardieri*, Black Gum *Eucalyptus aggregata* and tea–trees *Leptospermum spp*. near Queanbeyan and within the grassy groundlayer dominated by Kanagroo Grass under Box–Gum Woodland at Ilford (and Hall, ACT). Highly susceptible to grazing.	**0**	**Present** Box – Gum Woodland and Kangaroo Grass present within the proposal area.	**Unlikely** No records within the locality. Proposal area was highly disturbed.	**No** Species unlikely to occur.
Caladenia concolor Crimson Spider Orchid BC - E	Habitat is regrowth woodland on granite ridge country that has retained a high diversity of plant species, including other orchids. The dominant trees are Blakely's Red Gum (*Eucalyptus blakelyi*), Red Stringybark (*E. macrorhyncha*), Red Box (*E. polyanthemos*) and White Box (*E. albens*); the diverse understorey includes Silver Wattle (*Acacia dealbata*), Hop Bitter-pea (*Daviesia latifolia*), Common Beard-heath *(Leucopogon virgatus*), Spreading Flax-lily (*Dianella revoluta*) and Poa Tussock (*Poa sieberiana*).	**0**	**Present** Box-Gum woodland with Blakely's Red Gum present within the proposal area.	**Unlikely** Understorey of Box-gum woodland is highly exotic. No records within the locality.	**No** Species unlikely to occur.
Diuris tricolor Pine Donkey Orchid BC – V	The Pine Donkey Orchid grows in sclerophyll forest among grass, often with native Cypress Pine (*Callitris spp*.). It is found in sandy soils, either on flats or small rises. Also recorded from a red earth soil in a Bimble Box community in western NSW.	**0**	**Present** Sclerophyll forest occurs at the site; however, no Cypress Pine was observed.	**Unlikely** Understorey is highly exotic. No records within the locality.	**No** Species unlikely to occur.

Species	Description of habitat[2]	No. of Records	Presence of habitat	Likelihood of occurrence	Possible impact?
Caladenia arenaria Sand-hill Spider Orchid BC – E, EPBC – E	Occurs in woodland with sandy soil, especially that dominated by White Cypress Pine (*Callitris glaucophylla*).	**0**	**Not Present** Associated vegetation not present within the proposal area.	**Unlikely** No records within the locality.	**No** Species unlikely to occur.
Caladenia rosella Rosella Spider Orchid EPBC – E	Presumed extinct in NSW. In Victoria, the species is found in woodlands and low forests of Red Box (*Eucalyptus polyanthemos*), Long-leaved Box (*E. goniocalyx*) and Red Stringybark (*E. macrorhyncha*) in well-drained, skeletal soils.	**0**	**Absent** Associated vegetation not present within the proposal area.	**Unlikely** Presumed extinct in NSW. No records within the locality.	**No** Species unlikely to occur.
Caladenia tessellate Thick Lip Spider Orchid BC – E, EPBC – V	Generally found in grassy sclerophyll woodland on clay loam or sandy soils, though the population near Braidwood is in low woodland with stony soil.	**0**	**Present** This species is found in a wide range of habitats.	**Unlikely** No records within the locality.	**No** Species unlikely to occur.
Creepers					
Tylophora linearis BC – V, EPBC – E	Grows in dry scrub and open forest. Recorded from low-altitude sedimentary flats in dry woodlands of *Eucalyptus fibrosa, Eucalyptus sideroxylon, Eucalyptus albens, Callitris endlicheri, Callitris glaucophylla* and *Allocasuarina luehmannii*. Flowers in spring, with flowers recorded in November or May.	**0**	**Absent** Associated vegetation not present within the proposal area.	**Unlikely** No records within the locality.	**No** Species unlikely to occur.
Grasses					

Species	Description of habitat[2]	No. of Records	Presence of habitat	Likelihood of occurrence	Possible impact?
Amphibromus fluitans *River Swamp Wallaby Grass* BC – V, EPVC – V	Grows mostly in permanent swamps. Requires wetlands which are at least moderately fertile and which have some bare ground. These conditions re produced by seasonally–fluctuating water levels. Within South west NSW habitat includes swamp margins in mud, dam and tank beds in hard clay and in semi–dry mud lagoons with *Potamogenton* and *Chamaeraphis* sp. Disturbance regimes	**0**	**Absent** No permanent swamps or wetlands within the proposal area.	**Unlikely** No records within the locality.	**No** Species unlikely to occur.
TECs					
White Box–Yellow Box–Blakely's Red Gum Grassy Woodland and Derived Native Grassland BC – CE EEC EPBC – CE EEC	Characterised by the presence or prior occurrence of White Box, Yellow Box and/or Blakely's Red Gum. The trees may occur as pure stands, mixtures of the three species or in mixtures with other trees, including wattles. Commonly co–occurring eucalypts include Apple Box (*E. bridgesiana*), Red Box (*E. polyanthemos*), Candlebark (*E. rubida*), Snow Gum (*E. pauciflora*), Argyle Apple (*E. cinerea*), Brittle Gum (*E. mannifera*), Red Stringybark (*E. macrorhyncha*), Grey Box (*E. microcarpa*), Cabbage Gum (*E. amplifolia*) and others. The understorey in intact sites is characterised by native grasses and a high diversity of herbs; the most commonly encountered include Kangaroo Grass (*Themeda australis*), Poa Tussock (*Poa sieberiana*), wallaby grasses (*Austrodanthonia spp.*), spear–grasses (*Austrostipa spp.*), Common Everlasting (*Chrysocephalum apiculatum),* Scrambled Eggs (*Goodenia pinnatifida*), Small St John's Wort (*Hypericum gramineum*), Narrow–leafed New Holland Daisy (*Vittadinia muelleri*) and blue–bells (*Wahlenbergia spp.).* Shrubs are generally sparse or absent, though they may be locally common.		**Present** Characteristic species present.	**Present** Qualified for assessment under the BC Act. Did not qualify for assessment under the EPBC Act.	**Yes** AoS completed
Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions	Fuzzy Box Woodland on alluvial soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions occurred mainly in the Dubbo - Narromine - Parkes - Forbes area. Community occurs on brown loam or clay, alluvial or colluvial soils on prior streams and abandoned channels or slight depressions on undulating plains		**Not present** Characteristic species not present.	**Unlikely** Not recorded within the proposal area.	**No** Not present in proposal area.

Species	Description of habitat[2]	No. of Records	Presence of habitat	Likelihood of occurrence	Possible impact?
BC - EEC	or flats of the western slopes.				
Coolac-Tumut Serpentinite Shrubby Woodland in the NSW South Western Slopes and South Eastern Highlands Bioregions BC – E	Coolac-Tumut Serpentinite Shrubby Woodland consists of an overstorey of drooping sheoak (Allocasuarina verticillata) with the shrubs hickory wattle (Acacia implexa), grasstrees (Xanthorrhoea glauca) and Ricinocarpos bowmanii. The groundlayer is consists of a range of native grasses and herbs, often including kangaroo grass (Themeda australis), wiregrasses (Aristida spp.), wallaby grasses (Rytidosperma spp.), Senecio quadridentatus, rock fern (Cheilanthes seiberi) and Carex breviculmis. Scattered trees of white box (Eucalyptus albens) and bundy (Eucalyptus nortonii) can occur.		**Not Present** Characteristic species not present.	**Unlikely** Not recorded within the proposal area.	**No** Not present in proposal area.
Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia. EPBC – E	The Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia occurs in two forms. • The most common form is as grassy woodland comprising a tree layer and an understorey that must have native grasses but with a varying proportion of shrubs and herbs. • The derived native grassland form can occur in patches where the tree canopy and mid layer have been almost entirely removed but the native ground layer remains largely intact with high flora diversity.		**Not Present** Characteristic species not present.	**Unlikely** Not recorded within the proposal area.	**No** Not present in proposal area.

E BC = listed as Endangered under Schedule 1 of the NSW *Biodiversity Conservation Act 2016*
E EPBC = listed as Endangered under the Commonwealth *Environment Protection & Biodiversity Conservation Act 1999.*
V BC = listed as Vulnerable under Schedule 1 of the NSW *Biodiversity Conservation Act 2016.*
V EPBC = listed as Vulnerable under the Commonwealth *Environment Protection & Biodiversity Conservation Act 1999.*
EEC BC = Endangered Ecological Community listed under Schedule 2 of the NSW *Biodiversity Conservation Act 2016*
CE EPBC = listed as Critically Endangered under the Commonwealth *Environment Protection & Biodiversity Conservation Act 1999.*

C.2 Evaluation of the likelihood and extent of impact on threatened fauna species

Species	Description of Habitat	No. of Records	Presence of habitat	Likelihood of occurrence	Potential impact?
BIRDS					
Falco subniger Black Falcon BC - V	The Black Falcon is widely, but sparsely, distributed in New South Wales, mostly occurring in inland regions. In New South Wales there is assumed to be a single population that is continuous with a broader continental population, given that falcons are highly mobile, commonly travelling hundreds of kilometres. The Black Falcon occurs as solitary individuals, in pairs, or in family groups of parents and offspring.	0	**Present** This species utilises a wide range of habitats.	**Unlikely** This species has not been recorded within the locality.	**No** Species widely distributed. No HBTs would be removed by the proposal.
Falco hypoleucos Grey Falcon BC - E	The Grey Falcon is sparsely distributed in NSW, chiefly throughout the Murray-Darling Basin, with the occasional vagrant east of the Great Dividing Range. The breeding range has contracted since the 1950s with most breeding now confined to arid parts of the range. There are possibly less than 5000 individuals left. Population trends are unclear, though it is believed to be extinct in areas with more than 500mm rainfall in NSW. Usually restricted to shrubland, grassland and wooded watercourses of arid and semi-arid regions, although it is occasionally found in open woodlands near the coast. Also occurs near wetlands where surface water attracts prey. Preys primarily on birds, especially parrots and pigeons, using high-speed chases and stoops; reptiles and mammals are also taken.	0	**Present** A wooded watercourse is present within the proposal area.	**Unlikely** No records within the locality. Annual rainfall in region higher than 500 mm.	**No** Species widely distributed. No HBTs would be removed by the proposal.
Daphoenositta chrysoptera Varied Sittella BC – V	The Varied Sittella is sedentary and inhabits most of mainland Australia except the treeless deserts and open grasslands, with a nearly continuous distribution in NSW from the coast to the far west. It inhabits eucalypt forests and woodlands, especially rough–barked species and mature smooth–barked gums with dead branches, mallee and Acacia woodland. It builds a cup–shaped nest of plant fibres and cobweb in an upright tree fork high in the living tree canopy, and often re–uses the same fork or tree in successive years.	1	**Present** Box-gum woodland occurs within the proposal area.	**Possible** Species has been recorded within the locality.	**Yes** AoS completed.

