BIODIVERSITY ASSESSMENT REPORT

WENTWORTH HEALTH SERVICE REDEVELOPMENT

WENTWORTH SHIRE LOCAL GOVERNMENT AREA

APRIL 2023

Report prepared by

OzArk Environment & Heritage

on behalf of Health Infrastructure NSW

OzArk
Environment & Heritage

145 Wingewarra St
(PO Box 2069)
Dubbo NSW 2830

Phone: (02) 6882 0118
Fax: (02) 6882 0630
enquiry@ozarkehm.com.au
www.ozarkehm.com.au

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Sheena Duggan (Mostyn Copper)	Sam Bulling (SEB), Dr Crystal Graham (CG)
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Prepared for	**Prepared by**
Gert Halbgebauer Project Director Rural & Regional Health Infrastructure 1 Reserve Road St Leonards, NSW 2065 P: 0475 415 775 E: Gert.Halbgebauer@health.nsw.gov.au	Sam Bulling Ecologist OzArk Environment & Heritage 145 Wingewarra Street (PO Box 2069) Dubbo NSW 2830 P: 02 6882 0118 E: Sam@ozarkehm.com.au

Acknowledgement

OzArk acknowledge Traditional Owners of the area on which this assessment took place and pay respect to their beliefs, cultural heritage, and continuing connection with the land. We also acknowledge and pay respect to the post-contact experiences of Aboriginal people with attachment to the area and to the elders, past and present, as the next generation of role models and vessels for memories, traditions, culture and hopes of local Aboriginal people.

EXECUTIVE SUMMARY

OzArk Environment & Heritage (OzArk) has been engaged by Mostyn Copper (the client), who are acting on behalf of NSW Health Infrastructure (the proponent), to complete a Biodiversity Assessment Report (BAR) regarding their proposal to undertake the Wentworth Health Service Redevelopment project (the proposal), at 24 Hospital Road, Wentworth, NSW, within the Wentworth Shire Local Government Area. This BAR assesses the impacts of the development on local biodiversity and has been undertaken in accordance with Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) and Clause 171 of the EP&A Regulation (2021).

A field survey of the site was conducted by a Biodiversity Assessment Method (BAM)-accredited OzArk Ecologist on the 19th of May 2022. The subject site (1.287 ha) largely consisted of non-native vegetation, existing road surfaces, and the existing Wentworth District Hospital (1.234 ha). The remaining 0.053 ha contained planted native vegetation that will be removed or disturbed by the proposal. This native vegetation consisted of species native to Australia, though not to the Wentworth area (e.g., *Eucalyptus cladocalyx*, *E. peninsularis* and *Corymbia appareinja*). Although these trees provide potential foraging or nesting habitat for native fauna, these plantings cannot be assigned to any PCT.

The vegetation surrounding the subject site was assigned to:

- PCT 11 – River Red Gum – Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
- PCT 15 – Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)

PCT 11 and PCT 15 will not be directly impacted by the current proposal. No vegetation within, or immediately adjacent to, the subject site is associated with a Threatened Ecological Community (TEC) under either the *Biodiversity Conservation Act 2016* (BC Act), or the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The subject site does contain areas mapped as being of high terrestrial biodiversity value under the Wentworth Local Environmental Plan (2011).

No flora species or populations listed as threatened under the BC or EPBC Act were observed during the field survey. Given the short duration of the field survey, and the lack of targeted surveys, the non-detection of threatened flora species cannot be considered as confirmation of their absence. However, following a desktop review of nearby records and habitat requirements for predicted threatened flora, no species were considered to have a moderate-high probability of occurrence within the subject site.

The native vegetation surrounding the subject site offers a corridor of connectivity along the Darling (and by extension) Murray Rivers. The Vegetated Riparian Zone (VRZ) is already narrow in this area; the Office of Water recommends the VRZ should be 40 m for the Darling River. Supplementary planting with native species will be undertaken to enhance the VRZ, specifically, the planting of River Red Gum (*Eucalyptus camaldulensis*) and River Cooba (*Acacia stenophylla*) is recommended, as these are the native species that currently dominate the VRZ.

Twenty-eight fauna species were observed during the field survey; none of these species are listed as threatened or migratory under the BC, FM, and/or EBPC Act. Given the short duration of the field survey, and the lack of targeted surveys, the non-detection of threatened fauna species cannot be considered as confirmation of their absence. Based on the proximity of past records, distribution records, habitat requirements, and the results of the field survey, 16 threatened or migratory bird species and two threatened mammal species, were assessed as having a moderate-to-high likelihood of occurring at the subject site. Tests of significance have been conducted for these species under the BC and/or EPBC Act; these tests concluded that due to the small size of the impact footprint, the lack of native PCTs impacted, and the absence of habitat trees from within the footprint, the proposal would not result in a significant impact to any threatened entity.