Species	Description of Habitat	No. of Records	Presence of habitat	Likelihood of occurrence	Potential impact?
Petroica boodang Scarlet Robin BC – V	The Scarlet Robin lives in dry eucalypt forests and woodlands. The understorey is usually open and grassy with few scattered shrubs. This species lives in both mature and regrowth vegetation. It occasionally occurs in mallee or wet forest communities, or in wetlands and tea–tree swamps. Scarlet Robin habitat usually contains abundant logs and fallen timber: these are important components of its habitat. The Scarlet Robin breeds on ridges, hills and foothills of the western slopes, the Great Dividing Range and eastern coastal regions; this species is occasionally found up to 1000 metres in altitude. The Scarlet Robin is primarily a resident in forests and woodlands, but some adults and young birds disperse to more open habitats after breeding. In autumn and winter many Scarlet Robins live in open grassy woodlands, and grasslands or grazed paddocks with scattered trees.	0	**Present** Woodland habitat is present within the proposal area.	**Unlikely** This species has not been recorded in the locality.	**Yes** AoS completed
Petroica phoenicea Flame Robin BC – V	The Flame Robin is endemic to SE Australia, and ranges from near the Queensland border to SE South Australia and also in Tasmania. Breeds in upland tall moist eucalypt forests and woodlands, often on ridges and slopes. Prefers clearings or areas with open understoreys. The ground layer of the breeding habitat is dominated by native grasses and the shrub layer may be either sparse or dense. In winter, birds migrate to drier more open habitats in the lowlands (i.e. valleys below the ranges, and to the western slopes and plains).	0	**Present** Box-Gum Woodland present within the proposal area.	**Unlikely** Groundcover was mostly exotic. No records within the locality.	**No** Species unlikely to occur.
Stagoopleura guttata Diamond Firetail BC - V	The Diamond Firetail is endemic to south-eastern Australia, extending from central Queensland to the Eyre Peninsula in South Australia. It is widely distributed in NSW. Found in grassy eucalypt woodlands, including Box-Gum Woodlands and Snow Gum *Eucalyptus pauciflora* Woodlands. Also occurs in open forest, mallee, Natural Temperate Grassland, and in secondary grassland derived from other communities. Often found in riparian areas (rivers and creeks), and sometimes in lightly wooded farmland.	1	**Present** Habitat present.	**Possible** This species has a wide distribution. Is tolerant of disturbance.	**Yes** AoS completed

Species	Description of Habitat	No. of Records	Presence of habitat	Likelihood of occurrence	Potential impact?
Polytelis swainsonii Superb Parrot BC – V, EPBC – V	The Superb Parrot is found throughout eastern inland NSW. On the South–western Slopes their core breeding area is roughly bounded by Cowra and Yass in the east, and Grenfell, Cootamundra and Coolac in the west. Birds breeding in this region are mainly absent during winter, when they migrate north to the region of the upper Namoi and Gwydir Rivers. Inhabits Box–Gum, Box–Cypress–pine and Boree Woodlands and River Red Gum Forest.	16	**Present** Box-Gum woodland is present in the proposal area.	**Present** The proposal area falls within this species known breeding range. Observed during field surveys.	**Yes** AoS completed
Grantiella picta Painted Honeyeater BC – V, EPBC – V	The Painted Honeyeater is nomadic and occurs at low densities throughout its range. The greatest concentrations of the bird and almost all breeding occurs on the inland slopes of the Great Dividing Range in NSW, Victoria and southern Queensland. Inhabits Boree, Brigalow and Box–Gum Woodlands and Box–Ironbark Forests. A specialist feeder on the fruits of mistletoes growing on woodland eucalypts and acacias. Prefers mistletoes of the genus *Amyema*. Insects and nectar from mistletoe or eucalypts are occasionally eaten. Nest from spring to autumn in a small, delicate nest hanging within the outer canopy of drooping eucalypts, she–oak, paperbark or mistletoe branches.	0	**Absent** Characteristic tree species do not occur in the proposal area.	**Unlikely** No records within the locality.	**No** Species unlikely to occur.
Lathamus discolour Swift Parrot EPBC – CE	In NSW mostly occurs on the coast and south west slopes. On the mainland they occur in areas where eucalypts are flowering profusely or where there is abundant lerp (from sap–sucking bugs) infestations. Favoured feed trees include winter flowering species such as Swamp Mahogany *Eucalyptus robusta*, Spotted Gum *Corymbia maculata*, Red Bloodwood *C. gummifera*, Mugga Ironbark *E. sideroxylon*, and White Box *E. albens*. Commonly used lerp infested trees include Grey Box *E. microcarpa*, Grey Box *E. moluccana* and Blackbutt *E. pilularis*. Return to home foraging sites on a cyclic basis depending on food availability.	3	**Absent** Characteristic tree species absent from the proposal area.	**Possible** This species has been recorded within the locality.	Yes AoS completed
Neophema pulchella Turquoise Parrot	Lives on the edges of eucalypt woodland adjoining clearings, timbered ridges and creeks in farmland. Usually seen in pairs or small, possibly family, groups and have also been reported in flocks of up to thirty individuals. Prefers to feed in the shade of a tree and spends most of	0	**Present** Eucalypt woodland present.	**Unlikely** No records within the	**No** Species unlikely to occur.

Species	Description of Habitat	No. of Records	Presence of habitat	Likelihood of occurrence	Potential impact?
BC – V	the day on the ground searching for the seeds or grasses and herbaceous plants or browsing on vegetable matter. Forages quietly and may be quite tolerant of disturbance. However, if flushed it will fly to a nearby tree and then return to the ground to browse as soon as the danger has passed. Nests in tree hollows, logs or posts, from August to December. It lays four or five white, rounded eggs on a nest of decayed wood dust.			locality. Groundcover within the proposal area was largely exotic.	
Melithreptus gularis gularis Black–chinned Honeyeater BC – V	The subspecies is widespread, from the tablelands and western slopes of the Great Dividing Range to the north–west and central–west plains and the Riverina. Occupies mostly upper levels of drier open forests or woodlands dominated by box and ironbark eucalypts, especially Mugga Ironbark, White Box, Grey Box, Yellow Box and Forest Red Gum. Also inhabits open forests of smooth–barked gums, stringybarks, ironbarks and tea–trees. Feeding territories are large making the species locally nomadic.	1	**Present** Box-woodland Present.	**Possible** Species has been recorded within the locality; however, species occupies large territories and is locally nomadic.	**No** Species is locally nomadic.
Glossopsitta pusilla Little Lorikeet BC – V	NSW provides a large portion of the species' core habitat, with lorikeets found westward as far as Dubbo and Albury. Nomadic movements are common, influenced by season and food availability. Forages primarily in the canopy of open Eucalyptus forest and woodland, yet also finds food in Angophoras, Melaleucas and other tree species. Riparian habitats are particularly used, due to higher soil fertility and hence greater productivity. Isolated flowering trees in open country, e.g. paddocks, roadside remnants and urban trees also help sustain viable populations of the species. Feeds mostly on nectar and pollen, occasionally on native fruits such as mistletoe, and only rarely in orchards. Roosts in treetops, often distant from feeding areas. Nests in proximity to feeding areas if possible, most typically selecting hollows in the limb or trunk of smooth–barked Eucalypts. Entrance is small (3 cm) and usually high above the ground (2–15 m). These nest sites are often used repeatedly for decades, suggesting that preferred sites are limited. Riparian trees often chosen, including species like Allocasuarina. Nesting season extends from May to September.	0	**Present** Eucalyptus woodland present within the proposal area.	**Unlikely** No records within the locality.	**No** Species unlikely to occur – locally nomadic.

Species	Description of Habitat	No. of Records	Presence of habitat	Likelihood of occurrence	Potential impact?
Anthochaera phrygia Regent Honeyeater BC – CE, EPBC – CE	A semi–nomadic species occurring in temperate eucalypt woodlands and open forests. Most records are from box–ironbark eucalypt forest associations and wet lowland coastal forests (NPWS, 1999 177 /id)(Pizzey, 1997). A semi–nomadic species occurring in temperate eucalypt woodlands and open forests. There are three known key breeding areas, two of them in NSW - Capertee Valley and Bundarra-Barraba regions. The species breeds between July and January in Box-Ironbark and other temperate woodlands and riparian gallery forest dominated by River Sheoak.	2	**Present** Box-Gum Woodland present within the proposal area.	**Possible** Species has been recorded within the locality.	**No** Species semi-nomadic. Proposal area is not within a known breeding area for this species.
Artamus cyanopterus cyanopterus Dusky Woodswallow BC – V	The species primarily inhabit dry, open eucalypt forests and woodlands, including mallee associations, with an open or sparse understorey of eucalypt saplings, acacias and other shrubs, and groundcover of grasses or sedges and fallen woody debris. It has also been recorded in shrublands, heathlands and very occasionally in moist forest or rainforest. Also found in farmland, usually at the edges of forest or woodland. Most breeding activity occurs on the western slopes of the Great Dividing Range.	2	**Present** Woodland suitable to this species is present in the proposal area.	**Possible** The species has been recorded within the locality.	**Yes** AoS Completed.
Botaurus poiciloptilus Australasian Bittern EPBC – E	In NSW, this species occurs along the coast and is frequently recorded in the Murray–Darling Basin, notably in floodplain wetlands of the Murrumbidgee, Lachlan, Macquarie and Gwydir Rivers. Occurs in permanent freshwater wetlands with tall, dense vegetation. Favours permanent and seasonal freshwater habitats, particularly those dominated by sedges, rushes and/or reeds (e.g. *Phragmites, Cyperus, Eleocharis, Juncus, Typha, Baumea, Bolboschoenus*) or cutting grass (*Gahnia*) growing over muddy or peaty substrate. Breeding occurs in summer from October to January; nests are built in secluded places in densely–vegetated wetlands on a platform of reeds.	0	**Present** Permanent freshwater habitat occurs within the proposal area.	**Unlikely** No records occur within the locality.	**No** Species unlikely to occur. Aquatic habitat within the proposal area would not be impacted by the works.
Ninox strenua Powerful Owl BC–V	Powerful Owls occur in a range of vegetation types, including woodland and open sclerophyll forest. They need large tracts of habitat but can occur in fragmented landscapes as well. Breeding and hunting occurs in open or closed sclerophyll forest or woodland, and hunting may also occur in open habitat. They perch during the day in dense vegetation that includes species such as Turpentine, Black She–oak, Blackwood, Rough–barked Apple, Cherry Ballart, and a number of eucalypt species.	0	**Absent** Dense perching habitat is not present within the proposal area.	**Unlikely** No records within the locality.	**No** Species unlikely to occur. No HBTs would be removed by the proposal.

Species	Description of Habitat	No. of Records	Presence of habitat	Likelihood of occurrence	Potential impact?
Chthonicola sagittata Speckled Warbler BC – V	The Speckled Warbler has a patchy distribution throughout south–eastern Queensland, the eastern half of NSW and into Victoria. The species is most frequently reported from the hills and tablelands of the Great Dividing Range, and rarely from the coast. The Speckled Warbler lives in a wide range of Eucalyptus dominated communities that have a grassy understorey, often on rocky ridges or in gullies. Typical habitat would include scattered native tussock grasses, a sparse shrub layer, some eucalypt regrowth and an open canopy. Large, relatively undisturbed remnants are required for the species to persist in an area.	0	**Absent** No large, remnant tracts of vegetation within proposal area.	**Unlikely** No records within the locality.	**No** Species unlikely to occur.
Climacteris picumnus victoriae Brown Tree Creeper (Eastern Species) BC – V	Mainly inhabits woodlands dominated by stringybarks or other rough–barked eucalypts, usually with an open grassy understorey, sometimes with one or more shrub species; also found in mallee and River Red Gum (*Eucalyptus camaldulensis*). Forest bordering wetlands with an open understorey of acacias, saltbush, lignum, cumbungi and grasses.	8	**Present** Eucalypt woodland present within the proposal area.	**Likely** Records occur within the locality. The species is sedentary so likely still in the area.	**Yes** AoS completed.
Hieraaetus morphnoides Little Eagle BC – V	The Little Eagle occurs as a single population throughout NSW. It occupies open eucalypt forest, woodland or open woodland. Sheoak or acacia woodlands and riparian woodlands of interior NSW are also used. Nests in tall living trees within a remnant patch, where pairs build a large stick nest in winter.	1	**Present** Eucalypt forest occurs within the proposal area.	**Possible** This species has been recorded in the locality.	**Yes** AoS completed.
Lophoictinia isura Square–tailed Kite BC – V	The Square–tailed Kite ranges along coastal and subcoastal areas from south–western to northern Australia, Queensland, NSW and Victoria. In NSW, scattered records of the species throughout the state indicate that the species is a regular resident in the north, north–east and along the major west–flowing river systems. It is a summer breeding migrant to the south–east, including the NSW south coast, arriving in September and leaving by March. Found in a variety of timbered habitats including dry woodlands and open forests. Shows a particular preference for timbered watercourses. In arid north–western NSW, has been observed in stony country with a ground cover of chenopods and grasses, open acacia scrub and patches of low open eucalypt woodland.	0	**Present** Timbered watercourses are present in the proposal area.	**Unlikely** No records within the locality. Largely exotic understorey occurs within proposal area.	**No** Species unlikely to occur.