Although no watercourse passes directly through the subject site, the proposal is positioned at the confluence of southeast Australia's most important river system: the Murray and Darling rivers. The Darling, at its closest, is less than 15 m from the subject site, while the Murray is 300 m to the south. A tributary of the Darling, Tuckers Creek (a Strahler 3rd order minor perennial watercourse), is 115 m to the north. Therefore, the development footprint is flanked on three sides by Key Fish Habitat, as recognised by the DPI, and has Protected Riparian Land to the west and south. Furthermore, the subject site falls within the boundaries of the endangered Lowland Darling River aquatic ecological community. In addition, Chapter 5 (River Murray Lands) of the *Biodiversity and Conservation SEPP* applies to this land. For any works that involve dredging or reclamation, the proponent must provide the Minister with written notice of the proposed work prior to undertaking any works.

The vulnerable Murray Crayfish (*Euastacus armatus*), the vulnerable Silver Perch (*Bidyanus bidyanus*), and the endangered Murray-Darling Basin population of the Eel-tailed Catfish (*Tandanus tandanus*), all listed under the FM Act, are mapped as occurring in one or more of the above watercourses. These watercourses also have records for the EPBC Act-listed Vulnerable Murray Cod (*Maccullochella peelii*). Tests of significance have been conducted for these species and the endangered Lowland Darling River aquatic ecological community under the FM or EPBC Act. Provided that the proposed mitigation methods are adhered to, the

proposal is not likely to significantly impact any threatened aquatic species, population or community listed under the FM or EPBC Act.

This assessment covers the current form of the proposal. Any change to the scope of work may require re-assessment. If entry into the NSW Biodiversity Offsets Scheme is triggered by a changed footprint impacting additional native vegetation, then additional field work and reporting completed according to the BAM may be required.

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FIGURES

TABLES

ABBREVIATIONS

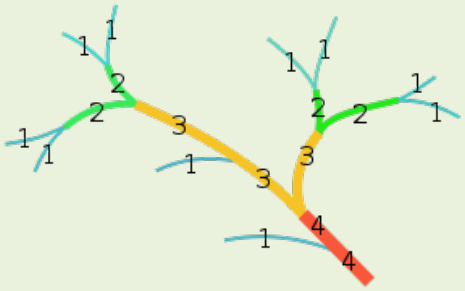
Term	Description
^{0}C	Degrees Celsius
AOBV	Areas of Outstanding Biodiversity Value
ASL	Above Sea Level
BAM	Biodiversity Assessment Method 2020
BAR	Biodiversity Assessment Report
BDAR	Biodiversity Development Assessment Report
BC Act	NSW *Biodiversity Conservation Act 2016*
BOS	NSW Biodiversity Offsets Scheme
CAMBA	China-Australia Migratory Bird Agreement
CEEC	Critically Endangered Ecological Community
CEMP	Construction Environmental Management Plan
DCCEEW	Commonwealth Department of Climate Change, Energy the Environment and Water
DoE	Department of Environment
DPE	Department of Planning and Environment
DPI	NSW Department of Primary Industries
DPIE	NSW Department of Planning, Industry and Environment
EEC	Endangered ecological community
EIS	Environmental Impact Statement
EP&A Act	NSW *Environmental Planning and Assessment Act 1979*
EPBC Act	Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*
ESCP	Erosion and Sediment Control Plan
FM Act	NSW *Fisheries Management Act 1994*
GDEs	Groundwater dependent ecosystems
GPS	Global Positioning System
ha	Hectare
HTE	High Threat Exotic
IBRA	Interim Biogeographic Regionalisation of Australia. Each region is a land area made up of a group of interacting ecosystems repeated in similar form across the landscape.
JAMBA	Japan-Australia Migratory Bird Agreement
KFH	Key Fish Habitat
KTP	Key Threatening Process
LEP	Local Environmental Plan
LGA	Local Government Area
mm/cm/m/m^2/km	Millimetre/centimetre/metre/square metre/kilometre
MNES	Matters of National Environmental Significance
NPW Act	NSW *National Parks and Wildlife Act 1974*
NSW	New South Wales
OEH	NSW Office of Environment and Heritage
PCT	Plant Community Type

Term	Description
PMST	Protected Matters Search Tool
PRL	Protected Riparian Land
PW	Priority Weed
RAMSAR	Convention on Wetlands of International Importance
REF	Review of Environmental Factors
ROKAMBA	Republic of Korea-Australia Migratory Bird Agreement
SEPP	State Environmental Planning Policy
SIS	Species Impact Statement
TECs	Threatened Ecological Communities
TSPD	Threatened Species Profile Database
VIS	Vegetation information system
VRZ	Vegetated Riparian Zone
WoNS	Weeds of National Significance

GLOSSARY OF TERMS

Term	Description
Areas of outstanding biodiversity	An area of outstanding biodiversity value is: ❖ an area important at a State, national or global scale, and ❖ an area that makes a significant contribution to the persistence of at least one of the following: o multiple species or at least one threatened species or ecological community o irreplaceable biological distinctiveness o ecological processes or ecological integrity o outstanding ecological value for education or scientific research. The declaration of an area may relate, but is not limited, to protecting threatened species or ecological communities, connectivity, climate refuges and migratory species (BC Act).
Cumulative impact	The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. Refer to Clause 228(2) of the EP&A Regulation 2000 for cumulative impact assessment requirements.
Direct impacts	Are those that directly affect the habitat of species and ecological communities and of individuals using the study area. They include, but are not limited to, death through predation, trampling, poisoning of the animal/plant itself and the removal of suitable habitat (OEH 2018).
Habitat	The area occupied or used, including areas periodically or occasionally occupied or used, by any threatened species or ecological community and includes all the different aspects (both biotic and abiotic) used by species during the different stages of their life cycle (OEH 2018).
Important population	Is a population that is necessary for a species' long-term survival and recovery; this may include populations identified as such in recovery plans, and/or that are: ❖ key source populations either for breeding or dispersal ❖ populations that are necessary for maintaining genetic diversity, and/or ❖ populations that are near the limit of the species range (DE 2013).
Indirect impact	Occur when project-related activities affect species or ecological communities in a manner other than direct loss within the subject site. Indirect impacts may sterilise or reduce the habitability of adjacent or connected habitats. Indirect impacts can include loss of individuals through starvation, exposure, predation by domestic and/or feral animals, loss of breeding opportunities, loss of shade/shelter, reduction in viability of adjacent habitat due to edge effects, deleterious hydrological changes, increased soil salinity, erosion, inhibition of nitrogen fixation, weed invasion, noise, light spill, fertiliser drift, or increased human activity within or directly adjacent to sensitive habitat areas (OEH 2018).
Invasive species	Is an introduced species, including an introduced (translocated) native species, which out-competes native species for space and resources, or which is a predator of native species. Introducing an invasive species into an area may result in that species becoming established. An invasive species may harm listed threatened species or ecological communities by direct competition, modification of habitat or predation.
Local occurrence (EEC)	The ecological community present within the study area. However, the local occurrence

Term	Description
	may include adjacent areas if the ecological community on the study area forms part of a larger contiguous area of the ecological community and the movement of individuals and exchange of genetic material across the boundary of the study area can be clearly demonstrated.
Local population (in regard to a threatened or migratory species)	A local population of a threatened plant species comprises those individuals occurring in a defined area or a cluster of individuals extends into habitat adjoining and contiguous with the study area where the individuals could reasonably be expected to cross-pollinate. A local population of fauna species comprises those individuals known or likely to occur in a defined area, as well as any individuals occurring in adjoining areas (contiguous or otherwise) that are known or likely to utilise habitats in the study area. The local population of migratory or nomadic fauna species comprises those individuals likely to occur in the study area from time to time (DECC 2007).
Low condition (vegetation)	Either: a) woody native vegetation with native over-storey percent foliage cover less than 50% of the lower value of the over-story percent foliage cover benchmark for that vegetation type, and where either: ❖ less than 50% of ground cover vegetation is indigenous species, or ❖ greater than 90% of ground cover vegetation is cleared or b) native grassland, wetland or herb field where either: ❖ less than 50% of ground cover vegetation is indigenous species, or ❖ more than 90% of ground cover vegetation is cleared. Note: The percentages for the ground cover calculations must be made in a season when the proportion of native ground cover vegetated compared to non-native ground cover vegetation is likely to be at its maximum.
Moderate to good condition (vegetation)	If native vegetation is into in low condition (above), it is in moderate to good condition.
Mitigation	Action to reduce the severity of an impact.
Mitigation measure	Any measure that prevents, reduce or controls adverse environmental effects of a project.
NSW (Mitchell) landscape	Landscapes with relatively homogeneous geomorphology, soils and broad vegetation types, mapped at a scale of 1:250,000 (OEH 2018).
Proposal	Is considered to include 'all activities likely to be undertaken within the subject site to achieve the objective of the proposed development' (DECC 2007).
Risk of extinction	The likelihood that the local population will become extinct either in the short-term or in the long-term as a result of direct or indirect impacts on the viability of that population.
Search area	Is considered to 'include the lands that surround the subject site for a distance of 10 km' (DECC 2007). The search area has been used to search information sources to establish the landscape context of the subject site.
Significant impact	A 'significant impact' is an impact which is important, notable, or of consequence, having regard to its context or intensity.
Strahler stream order	Strahler stream orders are used to define stream size based on a hierarchy of tributaries, based on the diagram below.