Species	Description of Habitat	No. of Records	Presence of habitat	Likelihood of occurrence	Potential impact?
Circus assimilis Spotted Harrier BC – V	Occurs in grassy open woodland including acacia and mallee remnants, inland riparian woodland, grassland and shrub steppe. It is found most commonly in native grassland, but also occurs in agricultural land, foraging over open habitats including edges of inland wetlands. Builds a stick nest in a tree and lays eggs in spring (or sometimes autumn), with young remaining in the nest for several months.	0	**Present** Grassy open woodland occurs within the proposal area.	**Unlikely** No records occur within the locality.	**No** Species unlikely to occur.
Haliaeetus leucogaster White–bellied Sea–Eagle BC – V EPBC – M	White–bellied Sea–Eagles are a common sight in coastal and near coastal areas of Australia. Birds form permanent pairs that inhabit territories throughout the year. Their loud "goose–like" honking call is a familiar sound, particularly during the breeding season. Birds are normally seen, perched high in a tree, or soaring over waterways and adjacent land. White–bellied Sea–Eagles build a large stick nest, which is used for many seasons in succession. The nest can be located in a tree up to 30 m above the ground, but may be also be placed on the ground or on rocks, where there are no suitable trees.	0	**Absent** No coastal habitat within or adjacent to proposal area.	**Unlikely** Preferred habitat not present. No records within the locality.	**No** This species and its habitat will not be impacted by the proposal.
Epthianura albifrons White-fronted Chat BC – V	Usually found foraging on bare or grassy ground in wetland areas, singly or in pairs. They are insectivorous, feeding mainly on flies and beetles caught from or close to the ground.	1	**Present** Wetland habitat occurs within the proposal area.	**Possible** This species has been recorded within the locality.	**Yes** AoS completed.
Callocephalon fimbriatum Gang-gang Cockatoo BC – V	In spring and summer, generally found in tall mountain forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests. In autumn and winter, the species often moves to lower altitudes in drier more open eucalypt forests and woodlands, particularly box-gum and box-ironbark assemblages, or in dry forest in coastal areas and often found in urban areas. Favours old growth forest and woodland attributes for nesting and roosting. Nests are located in hollows that are 10 cm in diameter or larger in eucalypts.	0	**Present** Remnant, open eucalypt forest present within the proposal area.	**Unlikely** No records within the locality.	**No** Species unlikely to occur. No HBTs would be removed by the proposal.
Oxyura australis	The Blue-billed Duck prefers deep water in large permanent wetlands and swamps with dense aquatic vegetation. The species is completely	0	**Absent** Deep water/dense	**Unlikely**	**No**

Species	Description of Habitat	No. of Records	Presence of habitat	Likelihood of occurrence	Potential impact?
Blue-billed Duck BC – V	aquatic, swimming low in the water along the edge of dense cover. It will fly if disturbed but prefers to dive if approached.		aquatic vegetation does not occur within the proposal area.	No records within the locality.	Species unlikely to occur.
Lophochroa leadbeateri Major Mitchell's Cockatoo BC – V	Inhabits a wide range of treed and treeless inland habitats, always within easy reach of water. Feeds mostly on the ground, especially on the seeds of native and exotic melons and on the seeds of species of saltbush, wattles and cypress pines.	0	**Absent** Characteristic food species were not present within the proposal area.	**Unlikely** No records within the locality.	**No** Species unlikely to occur.
Grus rubicunda Brolga BC – V	Though Brolgas often feed in dry grassland or ploughed paddocks or even desert claypans, they are dependent on wetlands too, especially shallow swamps, where they will forage with their head entirely submerged.	0	**Present** Foraging habitat and shallow wetlands occur within the proposal area.	**Unlikely** No records within the locality.	**No** Species unlikely to occur.
Hamirostra melanosternon Black-breasted Buzzard BC – V	Lives in a range of inland habitats, especially along timbered watercourses which is the preferred breeding habitat. Also hunts over grasslands and sparsely timbered woodlands. Occurs in highly disturbed areas with no or limited vegetation. The Black-breasted Buzzard is found sparsely in areas of less than 500mm rainfall.	0	**Present** Breeding habitat/ woodlands occur within the proposal area.	**Unlikely** No records within the locality. The proposal area receives too much rainfall to be suitable for this species.	**No** Species unlikely to occur.
Stictonetta naevosa Freckled Duck BC – V	Prefer permanent freshwater swamps and creeks with heavy growth of Cumbungi, Lignum or Tea-tree. During drier times they move from ephemeral breeding swamps to more permanent waters such as lakes, reservoirs, farm dams and sewage ponds. Generally rest in dense cover during the day, usually in deep water.	0	**Present** Freshwater creeks present within the proposal area.	**Unlikely** No records within the locality. No deep water	**No** Species unlikely to occur.

Species	Description of Habitat	No. of Records	Presence of habitat	Likelihood of occurrence	Potential impact?
				bodies were present within the proposal area.	
Anseranas semipalmata Magpie Goose BC – V	Mainly found in shallow wetlands (less than 1 m deep) with dense growth of rushes or sedges. Equally at home in aquatic or terrestrial habitats; often seen walking and grazing on land; feeds on grasses, bulbs and rhizomes.	0	**Present** Shallow wetlands occur within the proposal area.	**Unlikely** No records within the locality.	**No** Species unlikely to occur.
Ardeotis australis Australian Bustard BC – E	Mainly inhabits tussock and hummock grasslands, though prefers tussock grasses to hummock grasses; also occurs in low shrublands and low open grassy woodlands; occasionally seen in pastoral and cropping country, golf courses and near dams.	0	**Present** Tussock grasses occur at the site.	**Unlikely** No records within the locality. Species not known to occur in the area.	**No** Species unlikely to occur.
Burhinus grallarius Bush Stone-curlew BC – E	Inhabits open forests and woodlands with a sparse grassy groundlayer and fallen timber. Largely nocturnal, being especially active on moonlit nights. Feed on insects and small vertebrates, such as frogs, lizards and snakes. Nest on the ground in a scrape or small bare patch.	0	**Present** Open woodland occurs at the site.	**Unlikely** No records within the locality. Not associated with a mapped PCT within the proposal area.	**No** Species unlikely to occur.
Calyptorhynchus lathami Glossy Black-Cockatoo	In the Riverina, birds are associated with hills and rocky rises supporting Drooping Sheoak, but also recorded in open woodlands dominated by Belah (*Casuarina cristata*).	0	**Absent** Associated vegetation was not observed within the	**Unlikely** No records within the	**No** Species unlikely to occur.

Species	Description of Habitat	No. of Records	Presence of habitat	Likelihood of occurrence	Potential impact?
BC – V			proposal area.	locality.	No HBTs would be removed by the proposal.
Certhionyx variegatus Pied Honeyeater BC – V	Inhabits wattle shrub, primarily Mulga (*Acacia aneura*), mallee, spinifex and eucalypt woodlands, usually when shrubs are flowering; feeds on nectar, predominantly from various species of emu-bushes (*Eremophila spp*.); also from mistletoes and various other shrubs (e.g. *Grevillea spp*.); also eats saltbush fruit, berries, seed, flowers and insects.	0	**Present.** Associated vegetation occurs within the proposal area.	**Unlikely** No records within the locality.	**No** Species unlikely to occur.
Ephippiorhynchus asiaticus Black-necked Stork BC – E	Floodplain wetlands (swamps, billabongs, watercourses and dams) of the major coastal rivers are the key habitat in NSW for the Black-necked Stork. Secondary habitat includes minor floodplains, coastal sandplain wetlands and estuaries.	0	**Present** Wetland habitat suitable to this species occurs within the proposal area.	**Unlikely** No records within the locality. Prefers coastal rivers.	**No** Species unlikely to occur.
Ixobrychus flavicollis Black Bittern BC – V	Inhabits both terrestrial and estuarine wetlands, generally in areas of permanent water and dense vegetation. Where permanent water is present, the species may occur in flooded grassland, forest, woodland, rainforest and mangroves.	0	**Present** Wetland habitat occurs within the proposal area.	**Unlikely** No records within the locality. Wetland habitat was not densely vegetated.	**No** Species unlikely to occur.
Leipoa ocellata Malleefowl BC – E, EPBC – V	Predominantly inhabit mallee communities, preferring the tall, dense and floristically-rich mallee found in higher rainfall (300 - 450 mm mean annual rainfall) areas. Utilises mallee with a spinifex understorey, but usually at lower densities than in areas with a shrub understorey. Less frequently found in other eucalypt woodlands, such as Inland Grey Box, Ironbark or Bimble Box Woodlands with thick understorey, or in other woodlands such dominated by Mulga or native Cypress Pine species.	0	**Absent** No mallee species were recorded within the proposal area.	**Unlikely** No records within the locality.	**No** Species unlikely to occur.

Species	Description of Habitat	No. of Records	Presence of habitat	Likelihood of occurrence	Potential impact?
Limosa limosa Black-tailed Godwit BC – V	Primarily a coastal species. Usually found in sheltered bays, estuaries and lagoons with large intertidal mudflats and/or sandflats.	0	**Absent** Coastal habitat does not occur within the proposal area.	**Unlikely** No records within the locality.	**No** Species unlikely to occur.
Ninox connivens Barking Owl BC – V	Inhabits woodland and open forest, including fragmented remnants and partly cleared farmland. It is flexible in its habitat use, and hunting can extend in to closed forest and more open areas. Sometimes able to successfully breed along timbered watercourses in heavily cleared habitats (e.g. western NSW) due to the higher density of prey found on these fertile riparian soils. Two or three eggs are laid in hollows of large, old trees.	0	**Present.** Open forest and riparian habitat occurred within the proposal area.	**Unlikely** No records within the locality..	**No** Species has a wide distribution. No HBTs would be removed by the proposal.
Pachycephala inornate Gilbert's Whistler BC – V	The Gilbert's Whistler occurs in a range of habitats within NSW, though the shared feature appears to be a dense shrub layer. It is widely recorded in mallee shrublands, but also occurs in box-ironbark woodlands, Cypress Pine and Belah woodlands and River Red Gum forests, though at this stage it is only known to use this habitat along the Murray, Edwards and Wakool Rivers.	0	**Absent** Associated shrubland not present.	**Unlikely** No records within the locality.	**No** Species unlikely to occur.
Pomatostomus temporalis temporalis Grey-crowned Babbler (eastern subspecies) BC – V	Inhabits open Box-Gum Woodlands on the slopes, and Box-Cypress-pine and open Box Woodlands on alluvial plains. Woodlands on fertile soils in coastal regions. Build and maintain several conspicuous, dome-shaped stick nests about the size of a football. A nest is used as a dormitory for roosting each night. Nests are usually located in shrubs or sapling eucalypts, although they may be built in the outermost leaves of low branches of large eucalypts.	0	**Present** Box-gum woodland present within the proposal area.	**Unlikely** No records within the locality. No nests were observed within the proposal area.	**No** Species unlikely to occur.
Glossopsitta porphyrocephala Purple-crowned Lorikeet	Found in open forests and woodlands, particularly where there are large flowering eucalypts. Also recorded from mallee habitats. Feed primarily on nectar and pollen of flowering Eucalypts, including planted trees in urban areas.	0	**Present.** Open forest/ woodland occurs at the site.	**Unlikely** No records within the	**No** Species unlikely to occur.