Term	Description
	
Study area	Means the subject site and any additional areas which are likely to be affected by the proposal, either directly or indirectly. The study area should extend as far as is necessary to take all potential impacts into account (OEH 2018). In this instance, the study area extends 1,500 m from the site.
Subject site	Means the area directly affected by the proposal. The subject site includes the footprint of the proposal and any ancillary works, facilities, accesses or hazard reduction zones that support the construction or operation of the development or activity (OEH 2018).
Target species	A species that is the focus of a study or intended beneficiary of a conservation action or connectivity measure.

1 INTRODUCTION

OzArk Environment & Heritage (OzArk) has been engaged by Mostyn Copper, who are acting on behalf of NSW Health Infrastructure (the proponent), to complete a Biodiversity Assessment Report (BAR) regarding their proposal to undertake the Wentworth Health Service Redevelopment project (the proposal). This BAR will assess the impacts of the development on local biodiversity, with construction occurring within the Wentworth Shire Local Government Area (LGA) (**Figure 1-1**, **Table 1-1**).

This biodiversity assessment has been undertaken in accordance with Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The biodiversity assessment has been prepared in accordance with Clause 171 of the EP&A Regulation (2021).

1.1 PROPOSAL BACKGROUND

The Wentworth Health Service is currently located at 24 Hospital Road, Wentworth, NSW (**Figure 1-1**), and forms part of the Far West Local Health District. The closest hospital within the Local Health District is in Balranald (approximately 2 hours by road). Mildura Base Hospital operated by Vic Health is the closest (Level 1) tertiary facility (30 minutes by road). The proposal will see the 80-year-old existing Wentworth Health Service replaced by a new facility (**Figure 1-2**, **Figure 1-3**), thus improving the community's access to health services.

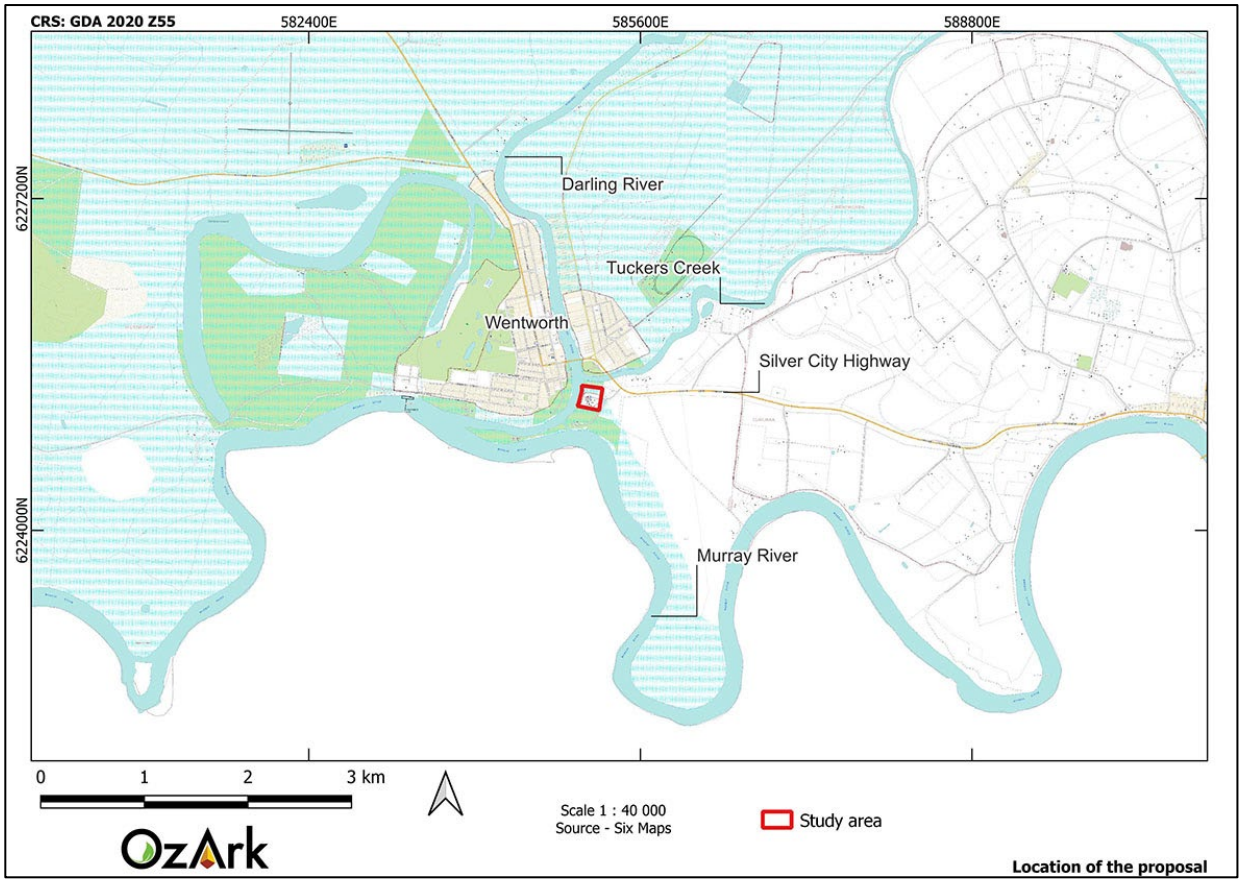


Figure 1-1. Map showing the location of the proposal.

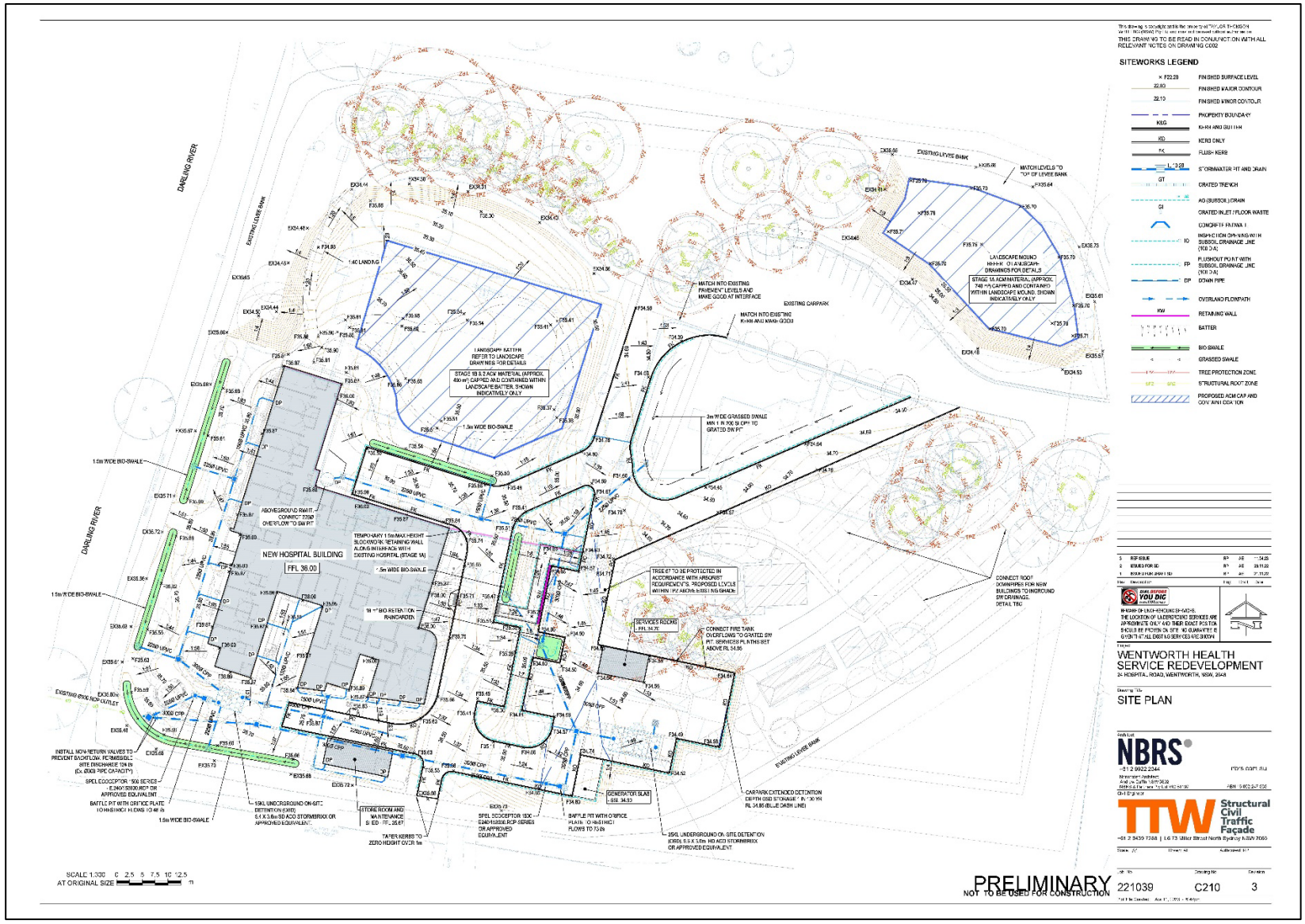


Figure 1-2. Wentworth Health Service Redevelopment Site Plan.