Species	Description of Habitat	No. of Records	Presence of habitat	Likelihood of occurrence	Potential impact?
BC – V				locality.	No HBTs would be removed by the proposed works.
Tyto novaehollandiae Masked Owl BC – V	Lives in dry eucalypt forests and woodlands from sea level to 1100 m. A forest owl, but often hunts along the edges of forests, including roadsides.	0	**Present** Eucalypt forest present at the site.	**Unlikely** No records within the locality.	**No** Species unlikely to occur. No HBTs would be removed by the proposed works.
Pandion cristatus Eastern Osprey BC – V	Favour coastal areas, especially the mouths of large rivers, lagoons and lakes. Feed on fish over clear, open water.	0	**Absent** Coastal habitat is not present within the proposal area.	**Unlikely** No records within the locality.	**No** Species unlikely to occur.
Petroica rodinogaster Pink Robin BC – V	Inhabits rainforest and tall, open eucalypt forest, particularly in densely vegetated gullies.	0	**Present** Tall, open forest occurs within the proposal area.	**Unlikely** No records within the locality.	**No** Species unlikely to occur.
Melanodryas cucullata cucullate Hooded Robin BC/EPBC	Prefers lightly wooded country, usually open eucalypt woodland, acacia scrub and mallee, often in or near clearings or open areas. Requires structurally diverse habitats featuring mature eucalypts, saplings, some small shrubs and a ground layer of moderately tall native grasses.	1	**Absent** Proposal area does not contain a structurally diverse habitat.	**Unlikely** Suitable habitat does not occur within the proposal area.	**No** Species unlikely to occur.
MAMMALS					
Dasyurus maculatus maculatus (SE mainland	This species is found in a range of forest habitats, from rainforest to open woodland. They require forest with suitable den sites such as	0	**Present.**	**Unlikely**	**No**

Species	Description of Habitat	No. of Records	Presence of habitat	Likelihood of occurrence	Potential impact?
population) Spotted–tailed Quoll BC – V, EPBC – E	rock crevices, caves, hollow logs, burrows and tree hollows. This species has a large home range and can cover considerable distances (more than 6km) overnight. It is largely nocturnal and solitary.		Open forest/ woodland occurs at the site.	No records within the locality.	Species unlikely to occur. No HBTs would be removed by the proposed works.
Petaurus norfolcensis Squirrel Glider BC – V (+ Squirrel Glider in the Wagga Wagga Local Government Area)	Inhabits dry sclerophyll forest and woodland and is generally absent from rainforest and closed forest. In NSW, potential habitat includes Box–Ironbark forests and woodlands in the west, the River Red Gum forests of the Murray Valley and the eucalypt forests of the northeast. Requires abundant hollow–bearing trees and a mix of eucalypts, acacias and banksias. Smooth–barked eucalypts are preferred as these eucalypts form hollows more readily than rough–barked and support a greater diversity of invertebrates. Squirrel Glider's forage in the upper and lower forest canopies and in the shrub understorey.	3	**Present** Open box-gum woodland occurs within the proposal area.	**Unlikely** Proposal area did not contain many shrubs suitable for this species.	**No** Species unlikely to occur. No HBTs would be removed by the proposed works.
Macrotis lagotis Bilby BC - Extinct	A hundred years ago, Bilbies were common in many habitats throughout Australia, from the dry interior to temperate coastal regions. Changes to the Bilby's habitat have seen their numbers greatly reduced and today the species is nationally listed as vulnerable, and is presumed extinct in NSW. They now occur in fragmented populations in mulga shrublands and spinifex grasslands in the Tanami Desert of the Northern Territory; in the Gibson and Great Sandy Deserts and the Pilbara and Kimberley regions of Western Australia; and the Mitchell Grasslands of southwest Queensland.	1	**Absent** No mulga shrubland or spinifex grasslands were observed in the proposal area.	**Unlikely** This species is considered to be extinct in NSW.	**No** Species unlikely to occur.
Pteropus poliocephalus Grey–headed Flying–fox EPBC – V	Grey–headed Flying–foxes are found within 200 km of the eastern coast of Australia, from Bundaberg in Queensland to Melbourne in Victoria. Occur in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops. Roosting camps are generally located within 20 km of a regular food source, often in stands of riparian rainforest, Paperbark or Casuarina forest, and are commonly found in gullies, close to water, or in vegetation with a dense canopy. Forage on the nectar and pollen of native trees, in particular *Eucalyptus*, *Melaleuca* and *Banksia,* and fruits of rainforest trees and vines. Travel up to 50 km to forage. Annual mating commences in January and a single young is born each October or November. Site fidelity to camps is high with some camps being used for over a century.	0	**Present** Water bodies occurred within the proposal area. Eucalypts were recorded.	**Unlikely** No records within the locality. The nearest known camp is located 27.3 km north east of the proposal area.	**No** Species unlikely to occur.

Species	Description of Habitat	No. of Records	Presence of habitat	Likelihood of occurrence	Potential impact?
Cercartetus nanus Eastern Pygmy-possum BC – V	In NSW it extents from the coast inland as far as the Pilliga, Dubbo, Parkes and Wagga Wagga on the western slopes. Found in a broad range of habitats from rainforest through sclerophyll (including Box-Ironbark) forest and woodland to heath, but in most areas woodlands and heath appear to be preferred, except in north-eastern NSW where they are most frequently encountered in rainforest. Feeds largely on nectar and pollen collected from banksias, eucalypts and bottlebrushes; an important pollinator of heathland plants such as banksias; soft fruits are eaten when flowers are unavailable.	0	**Present** Box-woodland occurs within the proposal area.	**Unlikely** No records within the locality. **No banksias or bottlebrushes were observed within the proposal area.**	**No** Species unlikely to occur.
Chalinolobus picatus Little Pied Bat EPBC - V	The Little-Pied Bat is found in inland Queensland and NSW (including Western Plains and slopes) extending slightly into South Australia and Victoria. Occurs in dry open forest, open woodland, mulga woodlands, chenopod shrublands, cypress pine forest and mallee and Bimbil box woodlands. Roosts in caves, rock outcrops, mine shafts, tunnels, tree hollows and buildings. Can tolerate high temperatures and dryness but need access to nearby open water. Feeds on moths and possibly other flying invertebrates.	0	**Present** Open Woodland occurs within the proposal area.	**Possible** This species has a wide distribution.	**No** Species unlikely to occur. No HBTs would be removed by the proposed work.
Falsistrellus tasmaniensis Eastern False Pipistrelle BC - V	The Eastern False Pipistrelle is found on the south-east coast and ranges of Australia, from southern Queensland to Victoria and Tasmania. Prefers moist habitats, with trees taller than 20 m. Generally roosts in eucalypt hollows, but has also been found under loose bark on trees or in buildings. Hunts beetles, moths, weevils and other flying insects above or just below the tree canopy. Hibernates in winter. Females are pregnant in late spring to early summer.	0	**Present** Eucalypt woodlands occur within the proposal area.	**Possible** This species has a wide distribution.	**No** Species unlikely to occur. No HBTs would be removed by the proposed work.
Miniopterus orianae oceanensis Large Bent–winged Bat *BC*– V	Primary roost habitat are caves, also use mines, storm–water tunnels and other man–made structures. Young are also raised within caves. Maternity caves have specific temperature and humidity regimes. Outside of breeding season populations can disperse up to 300m from maternity caves. Breeding colonies can reach numbers up to 150, 000	0	**Present** Box-Gum woodland present within the proposal area.	**Possible** Species has a wide distribution.	**No** Species unlikely to occur. Roosting habitat

Species	Description of Habitat	No. of Records	Presence of habitat	Likelihood of occurrence	Potential impact?
	individuals. Foraging occurs within forests areas above treetops where insects are a primary food source.				would not be impacted by the proposal.
Myotis Macropus Southern Myotis BC – V	The Large–footed Myotis is found in the coastal band from the north–west of Australia, across the top–end and south to western Victoria. It is rarely found more than 100 km inland, except along major rivers. Generally, roost in groups of 10 – 15 close to water in caves, mine shafts, hollow–bearing trees, storm water channels, buildings, under bridges and in dense foliage. Forage over streams and pools catching insects and small fish by raking their feet across the water surface. In NSW females have one young each year usually in November or December.	0	**Present** Aquatic habitat occurs within the proposal area.	**Unlikely** Species is rarely found more than 100 km inland.	**No** Species unlikely to occur. No roosting habitat would be impacted by the proposal.
Yellow–bellied Glider *Petaurus australis* BC–V	The Yellow–bellied Glider is found along the eastern coast to the western slopes of the Great Dividing Range, from southern Queensland to Victoria. Occur in tall mature eucalypt forest generally in areas with high rainfall and nutrient rich soils. Feeds primarily on insect exudates including nectar, sap, honeydew and mana. Also eats pollen and insects for protein. Resides in family groups within hollows of large trees during the day. Very mobile, occur home ranges between 20–85 ha encompassing disperse and seasonally variable foods.	0	**Present** Eucalypt woodland occurs within the proposal area.	**Possible** This species has a wide distribution.	**No** Species unlikely to occur. No roosting habitat would be impacted by the proposal.
Phascolarctos cinereus Koala BC – V, EPBC – V	Occurs in eastern Australia, from north–eastern Queensland to south–eastern South Australia and to the west of the Great Dividing Range. In NSW it mainly occurs on the central and north coasts with some populations in the western region. It was historically abundant on the south coast of NSW, but now occurs in sparse and possibly disjunct populations. The koala inhabits a range of eucalypt forest and woodland communities, including coastal forests, the woodlands of the tablelands and western slopes, and the riparian communities of the western plains.	0	**Present** Box-Gum Woodland occurs within the proposal area.	**Unlikely** This species has not been recorded within the locality.	**No** Species unlikely to occur.
Petrogale penicillate Brush-tailed Rock-Wallaby BC – E, EPBC – V	Occupy rocky escarpments, outcrops and cliffs with a preference for complex structures with fissures, caves and ledges, often facing north. Shelter or bask during the day in rock crevices, caves and overhangs and are most active at night when foraging. Browse on vegetation in and adjacent to rocky areas eating grasses and forbs as well as the foliage and fruits of shrubs and trees.	0	**Absent** Complex rocky habitat does not occur within the proposal area.	**Unlikely** No records within the locality.	**No** Species unlikely to occur.

Species	Description of Habitat	No. of Records	Presence of habitat	Likelihood of occurrence	Potential impact?
Phascogale tapoatafa Brush-tailed Phascogale BC – V	Prefer dry sclerophyll open forest with sparse groundcover of herbs, grasses, shrubs or leaf litter. Also inhabit heath, swamps, rainforest and wet sclerophyll forest.	0	**Present** Open forest occurs within the proposal area; however, heavily vegetated.	**Unlikely** No records within the locality.	**No** Species unlikely to occur.
Saccolaimus flaviventris Yellow-bellied Sheathtail-bat BC -V	Roosts singly or in groups of up to six, in tree hollows and buildings; in treeless areas they are known to utilise mammal burrows. Forages in most habitats across its very wide range, with and without trees; appears to defend an aerial territory.	0	**Present** This species has a large distribution.	**Possible** Species inhabits a wide range of habitats. No records within the locality.	**No** Species unlikely to occur. No HBTs would be removed by the proposed work.
Nyctophilus corbeni Corben's Long-eared Bat BC – V, EPBC – V	Inhabits a variety of vegetation types, including Mallee, Bulloke *Allocasuarina leuhmanni* and box eucalypt dominated communities, but it is distinctly more common in box/ironbark/cypress-pine vegetation that occurs in a north-south belt along the western slopes and plains of NSW and southern Queensland. Roosts in tree hollows, crevices, and under loose bark.	0	**Present.** Box eucalypt dominated vegetation occurs within the proposal area.	**Possible.** Species has a wide distribution. No records within the locality.	**No** Species unlikely to occur. No HBTs would be removed by the proposed work.
Chalinolobus dwyeri Large-eared Pied Bat BC – V, EPBC – V	Roosts in caves (near their entrances), crevices in cliffs, old mine workings and in the disused, bottle-shaped mud nests of the Fairy Martin (Petrochelidon ariel), frequenting low to mid-elevation dry open forest and woodland close to these features. Females have been recorded raising young in maternity roosts (c. 20-40 females) from November through to January in roof domes in sandstone caves and overhangs. They remain loyal to the same cave over many years. Found in well-timbered areas containing gullies.	0	**Present.** A timbered watercourse occurs within the proposal area.	**Possible.** This species has a wide distribution. No records within the locality.	**No** Species unlikely to occur. No HBTs would be removed by the proposed work.
AMPHIBIANS					