Figure 1-3. Wentworth Health Service Redevelopment Landscape Planting Plan.

1.2 REGIONAL CONTEXT

The subject site is comprised of approximately 1.29 hectares (ha) of land at the junction of the Murray and Darling Rivers, as well as Tuckers Creek in Wentworth NSW. The regional context for the proposal is explored further in **Table 1-1**.

This report uses the following terms to describe and contextualise the development location:

Subject site the footprint of the proposal and the area directly affected by the development activities.

Study area the area within a 1,500 metre (m) radius of the subject site. Native vegetation has been mapped within this 1,500 m buffer to provide some context regarding the connectivity and cover of native vegetation in the area affected by the proposal, and to inform the impact assessment of the proposal.

10 km search area the area within a 10 km radius of the subject site. This 10 km buffer has been used to search information sources to establish the landscape context of the subject site.

The subject site, study area, and search area are depicted in **Figure 1-4**.

Table 1-1. Regional context for the project.

Criteria	Value
Interim Biogeographic Regionalisation for Australia (IBRA Region)	❖ Murray Darling Depression Bioregion (subject site) ❖ Riverina Bioregion (search area)
Interim Biogeographic Regionalisation for Australia Sub-region (IBRA Sub-Region)	❖ Murray Scroll Belt subregion (subject site) ❖ Murray Mallee subregion (search area) ❖ Robinvale Plains subregion (search area) ❖ South Olary Plain subregion (search area)
State	❖ NSW
Local Government Area	❖ Wentworth Shire
Nearest town	❖ Wentworth
Nearest park, state forest or reserve	❖ River Murray Reserve (~ 1650 m)
NSW (Mitchell) landscapes	❖ Lower Darling Channels and Floodplains
Nearest waterways (Name, Type)	❖ Darling River, major perennial (~ 10 m) ❖ Tuckers Creek, minor perennial (~ 125 m) ❖ Murray River, major perennial (~ 240 m)
Surrounding land use	❖ Grazing native vegetation ❖ River
Surrounding land zone	❖ RU5 – Primary Production

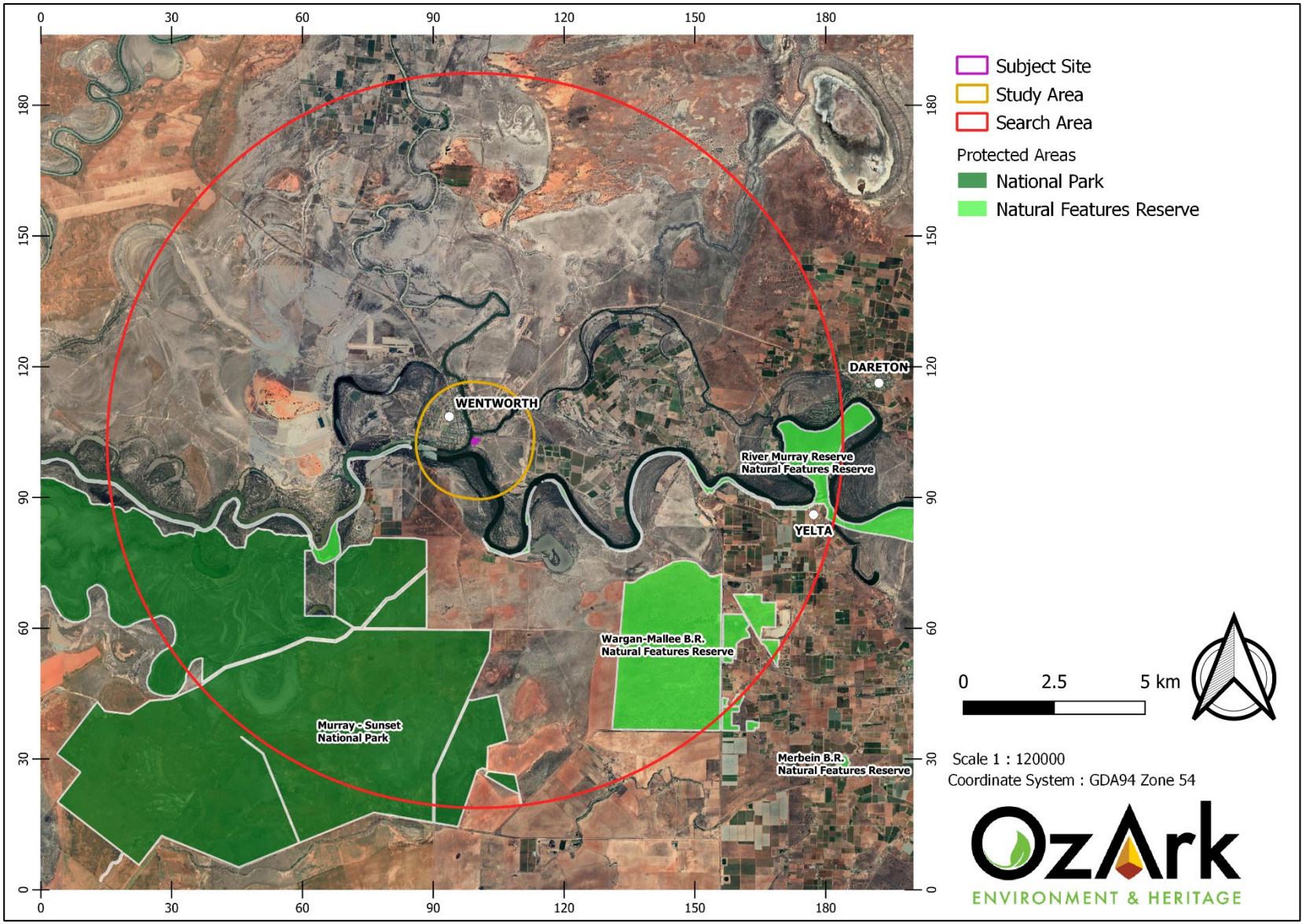


Figure 1-4. Regional context for the proposal.

2 STATUTORY AND PLANNING CONTEXT

2.1 COMMONWEALTH LEGISLATION

2.1.1 *Environment Protection & Biodiversity Conservation Act 1999* (EPBC Act)

To assist with nationally listed matters assessments, the *Matters of National Environmental Significance: Significant impact guidelines 1.1. Environment Protection and Biodiversity Conservation Act 1999* (DoE 2013) are followed.

Birds listed in the following international agreements are classified as migratory birds under the EPBC Act:

- Japan-Australia Migratory Bird Agreement (JAMBA),
- China-Australia Migratory Bird Agreement (CAMBA),
- Republic of Korea-Australia Migratory Bird Agreement (ROKAMBA).

Matters which fall under this legislation are addressed in **Section 5.8** and **Appendix E**.

2.2 STATE LEGISLATION

2.2.1 *Environmental Planning and Assessment Act 1979* (EP&A Act)

The EP&A Act is the principal planning legislation for NSW by providing the framework for environmental planning and the assessment of proposals.

Part 5 of the Act requires that a determination be made as to whether a proposed action is likely to significantly affect threatened species or ecological communities, or their habitats listed on Schedule 1 and 2 of the *Biodiversity and Conservation Act 2016* (BC Act). Where found, the assessment criteria under Part 7 Section 7.3 of the BC Act (the 'Assessment of Significance') will be drawn upon to determine whether there would be a significant effect on these species and hence whether a Species Impact Statement (SIS) or Biodiversity Development Assessment Report (BDAR), should the proponent elect that option, is required.

2.2.2 *Biodiversity Conservation Act 2016* (BC Act)

The BC Act relates to the terrestrial environment and includes threatened species, ecological communities, key threatening processes and other protected animals and plants.

Section 7.3 of the BC Act contains a five-part test of significance for determining whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats.

Where a significant impact is likely to occur, the proponent must either opt into the Biodiversity Offsets Scheme (BOS) and prepare a BDAR or SIS for each significantly impacted BC listed entity.

BC Act listed species and communities are addressed in **Sections 5.2 & 5.3** and **Appendices C** & **D**.

2.2.3 NSW Biosecurity Act 2015

The Biosecurity Act aims to manage biosecurity risks from animal and plant pests and diseases, weeds, and contaminants in NSW. The Biosecurity Act imposes a general biosecurity duty to ensure that, so far as is reasonably practicable, any biosecurity risk is prevented, eliminated, or minimised. The proponent is required to manage the presence of weeds in the study area.

2.2.4 Fisheries Management Act 1994 (FM Act)

Part 7A of the FM Act along with schedules within the act, list threatened aquatic and marine species, populations and ecological communities and key threatening processes which must be considered as part of obligations under Section 5.5 of the EP&A Act.