Species	Description of Habitat	No. of Records	Presence of habitat	Likelihood of occurrence	Potential impact?
Litoria raniformis Growling Grass Frog, Southern Bell Frog, Green and Golden Frog, Warty Swamp Frog BC – E, EPBC – V	Currently, the species is known to exist only in isolated populations in the Coleambally Irrigation Area, the Lowbidgee floodplain and around Lake Victoria. Usually found in or around permanent or ephemeral Black Box/Lignum/Nitre Goosefoot swamps, Lignum/Typha swamps and River Red Gum swamps or billabongs along floodplains and river valleys. They are also found in irrigated rice crops, particularly where there is no available natural habitat. Breeding occurs during the warmer months and is triggered by flooding or a significant rise in water levels. During the breeding season animals are found floating amongst aquatic vegetation (especially cumbungi or Common Reeds). Tadpoles require standing water for at least 4 months for development and metamorphosis to occur but can take up to 12 months to develop. Outside the breeding season animals disperse away from the water and take shelter beneath ground debris such as fallen timber and bark, rocks, grass clumps and in deep soil cracks.	0	**Present** Aquatic habitat occurred within the proposal area.	**Unlikely** This species has a restricted distribution.	**No** Species unlikely to occur.
Litoria booroolongensis Booroolong Frog BC–E	Booroolong Frog lives along permanent streams with some fringing vegetation cover such as ferns, sedges or grasses. They shelter under rocks or amongst vegetation near the ground on the stream edge.	0	**Present** Suitable aquatic habitat occurs within the proposal area.	**Unlikely** No records within the locality. Lack of rocky habitat within or nearby to the stream.	**No** Species unlikely to occur.
Crinia sloanei Sloane's Froglet BC – V, EPBC – E	This species is typically associated with periodically inundated areas in grassland, woodland and disturbed habitats. Live along permanent streams with some fringing vegetation cover such as ferns, sedges or grasses. Adults occur on or near cobble banks and other rock structures within stream margins. Shelter under rocks or amongst vegetation near the ground on the stream edge. Sometimes bask in the sun on exposed rocks near flowing water during summer.	0	**Present** Suitable aquatic habitat occurs within the proposal area.	**Unlikely** This species has a limited distribution, occurring within the Murray River.	**No** Species unlikely to occur.
REPTILES					
Aprasia parapulchella Pink–tailed Worm–lizard,	Inhabits sloping, open woodland areas with predominantly native grassy ground layers, particularly those dominated by Kangaroo Grass (*Themeda australis*). Sites are typically well–drained, with rocky	0	**Present** Rocky habitat/	**Unlikely** No records	**No** Species unlikely to

Species	Description of Habitat	No. of Records	Presence of habitat	Likelihood of occurrence	Potential impact?
Pink–tailed Legless Lizard BC – V, EPBC – V	outcrops or scattered, partially buried rocks. Commonly found beneath small, partially embedded rocks and appear to spend considerable time in burrows below these rocks; the burrows have been constructed by and are often still inhabited by small black ants and termites. Feeds on the larvae and eggs of the ants with which it shares its burrows.		Kangaroo Grass occurs within the proposal area.	within the locality. Ground layer was dominated by exotic vegetation.	occur.
Rosenberg's Goanna *Varanus rosenbergi* BC–V	Rosenberg's Goannas are found in heath, open forest, and woodland. Individuals require large areas of habitat. Termite mounds, where they nest, are a critical habitat component. They shelter in hollow logs, rock crevices, and in burrows.	0	**Absent** No termite mounds within the proposal area.	**Unlikely** Lack of suitable habitat. No records within the locality.	**No** Species unlikely to occur.
Hoplocephalus bitorquatus Pale-headed Snake BC – V	Found mainly in dry eucalypt forests and woodlands, cypress forest and occasionally in rainforest or moist eucalypt forest. In drier environments, it appears to favour habitats close to riparian areas.	0	**Present** Eucalypt forest present within the proposal area.	**Unlikely** No records within the locality. Species is not known to occur in the area.	**No** Species unlikely to occur.
Delma impar Striped Legless Lizard BC – V, EPBC - V	Found mainly in Natural Temperate Grassland but has also been captured in grasslands that have a high exotic component. Also found in secondary grassland near Natural Temperate Grassland and occasionally in open Box-Gum Woodland. Habitat is where grassland is dominated by perennial, tussock-forming grasses such as Kangaroo Grass *Themeda australis,* spear-grasses *Austrostipa spp.* and poa tussocks *Poa spp.,* and occasionally wallaby grasses *Austrodanthonia spp.* Sometimes present in modified grasslands with a significant content of exotic grasses. Sometimes found in grasslands with significant amounts of surface rocks, which are used for shelter.	0	**Present** Exotic dominated grassland, with some native species, occurs within the proposal area.	**Unlikely** No records within the locality. Populations are only known in the Goulburn, Queanbeyan, Cooma, Yass, Muswellbrook and Tumut areas.	**No** Species unlikely to occur.
FISH					
Macquaria australasica Macquarie Perch	Macquarie perch grow to a maximum size of 400mm. They are found in the Murray–Darling Basin (particularly upstream reaches) of the	0	**Absent** Aquatic habitat	**Unlikely** No records	**No**

Species	Description of Habitat	No. of Records	Presence of habitat	Likelihood of occurrence	Potential impact?
EPBC – E	Lachlan, Murrumbidgee and Murray rivers, and parts of south–eastern coastal NSW, including the Hawkesbury and Shoalhaven catchments. Macquarie perch are found in both river and lake habitats, especially the upper reaches of rivers and their tributaries. They are quiet, furtive fish that feed on aquatic insects, crustaceans and molluscs. Sexual maturity occurs at two years for males and three years for females. Macquarie perch spawn in spring or summer in shallow upland streams or flowing parts of rivers. Females produce around 50,000–100,000 eggs which settle among stones and gravel of the stream or river bed.		within the proposal is unsuitable.	within the locality.	Species unlikely to occur.
Maccullochella peelii Murray Cod EPBC – V	Murray cod are able to live in a wide range of habitats from clear, rocky streams in the upper western slopes regions of New South Wales to the slow flowing, turbid rivers and billabongs of the western plains. Generally, they are found in waters up to 5m deep and in sheltered areas with cover from rocks, timber or overhanging banks. The most common components of adult cod's diet include crustaceans such as yabbies, shrimp and crayfish, and fish such as the introduced common carp, goldfish and redfin perch, and the native fishes bony herring, catfish, golden perch, western carp gudgeon and even other cod. It appears that Murray cod prefer protected spawning sites, and typically spawn large (3.0–3.5mm diameter) adhesive eggs onto firm substrates such as hollow logs, rocks, pipes and clay banks, from spring to early summer.	0	**Absent** Aquatic habitat within the proposal is unsuitable.	**Unlikely** No records within the locality.	**No** Species unlikely to occur.
Maccullochella macquariensis Trout Cod EPBC – V	Trout Cod habitat is not well understood, but they appear to favour deep, fast flowing waters. Cover is vital, and they are often found sheltering under snags (woody debris).	0	**Absent** Aquatic habitat within the proposal is unsuitable.	**Unlikely** No records within the locality.	**No** Species unlikely to occur.
INVERTEBRATES					
Synemon plana Golden Sun Moth BC – E EPBC – CE	Known populations are found between Queanbeyan, Gunning, Young and Tumut. Species distribution extended from Bathurst through to the NSW Southern Tablelands and central and western Victoria though to eastern South Australia. Occurs within Natural Temperate Grasslands and grassy box–gum Woodlands in which ground layer is dominated by wallaby grasses. Grasslands dominated by wallaby grass are	0	**Present** Woodland and associated grass species are present within the proposal area.	**Unlikely** No records within the locality. Groundlayer	**No** Species unlikely to occur.

Species	Description of Habitat	No. of Records	Presence of habitat	Likelihood of occurrence	Potential impact?
	typically low and open, bare ground between grass tussocks is thought to be an important microhabitat feature for this species. This area is where females are typically observed displaying to attract males. Known habitat may contain several wallaby grass species, typically associate with spear grasses or Kangaroo Grass. Adults are short lived (one to four days) and do not feed, having no mouthparts, the larvae are thought to feed exclusively on the roots of wallaby grasses. Eggs are laid at the base of wallaby grasses. Males will not fly more than 100m from suitable habitat. Populations separated more than 200m can be considered isolated populations that have gone extinct and are highly unlikely to be recolonised.			species are highly exotic. The proposal area is outside of the known populations for this species.	
MIGRATORY					
Myiagra cyanoleuca Satin Flycatcher EPBC - M	Satin Flycatchers inhabit heavily vegetated gullies in eucalypt-dominated forests and taller woodlands, and on migration, occur in coastal forests, woodlands, mangroves and drier woodlands and open forests.	0	**Present** Eucalypt woodland occurs within the proposal area.	**Unlikely** Only small tracts of remnant woodland occur within the proposal area.	**No** Species unlikely to occur.
Rostratula australis Australian Painted Snipe BC – E, EPBC – E, M	The Australian Painted Snipe is restricted to Australia. Most records are from the southeast, particularly the Murray Darling Basin, with scattered records across northern Australia and historical records from around the Perth region in Western Australia. In NSW many records are from the Murray-Darling Basin including the Paroo wetlands, Lake Cowal, Macquarie Marshes, Fivebough Swamp and more recently, swamps near Balldale and Wanganella. Other important locations with recent records include wetlands on the Hawkesbury River and the Clarence and lower Hunter Valleys.	0	**Present** Wetland habitat occurs within the proposal area.	**Unlikely** No records within the locality. Wetland habitat was small in size and unlikely to support this species.	**No** Species unlikely to occur.
Calidris ferruginea Curlew Sandpiper BC – E, EPBC – CE, M	It generally occupies littoral and estuarine habitats, and in New South Wales is mainly found in intertidal mudflats of sheltered coasts. It also occurs in non-tidal swamps, lakes and lagoons on the coast and sometimes inland. It forages in or at the edge of shallow water, occasionally on exposed algal mats or waterweed, or on banks of beach-cast seagrass or seaweed.	0	**Absent** Coastal habitat does not occur within or nearby to the proposal area.	**Unlikely** No records within the locality.	**No** Species unlikely to occur.

Species	Description of Habitat	No. of Records	Presence of habitat	Likelihood of occurrence	Potential impact?
Hirundapus caudacutus White–throated Needletail EPBC – V, M	Most White–throated Needletails spend the non–breeding season in Australasia, mainly in Australia, and occasionally in New Guinea and New Zealand. In Australia, the White–throated Needletail is almost exclusively aerial, from heights of less than 1 m up to more than 1000 m above the ground. Although they occur over most types of habitat, they are probably recorded most often above wooded areas, including open forest and rainforest, and may also fly between trees or in clearings, below the canopy, but they are less commonly recorded flying above woodland. They also commonly occur over heathland but less often over treeless areas, such as grassland or swamps.	0	**Present** Woodland present in study area.	**Unlikely** No records within the locality. Species almost exclusively aerial.	**No** Species unlikely to occur/be impacted.
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew EPBC – CE	The Eastern Curlew is most commonly associated with sheltered coasts, especially estuaries, bays, harbours, inlets and coastal lagoons, with large intertidal mudflats or sandflats, often with beds of seagrass. The Eastern Curlew mainly forages on soft sheltered intertidal sandflats or mudflats, open and without vegetation or covered with seagrass, often near mangroves, on saltflats and in saltmarsh, rockpools and among rubble on coral reefs, and on ocean beaches near the tideline. The Eastern Curlew roosts on sandy spits and islets, especially on dry beach sand near the high–water mark, and among coastal vegetation including low saltmarsh or mangroves. It occasionally roosts on reef–flats, in the shallow water of lagoons and other near–coastal wetlands.	0	**Absent** Coastal habitat not within or nearby to proposal area.	**Unlikely** No records within the locality. No suitable habitat within the proposal area.	**No** Species unlikely to occur.
Apus pacificus Fork-tailed Swift EPBC - M	Preferred habitat includes mountains, near water. This species breeds in the north-east and mid-east Asia and winters in Australia and southern New Guinea. It is a visitor to most parts of Western Australia, beginning to arrive in the Kimberley in late September, in the Pilbara and Eucla in November and in the south-west land division in mid-December, and leaving by late April. They never settle voluntarily on the ground and spend most of their lives in the air, living on the insects they catch in their beaks.	0	**Absent** No mountainous terrain present in the proposal area.	**Unlikely** No records within the locality.	**No** This species is almost exclusively aerial. Would not be impacted.
Motacilla flava Yellow Wagtail EPBC - M	Widespread wagtail, favouring wet meadows, marshland, grassy and muddy lakeshores.	0	**Present** Wetland habitat occurs within the proposal area.	**Unlikely** No records within the locality. Wetland habitat	**No** Species unlikely to occur.

Species	Description of Habitat	No. of Records	Presence of habitat	Likelihood of occurrence	Potential impact?
				was small in size and unlikely to support this species.	
Rhipidura rufifrons Rufous fantail EPBC – M	The Rufous Fantail is found in rainforest, dense wet forests, swamp woodlands and mangroves, preferring deep shade, and is often seen close to the ground. During migration, it may be found in more open habitats or urban areas.	0	**Absent** Dense forest does not occur within the proposal area.	**Unlikely** No records within the locality.	**No** Species unlikely to occur.
Actitis hypoleucos Common Sandpiper BC -E, EPBC – CE, M	In Australia, the Common Sandpiper is found in coastal or inland wetlands, both saline or fresh. It is found mainly on muddy edges or rocky shores.	0	**Present** Wetlands occur in the proposal area.	**Unlikely** No records within the locality. Wetland habitat was small in size and unlikely to support this species.	**No** Species unlikely to occur.
Calidris acuminata Sharp-tailed Sandpiper EPBC – M	This species prefers non-tidal wetlands, especially freshly exposed mudflats in drying lakes and on intertidal mudflats.	0	**Present** Wetlands occur in the proposal area.	**Unlikely** No records within the locality. Wetland habitat was small in size and unlikely to support this species.	**No** Species unlikely to occur.
Calidris melanotos Pectoral Sandpiper EPBC – M	A small number of these birds are known to reach Australia and are believed to be concentrated in south-eastern Australia. This species prefers freshwater mudflats.	0	**Absent** No freshwater mudflats occur within the proposal area.	**Unlikely** No records within the locality.	**No** Species unlikely to occur.
Gallinago hardwickii	This species usually inhabits open, freshwater wetlands with low, dense vegetation (e.g. swamps, flooded grasslands or heathlands,	0	**Present** Wetlands occur in	**Unlikely** No records	**No**

Species	Description of Habitat	No. of Records	Presence of habitat	Likelihood of occurrence	Potential impact?
Latham's Snipe EPBC – M	around bogs and other water bodies). However, they can also occur in habitats with saline or brackish water, in modified or artificial habitats, and in habitats located close to humans or human activity.		the proposal area.	within the locality. Wetland habitat was small in size and unlikely to support this species.	Species unlikely to occur.
MARINE					
Ardea ibis Cattle Egret EPBC – Mar.	The Cattle Egret is found in grasslands, woodlands and wetlands, and is not common in arid areas. It also uses pastures and croplands, especially where drainage is poor.	0	**Present** Woodlands occur within the proposal area.	**Unlikely** No records within the locality. The proposal area is highly disturbed.	**No** Species unlikely to occur.
Chrysococcyx osculans Black-eared Cuckoo EPBC – Mar.	The Black-eared Cuckoo is found in drier country where species such as mulga and mallee form open woodlands and shrublands. It is often found in vegetation along creek beds.	0	**Present** Open woodland occurs within the proposal area.	**Unlikely** No records within the locality.	**No** Species unlikely to occur.
Merops ornatus Rainbow bee-eater EPBC – Mar.	The Rainbow Bee-eater is most often found in open forests, woodlands and shrublands, and cleared areas, usually near water. It will be found on farmland with remnant vegetation and in orchards and vineyards. It will use disturbed sites such as quarries, cuttings and mines to build its nesting tunnels.	0	**Absent** Open forest occurs within the proposal area; no breeding habitat was observed.	**Unlikely** No records within the locality.	**No** Species unlikely to occur.

CE BC = listed as Critically Endangered under Schedule 1 of the NSW *Biodiversity Conservation Act 2016*
CE EPBC = listed as Critically Endangered under the Commonwealth *Environment Protection & Biodiversity Conservation Act 1999.*
E BC = listed as Endangered under Schedule 1 of the NSW *Biodiversity Conservation Act 2016*
E EPBC = listed as Endangered under the Commonwealth *Environment Protection & Biodiversity Conservation Act 1999.*
V BC = listed as Vulnerable under Schedule 1 of the NSW *Biodiversity Conservation Act 2016*

Species	Description of Habitat	No. of Records	Presence of habitat	Likelihood of occurrence	Potential impact?
V EPBC = listed as Vulnerable under the Commonwealth *Environment Protection & Biodiversity Conservation Act 1999.* M EPBC = listed as Migratory under the Commonwealth *Environment Protection & Biodiversity Conservation Act 1999.* Mar. EPBC = listed as Marine under the Commonwealth *Environment Protection & Biodiversity Conservation Act 1999.* CAMBA = Chinese–Australia Migratory Bird Agreement JAMBA = Japan-Australia Migratory Bird Agreement					

Appendix D BC Act Assessments of Significance

Part 7.3 of the *Biodiversity Conservation Act 2016* (BC Act) specifies five factors to be taken into account when deciding whether a development is likely to significantly affect threatened species, populations or ecological communities, or their habitats, listed at the state level under the *Biodiversity Conservation Act 2016*.

This *Five-part Test* characterises the significance of likely impacts associated with the proposal on the following species and ecological communities:

- Groundcover species:
  - *Cullen parvum* Small Scurf-pea BC – E
  - *Swainsona recta* Small Purple–pea BC – E
- EEC:
  - *White Box–Yellow Box–Blakely's Red Gum Grassy Woodland and Derived Native Grassland*, BC – CE
- Ground foraging birds:
  - *Petroica boodang* Scarlet Robin BC – V
  - *Daphoenositta chrysoptera* Varied Sittella BC – V
  - *Stagonopleura guttata* Diamond Firetail BC - V
  - *Polytelis swainsonii* Superb Parrot BC – V
  - *Artamus cyanopterus cyanopterus* Dusky Woodswallow BC – V
  - *Climacteris picumnus victoriae* Brown Tree Creeper (Eastern Species) BC – V
  - *Epthianura albifrons* White-fronted Chat BC – V
- Birds of Prey:
  - *Hieraaetus morphnoides* Little Eagle BC – V

a) **In the case of a threatened species, whether the proposed development is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.**
Groundcover species: Small Scurf-pea & Small Purple-pea.
The Small Scurf-pea and Small Purple-pea were not detected during the site survey. However, due to seasonal conditions they may have been overlooked. Habitat within the proposal area showed evidence of prior disturbance. The Small Scurf-pea has shown a preference for disturbed habitats, while the Small Purple-pea is known to grow along railway easements (OEH, 2012). Therefore, suitable habitat for these species occurs within the proposal area. The proposal would result in the disturbance and removal of up to 0.24 ha of largely exotic PCT 277 vegetation from within the proposal area. Groundcover disturbance within the proposal area would occur either side of the bridge and within the proposed road formation. Vegetation to be removed represents approximately 0.009% of PCT 277 habitat within the greater locality. HBTs would be retained during the works, preserving connectivity with surrounding woodland habitat. Any potential occurrence of a seed bank for these species would not be removed by the

proposed works.

The area of vegetation to be removed by the works is small given the local context. Given the pre-disturbed nature of the site, an adverse impact is considered unlikely to occur. The proposal is not considered an action that would have an adverse effect on the life cycle of these species, nor is it considered an action that would place a local viable population at risk of extinction.

Ground Foraging Birds: Scarlet Robin, Varied Sitella, Diamond Firetail, Superb Parrot, Dusky Woodswallow, Brown Tree Creeper, White-fronted Chat.

A Superb Parrot (*Polytelis swainsonii*) was observed flying overhead during the site survey. No other threatened species were observed during the site survey. However, due to the size of the proposal area and seasonal conditions they may not have been present at the time. Suitable habitat for the listed species occurs within the proposal area.

Habitat within the proposal area showed evidence of prior disturbance, which likely accounted for the high proportion of exotic species within the proposal area. The proposal would result in the disturbance and removal of up to 0.24 ha of foraging habitat potentially suitable for these species.

Woodland disturbance within the proposal area would occur on either side of the bridge and within the proposed road formation. Vegetation to be removed represents approximately 0.009% of PCT 277 habitat within the greater locality. HBTs would be retained during the works, preserving connectivity with surrounding woodland habitat.

The area of vegetation to be removed by the works is small given the local context. Given the pre-disturbed nature of the site, an adverse impact is considered unlikely to occur. The proposal is not considered an action that would have an adverse effect on the life cycle of these species, nor is it considered an action that would place a local viable population at risk of extinction.

Birds of Prey: The Little Eagle

The Little Eagle was not observed during the site survey. However, this species has a wide distribution and may not have been observable at the time of survey. The Little Eagle hunts small mammals, which are reliant on groundcover species within the proposal area for cover and protection. Furthermore, noise associated with construction activities can be disruptive during the breeding months (spring).

The proposal would result in the disturbance and removal of 0.24 ha of woodland habitat. Woodland disturbance within the proposal area would occur on either side of the bridge and within the proposed road formation. Vegetation to be removed represents approximately 0.009% of PCT 277 habitat within the greater locality. HBTs would be retained during the works, preserving connectivity with surrounding woodland habitat.

The area of vegetation to be removed by the works is small given the local context. The works would be short-term in nature, moving along the proposal area in accordance with the activities being performed. Given the small scale and short-term nature of the work, an adverse impact is considered unlikely to occur. The proposal is not considered an action that would have an adverse effect on the life cycle of the species, nor is it considered an action that would place a local viable population at risk of extinction.

b) In the case of an endangered ecological community, or critically endangered ecological

community, whether the proposed development or activity: **a. Is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction.** **b. Is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction.**
Groundcover species
Not applicable.
CEEC*:* White Box–Yellow Box–Blakely's Red Gum Grassy Woodland and Derived Native Grassland
a) The works would directly impact up to 0.24 ha of White Box-Yellow Box Woodland critically endangered ecological community (CEEC). Impacts to this CEEC would occur as small patches on either side of the existing road formation. These patches are relatively small in the local context, representing only 0.009% of PCT 277 vegetation within the locality. The proposed works are not likely to have an adverse effect on the extent of this CEEC such that its local occurrence is likely to be placed at risk of extinction. b) The proposed works would remove approximately 0.24 ha of this CEEC. Impacts to woodland vegetation would occur as narrow linear strips along either side of the bridge and the existing road formation. The proposal area showed evidence of prior disturbance, which accounts for the high number of exotic species that were observed during the site survey. It is considered unlikely that the proposal would substantially and adversely modify the composition of the ecological community such that its local occurrence would be placed at risk of extinction.
Ground foraging birds
Not applicable.
Birds of prey
Not applicable.
c) In relation to the habitat of a threatened species or ecological community: **i. The extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and** **ii. Whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and** **iii. The importance of the habitat to be removed, modified, fragmented or isolated to the long–term survival of the species or ecological community in the locality.**
Groundcover species
i. Up to 0.24 ha of woodland vegetation suitable to these species would incur impacts from

the proposal. Groundcover disturbance would occur as strips on either side of the bridge and within the proposed road formation. Understory vegetation to be removed is highly exotic in nature and representative of approximately 0.009% of PCT 277 woodland habitat within the greater locality. ii. No further fragmentation or isolation is expected as a result of the proposed works. The area to be impacted occurs within a heavily cleared landscape. No HBTs would be removed by the proposed works. Impacted vegetation represents a small portion of woodland habitat within the surrounding area. No further fragmentation or isolation is expected as a result of the proposed development. iii. The area of habitat to be disturbed/removed is small (0.009%) given the local context. This habitat is not likely to be important for these species, given the previous disturbance associated with the road corridor, agricultural activities and edge effects.
CEEC*:* White Box–Yellow Box–Blakely's Red Gum Grassy Woodland and Derived Native Grassland
i. Up to 0.24 ha of this CEEC would incur impacts from the proposal. Disturbance to this CEEC would occur as isolated patches on either side of the existing road formation. Vegetation to be removed is highly exotic in nature and represents approximately 0.009% of PCT 277 woodland habitat within the greater locality. ii. No further fragmentation or isolation is expected as a result of the proposed works. The area to be impacted occurs within a heavily cleared landscape. No HBTs would be removed by the proposed works. Impacted vegetation represents a small portion of woodland habitat within the surrounding area. No further fragmentation or isolation is expected as a result of the proposed development. iii. The area of habitat to be disturbed/removed is small (0.009%) given the local context. This habitat is not likely to be important for this CEEC, given the previous disturbance associated with the road corridor, agricultural activities and edge effects.
Ground Foraging Birds
i. Up to 0.24 ha of woodland vegetation suitable to these species would incur impacts from the proposal. Groundcover disturbance would occur as strips on either side of the bridge and within the proposed road formation. Vegetation to be removed is highly exotic in nature and representative of approximately 0.009% of PCT 277 woodland habitat within the greater locality. ii. No further fragmentation or isolation is expected as a result of the proposed works. The area to be impacted occurs within a heavily cleared landscape. No HBTs would be removed by the proposed works. Impacted vegetation represents a small portion of woodland habitat within the surrounding area. No further fragmentation or isolation is expected as a result of the proposed development. iii. The area of habitat to be disturbed/removed is small (0.009%) given the local context. This habitat is not likely to be important for these species, given the previous disturbance associated with the road corridor, agricultural activities and edge effects.
Birds of prey

i. Up to 0.24 ha of woodland vegetation suitable to these species would incur impacts from the proposal. Groundcover disturbance would occur as strips on either side of the bridge and within the proposed road formation. Vegetation to be removed is highly exotic in nature and representative of approximately 0.009% of PCT 277 woodland habitat within the greater locality.

ii. No further fragmentation or isolation is expected as a result of the proposed works. The area to be impacted occurs within a heavily cleared landscape. No HBTs would be removed by the proposed works. Impacted vegetation represents a small portion of woodland habitat within the surrounding area. No further fragmentation or isolation is expected as a result of the proposed development.

iii. The area of habitat to be disturbed/removed is small (0.009%) given the local context. This habitat is not likely to be important for these species, given the previous disturbance associated with the road corridor, agricultural activities and edge effects.

d) Whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly).

No Areas of Outstanding Biodiversity Values (AOBV) occur within or adjacent to the proposal area.

e) Whether the proposed development or activity is part of a key threatening process or is likely to increase the impact of a key threatening process.

The BC Act lists numerous key threatening processes (KTP's). KTP's relevant to the proposal including the following:

- Clearing of native vegetation.
- Invasion of native plant communities by exotic perennial grasses.
- Invasion and establishment of exotic vines and scramblers
- Aggressive exclusion of birds from woodland and forest habitat by abundant Noisy Minors *Manorina melanocephala*

Clearing of native vegetation

Clearing of native vegetation is recognised as a major factor contributing to loss of biological diversity. In the determination, the NSW Scientific Committee found that 'clearing of any area of native vegetation, including areas less than two hectares in extent, may have significant impacts on biological diversity." The proposed works would remove approximately 0.24 ha of woodland vegetation from within the proposal area. Evidence of prior disturbance, in the form of clearing and subsequent regeneration, already exists within the proposal area.

Vegetation trimming and removal would occur as parallel linear strips on either side of the trail. Vegetation to removed is largely regenerative. No HBTs or remnant woodland would be impacted by the proposed works. It is considered that, with the appropriate mitigation measures in place, the proposal would result in a minor increase of this KTP.

Invasion of native plant communities by exotic perennial grasses

Exotic perennial grasses invade native plant communities, competing with, and displacing, many

native species. Dense monocultures of perennial grasses that develop after invasion threaten local vegetation at all sites that are affected. This may result in local and regional declines of many native species and communities, possibly to the extent that they become endangered.

The proposal involves disturbance that can lead to the establishment of exotic perennial grasses. As part of the mitigation measures, it has been recommended that construction machinery would be cleaned prior to entering and exiting work sites, and regular targeted control of priority weeds would be undertaken to reduce the risk of weeds being introduced and spread. With the implementation of these measures, the proposal would be unlikely to increase the impact of this KTP.

Invasion and establishment of exotic vines and scramblers

A large number of exotic vines and scramblers have become established in New South Wales, which have significant adverse impacts on biodiversity. They can smother native vegetation and seedlings, and prevent recruitment, especially in riparian areas.

The proposal involves disturbance that can lead to the establishment of exotic vines and scramblers. As part of the mitigation measures, it has been recommended that construction machinery would be cleaned prior to entering and exiting work sites. With the implementation of these measures, the proposal would be unlikely to increase the impact of this KTP.

Aggressive exclusion of birds from woodland and forest habitat by abundant Noisy Minors *Manorina melanocephala*

The proposal area has a history of disturbance and experiences edge effects as a result of the existing road. It is considered that the proposal would not further fragment the existing environment or increase edge effects. The Noisy Miner is already present in the proposal area and it is unlikely the proposal would contribute to the Noisy Miners growth.

Conclusion

The impacts of the proposal on the assessed threatened species listed under the BC Act are manageable. A significant impact is considered unlikely, based on the following conclusions:

- The amount of habitat to be removed or disturbed by the proposal is relatively small within in the local context. No HBTs would be impacted by the proposal.
- No further fragmentation or isolation of habitat would occur.
- Mitigation measures have been recommended to further reduce impacts to biodiversity.
- No substantial contribution to any Key Threatening Process are expected, if mitigation measures are followed.

Appendix E EPBC Act Test of Significance

E.1 Vulnerable Species

The *Environment Protection and Biodiversity Conservation Act 1999* specifies factors to be taken into account in deciding whether a development is likely to significantly affect Endangered Ecological Communities, threatened species and migratory species, listed at the Commonwealth level. These assessments characterise the significance of likely impacts associated with the proposal on the following **Vulnerable** species:

- *Polytelis swainsonii* Superb Parrot EPBC – V

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:
a) Will the action lead to a long-term decrease in the size of an important population of a species?
Superb Parrot
Two Superb Parrots were observed flying over the proposal area. The National Recovery Plan for the Superb Parrot (Baker-Gabb, 2011) indicates that this species shows a preference for nesting on major waterways. The proposal area is located approximately 63 km north of the Murrumbidgee River, a known breeding location for this species. This species is known to nest within 25 km of major waterways and, as such, the proposal area is not considered to be an important breeding area for this species. Around 0.24 ha of woodland habitat, potentially suitable for these species would be removed by the proposed works. No HBTs would be removed by the proposed work. The vegetation proposed for removal does not form part of any important or large wildlife movement corridor. As the population does not occur within; a core breeding area, an area that maintains genetic diversity or an area near the limit of the species range, an important population of Superb Parrot is not considered to occur within the proposal area. The proposal is not considered an action that would lead to a long-term decrease in the size of an important population of this species. Due to the potential presence of hollow-bearing species it has been recommended that that a suitably qualified person is present to survey woodland vegetation for removal prior to the commencement of works to rescue and/or relocate any fauna, including breeding fauna. An unexpected threatened species find procedure would be implemented.
b) Will the action reduce the area of occupancy of an important population of a species?
Superb Parrot
As noted above, this species has been recorded within the locality; however, no important population is known to occur within the proposal area. Approximately 0.24 ha of woodland suitable to this species would be removed for the proposal, representing 0.009% of PCT 277 woodland within the locality. This vegetation is unlikely to be important to the survival of this species. Therefore, the proposal is not considered an action that would reduce the area of occupancy of any important population for this species.
c) Will the action fragment an existing important population into two or more populations?
Superb Parrot

As noted above, an important population is not likely to occur within the proposal area, The vegetation proposed for removal does not form part of any important or large wildlife movement corridor. Removal of woodland vegetation within the proposal area would occur as isolated patches on either side of the road formation. Therefore, the proposal is not considered an action that would fragment an important population of this species into two or more populations.
d) Will the action adversely affect habitat critical to the survival of a species?
Superb Parrot
The National Recovery Plan for the Superb Parrot, states habitat critical to the survival of the Superb Parrot can be divided into breeding and foraging habitat. Breeding is unlikely to occur within the Wallendbeen area. The proposal would result in the disturbance/removal of up to 0.24 ha of potential foraging habitat from within the proposal area. This species is known to roam widely in search of food. The removal of 0.24 ha of PCT 277 habitat represents approximately 0.009% of PCT 277 habitat within the locality. Therefore, the proposal is not considered an action that would adversely affect the survival of this species.
e) Will the action disrupt the breeding cycle of an important population?
Superb Parrot
The proposal has the potential to disrupt and impact the lifecycle of any birds nesting in HBTs. Wallendbeen is not an important breeding location for this species, due to its distance from major rivers. Furthermore, no HBTs would be impacted by the proposed works. Therefore, the works are not considered likely to disrupt the breeding cycle of an important population of this species.
f) Will the action modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline?
Superb Parrot
The proposal would result in the removal of up to 0.24 ha of potential foraging habitat from within the proposal area. No HBTs would be removed by the proposed works. Vegetation removal would occur as strips on either side of the bridge and within the proposed road formation. This woodland already experiences edge effects, associated with the existing road corridor. The proposal area does not represent an important breeding location for this species. Therefore, the proposal is not considered an action that would modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.
g) Will the action result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat?
Invasive flora species, including Blackberry (*Rubus spp.*), have been recorded in the proposal area. The proposal has the potential to contribute to the spread of invasive species, mainly through the clearing of vegetation and transfer and introduction of plant material and soil on machinery. Mitigation measures have been recommended to prevent the spread of weeds on site. The proposal would therefore be unlikely to result in invasive species that are harmful to these species becoming established in their potential habitat.
h) Will the action introduce disease that may cause the species to decline?
The proposal has the potential to contribute to the spread of disease through the transfer and introduction of plant material and soil on machinery. Mitigation measures have been recommended to prevent the spread of disease on site. The proposal would therefore be unlikely to result in disease which may cause the species to decline.

i) Will the action interfere substantially with the recovery of the species?
Superb Parrot
The National Recovery Plan for Superb Parrot lists the following specific objectives: • Determine population trends in the Superb Parrot. • Increase the level of knowledge of the Superb Parrot's ecological requirements. • Develop and implement threat abatement strategies. • Increase community involvement in and awareness of the Superb Parrot recovery program. The proposal would not interfere with any of these objectives.

Conclusion

The impacts of the proposal on the assessed threatened species listed under the EPBC Act are considered to be manageable. A significant threat is considered unlikely based on the following conclusions:

- The amount of habitat to be removed or disturbed by the proposal is relatively small in the local context.
- No further fragmentation of the habitat would occur.
- No HBTs would be removed by the proposed works.
- No substantial contribution to any key threatening process would be expected.
- No impact to any important population is expected by the proposed works.
- Mitigation measures have been recommended to minimise potential impacts to threatened species.

E.2 Endangered Species

The *Environment Protection and Biodiversity Conservation Act 1999* specifies factors to be taken into account in deciding whether a development is likely to significantly affect Endangered Ecological Communities, threatened species and migratory species, listed at the Commonwealth level. These assessments characterise the significance of likely impacts associated with the proposal on the following **Endangered** and **Critically Endangered** species:

- Groundcover species:
  - *Swainsona recta* Small Purple–pea EPBC– E
- Woodland birds:
  - *Lathamus discolour* Swift Parrot EPBC – CE

An action is likely to have a significant impact on an Endangered or Critically Endangered species if there is a real chance or possibility that it will:
a) lead to a long-term decrease in the size of a population
Small Purple-pea
No known population of Small-purple pea occurs within the proposal area; however, potential habitat for the Small Purple-pea occurs within the proposal area as grassy woodlands. This species was not observed within the proposal area during the site survey. However, this species is inconspicuous and may not have been detected during the survey period. The proposal has the potential to disrupt the lifecycle of any potential occurrence of this species through ground disturbance and potential removal of existing plants. The proposal would disturb up to 0.24 ha of habitat potentially suitable for this species. Disturbance would be staggered as vehicles and equipment works move from one end of the proposal area to the other. Groundcover disturbance within the proposal area would occur as parallel linear strips on either side of the bridge and within the proposed road corridor. The proposal area has already been largely disturbed and, as such, vegetation removed would be largely exotic in nature. Better condition vegetation surrounding the HBTS would not be removed by the proposal and . any potential occurrence of a seed bank for these species here would not be impacted by the proposed works. Given the short-term nature of the disturbance, the pre-disturbed condition of the proposal area and providing that appropriate mitigation measures are adhered to, the proposal is not considered an action that would lead to a long-term decrease in any potential population of this species. An unexpected threatened species find procedure would be implemented.
Swift Parrot
Potential habitat for the Swift Parrot occurs within the proposal area. The Swift parrot does not breed on mainland Australia, therefore only foraging habitat for this species occurs within the proposal area (OEH, 2011). The species was not detected during the site visit; however, this species breeds in Tasmania and may not have been present during the site survey. Around 0.24 ha of woodland habitat, potentially suitable for these species would be removed by the proposed works. No HBTs would be removed by the proposed work. The vegetation proposed for removal does not form part of any important or large wildlife movement corridor.

The Swift Parrot does not breed within Australia (OEH, 2011). Given that the proposal is not an area that maintains genetic diversity and it is not an area near the limit of the species range, an important population of Superb Parrot is not considered to occur within the proposal area. The proposal is not considered an action that would lead to a long-term decrease in the size of an important population of this species. Due to the potential presence of hollow-bearing species it has been recommended that that a suitably qualified person is present to survey woodland vegetation for removal prior to the commencement of works to rescue and/or relocate any fauna, including breeding fauna. An unexpected threatened species find procedure has been recommended.
b) reduce the area of occupancy of the species
Small Purple-pea
The proposal would result in the removal of up to 0.24 ha of habitat potentially suitable for this species. Groundcover disturbance within the proposal area would occur as parallel linear strips on either side of the bridge and within the proposed road corridor. The proposal area has already been largely disturbed and, as such, vegetation removed would be largely exotic in nature. HBTs would be avoided during the works, providing refuges for this species. Any potential occurrence of a seed bank for these species would not be impacted by the proposed works. Given the short-term nature of the disturbance, the pre-disturbed condition of the proposal area and providing that appropriate mitigation measures are adhered to, the proposal is not considered an action that would reduce the area of occupancy of this species.
Swift Parrot
No important population of this species is known to occur within the proposal area. Approximately 0.24 ha of woodland suitable to this species would be removed for the proposal, representing 0.009% of PCT 277 woodland within the locality. This vegetation is unlikely to be important to the survival of this species. The vegetation proposed for removal does not form part of any important or large wildlife movement corridor. Therefore, the proposal is not considered an action that would reduce the area of occupancy of any important population of this species.
c) Will the action fragment an existing population into two or more populations?
Small Purple-pea
As stated above, groundcover disturbance within the proposal area would occur as parallel linear strips on either side of the bridge and within the proposed road corridor. The proposal area has already been largely disturbed and, as such, vegetation removed would be largely regenerative in nature. HBTs would be avoided during the works, providing refuges for this species. Any potential occurrence of a seed bank for these species would not be impacted by the proposed works. Given the short-term nature of the disturbance, the pre-disturbed condition of the proposal area and providing that appropriate mitigation measures are adhered to, the proposal is not considered an action that would fragment an existing population into two or more populations.
Swift Parrot

As noted above, an important population is not likely to occur within the proposal area, The vegetation proposed for removal does not form part of any important or large wildlife movement corridor. Removal of woodland vegetation within the proposal area would occur as isolated patches on either side of the road formation. Therefore, the proposal is not considered an action that would fragment an important population of this species into two or more populations.

d) Will the action adversely affect habitat critical to the survival of a species?

Small Purple-pea

According to the National Recovery Plan for the Small Purple-pea (OEH, 2012), all populations of the Small Purple-pea and the habitat they occupy are critical to the survival of this species. No priority management sites for this species occur within or nearby to the proposal area. The proposal would result in a short-term decrease in habitat suitable for this species. HBTs would be avoided during the works, providing refuges for this species. Any potential occurrence of a seed bank for these species would not be impacted by the proposed works.

The action is unlikely to affect habitat critical to the survival of this species.

Swift Parrot

The National Recovery Plan for the Swift Parrot, states that habitat critical to the survival of this species includes 'habitat used for nesting, by large proportions of the Swift Parrot population, repeatedly between seasons (site fidelity), or for prolonged periods of time (site persistence) (OEH, 2011).

This species does not nest on mainland Australia. Further, if this species had exhibited site fidelity, it is likely that there would have been more records of this species within the locality. The proposal would result in the disturbance/removal of up to 0.24 ha of potential foraging habitat from within the proposal area. This species is known to roam widely in search of food. The removal of 0.24 ha of PCT 277 habitat represents approximately 0.009% of PCT 277 habitat within the locality. Therefore, the proposal is not considered an action that would adversely affect habitat critical to the survival of this species.

e) Will the action disrupt the breeding cycle of a population?

Small Purple-pea

The species is known to flower in Spring, with peaks in October. The proposal has the potential to disrupt the lifecycle of any potential occurrence of these species through ground disturbance and potential removal of existing plants. The proposal would result in a short-term decrease in habitat suitable for this species. HBTs would be avoided during the works, providing refuges for this species. Any potential occurrence of a seed bank for these species would not be impacted by the proposed works.

This species is a disturbance specialist. Therefore, the proposal is not considered an action that would disrupt the breeding cycle of this species.

Swift Parrot

This species does not nest on mainland Australia (OEH, 2011). The proposal would result in the disturbance/removal of up to 0.24 ha of potential foraging habitat from within the proposal area.

This species is known to roam widely in search of food and it is considered likely that this site would be used opportunistically. The removal of 0.24 ha of PCT 277 habitat represents approximately 0.009% of PCT 277 habitat within the locality. Therefore, the proposal is not considered an action that would adversely affect habitat critical to the survival of this species.

f) Will the action modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline?

Small Purple-pea

The proposal would result in a short-term decrease in habitat suitable for this species. Remnant vegetation would be avoided during the works, providing refuges for this species. Any potential occurrence of a seed bank for these species would not be impacted by the proposed works.

The proposal is not considered an action that would modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

Swift Parrot

The proposal would result in the removal of up to 0.24 ha of potential foraging habitat from within the proposal area. Vegetation removal would occur as strips on either side of the bridge and within the proposed road formation. This woodland already experiences edge effects, associated with the existing road corridor. The proposal area does not represent an important breeding location for this species. Therefore, the proposal is not considered an action that would modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

g) Will the action result in invasive species that are harmful to a Critically Endangered or Endangered species becoming established in the Critically Endangered or Endangered species' habitat?

Invasive flora species, including Blackberry (*Rubus spp*.) have been recorded in the proposal area. The proposal has the potential to contribute to the spread of invasive species, mainly through the clearing of vegetation and transfer and introduction of plant material and soil on machinery. Mitigation measures have been recommended to prevent the spread of weeds on site. The proposal would therefore be unlikely to result in invasive species that are harmful to these species becoming established in their potential habitat.

h) Will the action introduce disease that may cause the species to decline?

The proposal has the potential to contribute to the spread of disease through the transfer and introduction of plant material and soil on machinery. Mitigation measures have been recommended to prevent the spread of disease on site. The proposal would therefore be unlikely to result in disease which may cause the species to decline.

i) Will the action interfere substantially with the recovery of the species?

Small Purple-pea

The National Recovery Plan for the Small Purple-pea (OEH, 2012) details the following recovery objectives:

• All natural populations are stable or increasing. • Maintain current genetic diversity across the range of the species. • Achieve formal protection for currently unprotected populations. The proposal would not interfere with these objectives.
Swift Parrot
The National Recovery Plan for the Small Purple-pea (OEH, 2011) details the following recovery objectives: • To prevent further decline of the Swift Parrot population. • To achieve a demonstrable sustained improvement in the quality and quantity of Swift Parrot habitat to increase carrying capacity. The proposal would not interfere with these objectives.

Conclusion

The impacts of the proposal on the assessed threatened species listed under the BC Act are manageable. A significant impact is considered unlikely, based on the following conclusions:

- The amount of habitat to be removed or disturbed by the proposal is relatively small within in the local context. No HBTs would be impacted by the proposal.
- No further fragmentation or isolation of habitat would occur. As mentioned in REF the clearing is on the edge of woodland habitats, so no future fragmentation or isolation of habitat would occur.
- Mitigation measures have been recommended to further reduce impacts to biodiversity.

Appendix F Clause 228 Checklist

A checklist of factors that should be considered in the assessment of impacts prior to its determination is included within Clause 228 of the Environmental Planning and Assessment Regulation 2000. This clause identifies sixteen issues that need to be addressed. The following text provides summary details of each of the issues, the majority of which have been addressed within the body of this document.

Factor	Impact
a. Any environmental impact on a community? During construction, there would be minor short term negative impacts on the community. Potential impacts include traffic and transport, noise and vibration. These impacts have been addressed in section 6.6 and section 6.7 of this report. Positive impacts would be achieved in the long term for motorists using the bridge. The Proposal would also provide for active transport within Wallendbeen and support future development and growth of Wallendbeen.	Minor negative (short-term)
b. Any transformation of a locality? The Proposal would not transform the locality significantly, as works would be contained within the existing road corridor, which is largely hidden from view of sensitive receivers. However, there would also be some long-term transformations during operation as a result of vegetation clearing. Minor vegetation clearing of 0.24ha of native vegetation would result in a long-term, minor visual impact, however, given the small clearing area this would not be deemed as significant and would likely regrow overtime. All existing trees outside the Proposal area that are within the visual catchment would be retained. Proposed safeguards would further assist with screening the Proposal from sensitive receivers.	Minor negative (short-term) Minor negative (long-term)
c. Any environmental impact on the ecosystems of the locality? The Proposal would have the following environmental impacts on the ecosystems of the locality: • Removal of up to 0.24ha of native vegetation (including native vegetation classified as PCT 277 (Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion). AoS and ToS for all BC Act and EPBC Act listed entities confirmed there would be no significant impacts to listed species or communities. The implementation of the safeguards as provided in section 6.3.5 of this REF would ensure that impacts to biodiversity are minimised.	Minor negative (long- term)
d. Any reduction of the aesthetic, recreational, scientific or other environmental quality or value of a locality? The proposal would have minor visual impacts due to the removal of 0.24ha of native vegetation. However, the recreational, scientific or other environmental qualities would not be reduced.	Negative (short-term) Positive (long-term)

Factor	Impact
e. Any effect on a locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance or other special value for present or future generations? There would be no impacts on a locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance or other special value for present or future generations, in the long-term effects on aesthetic values would be positive.	Nil
f. Any impact on the habitat of protected fauna (within the meaning of the *Biodiversity Conservation Act 2016*)? The Proposal would result in the loss of up to 0.24ha of vegetation that would provide habitat for a range of birds, mammals, reptiles and microbats. AoS and ToS for all BC Act and EPBC Act listed entities confirmed that there would be no significant impact from the removal of habitat as part of the Proposal. The implementation of the safeguards as provided in section 6.3.5 of this REF would minimise impacts to biodiversity.	Negative (short-term)
g. Any endangering of any species of animal, plant or other form of life, whether living on land, in water or in the air? The Proposal would not endanger any species.	Nil
h. Any long-term effects on the environment? The Proposal would improve safety, provide active transport and support future development and growth of Wallendbeen. Vegetation to be cleared and modified for the Proposal is approximately 0.98ha in total. This includes 0.24ha of native vegetation classified as PCT 277 (Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion). The implementation of the safeguards as provided in section 8 of this REF would minimise impacts to the environment.	Negative (long-term)
i. Any degradation of the quality of the environment? The Proposal would temporarily degrade small areas of the environment during construction, however, the potential impacts would be minimised with the implementation of the safeguards discussed in section 6.3.5**.** In the long term the Proposal would improve safety and access, provide active transport and support the future development and growth of Wallendbeen.	Negative (short-term) Positive (long-term)
j. Any risk to the safety of the environment? The proposed works (construction and operation) are unlikely to pose a risk to the safety of the environment with the implementation of the proposed mitigation measures outlined in section 8 of this report.	Positive (long-term)
k. Any reduction in the range of beneficial uses of the environment?	Negative (short-term)

Factor	Impact
There may be some inconvenience and altered traffic and access conditions temporarily during works. In the long-term the Proposal would improve safety, connectivity and reduce queuing.	Positive (long-term)
l. Any pollution of the environment? The proposed works could generate pollution risks for soils and water during construction works. These risks would be confined to the construction phase and are manageable with implementation of the safeguards outlined in Chapter 6.	Negative (short-term)
m. Any environmental problems associated with the disposal of waste? Section 6.4 discusses the waste products associated with the Proposal. Specific protocols are set out to manage waste and waste disposal. The Proposal is unlikely to have any environmental problems associated with the disposal of waste, particularly with the reuse of excavated spoil within the bridge abutments, resulting in no excess spoil.	Nil
n. Any increased demands on resources (natural or otherwise) that are, or are likely to become, in short supply? The Proposal does not require resources that are in short supply.	Nil
o. Any cumulative environmental effect with other existing or likely future activities? The cumulative impacts of the Proposal are discussed in Section 6.12. The Proposal may contribute to traffic and noise impacts during construction, however the effects of this would be minimal due to the temporary nature of the Proposal.	Short term negative
p. Any impact on coastal processes and coastal hazards, including those under projected climate change conditions? No coastal processes or hazards would be impacted upon.	Nil