Section 199 of the FM Act states that a public authority may carry out dredging and reclamation work only after giving the Minister written notice of the proposed work. In this instance, NSW Health Infrastructure should be considered a public authority. Under Section 198A of the FM Act:

dredging work *means—*

(a) any work that involves excavating water land, or

(b) any work that involves moving material on water land or removing material from water land that is prescribed by the regulations as being dredging work to which this Division applies.

reclamation work *means any work that involves—*

(a) using any material (such as sand, soil, silt, gravel, concrete, oyster shells, tyres, timber or rocks) to fill in or reclaim water land, or

(b) depositing any such material on water land for the purpose of constructing anything over water land (such as a bridge), or

(c) draining water from water land for the purpose of its reclamation.

water land *means land submerged by water—*

(a) whether permanently or intermittently, or

(b) whether forming an artificial or natural body of water,

and includes wetlands and any other land prescribed by the regulations as water land to which this Division applies.

As works will be taking place within sensitive aquatic environments, the proponent will be required to notify NSW Fisheries prior to undertaking the works. Refer to **Section 4.3** of this BAR for issues relating to watercourses and the FM Act.

2.2.5 *Water Management Act 2000* (WM Act)

The WM Act aims to provide for the '*sustainable and integrated management of the water sources of the state for the benefit of both present and future generations*.'

The WM Act provides for the granting of various licenses and approvals, including for the use of water and water supply work. Additionally, the WM Act identifies provisions relating to 'controlled activities' carried out on 'waterfront land' (within 40 m of a river bank, lake shore, or estuary's high water mark). Controlled activities include:

- erecting a building,
- carrying out works,
- removing material (e.g., plants and rocks),
- depositing material (e.g., gravel and fill),
- any activity which affects the quantity or flow of water in a water source.

Examples of controlled activities include:

- construction of watercourse crossings (e.g., bridges, bed level crossings),
- laying pipes and cables,
- sand and gravel extraction.

Public Authorities have an exemption under Clause 41 of the *Water Management (General) Regulation 2018*, therefore controlled activity approval is not required.

2.2.6 Wentworth Local Environmental Plan (2011)

A Local Environmental Plan (LEP) is a legal document prepared by Council and approved by the State Government to regulate land use and development. LEPs guide planning decisions for local governments. The plan allows Council to regulate the ways in which all land both private and public may be used and protected through zoning and development controls.

The aims of this Plan, relevant to the proposal, are as follows:

(1) This Plan aims to make local environmental planning provisions for land in Wentworth in accordance with the relevant standard environmental planning instrument under section 3.20 of the Act.

(2) The particular aims of this Plan are as follows—

(aa) to protect and promote the use and development of land for arts and cultural activity, including music and other performance arts,

(a) to encourage and manage ecologically sustainable development within Wentworth,

(b) to encourage the retention and enhancement of land that supports the primary economic activities within Wentworth for productive agriculture and other primary production purposes,

(c) to conserve and protect items of European and Aboriginal cultural heritage,

(d) to conserve and protect areas of environmental significance, particularly conservation parks, reserves and the Murray and Darling River systems.

The subject site contains areas mapped as being of high terrestrial biodiversity value under the LEP (**Appendix A**).

2.2.7 *State Environmental Planning Policy (Transport and Infrastructure) 2021*

The Transport and Infrastructure SEPP aims to *'facilitate the effective delivery of infrastructure across the state'.* Division 10 pertains to Health services facilities.

2.2.8 State Environmental Planning Policy (Biodiversity and Conservation) 2021

The *State Environmental Planning Policy (Biodiversity and Conservation) 2021* (*Biodiversity and Conservation SEPP*) consolidates, transfers and repeals provisions of 11 SEPPs, the following of which are relevant to the current assessment:

- *State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017*;
- *State Environmental Planning Policy (Koala Habitat Protection) 2020*;
- *State Environmental Planning Policy (Koala Habitat Protection) 2021*;
- *Murray Regional Environmental Plan No 2—Riverine Land*;
- *State Environmental Planning Policy No 19—Bushland in Urban Areas*;

These individual SEPPs are no longer current; however, their provisions are incorporated into the *Biodiversity and Conservation SEPP.*

Chapters 3 and 4 of the *Biodiversity and Conservation SEPP* aims to encourage the '*proper conservation and management of areas of natural vegetation that provide habitat for Koalas to ensure a permanent free-living population over their present range and reverse the current trend of Koala population decline*'. As the proposal is being assessed as a Part 5 development, the Koala SEPP does not apply in this case. Potential impacts to Koalas were assessed under the BC and EPBC Acts (**Appendices C-E**).

Chapter 5 (River Murray Lands) of the *Biodiversity and Conservation SEPP* aims to *'conserve and enhance the riverine environment of the River Murray for the benefit of all users.'* This Chapter applies to the riverine land of the River Murray within the City of Albury and the areas of Balranald, Berrigan, Conargo, Corowa, Deniliquin, Hume, Murray, Wakool, Wentworth and Windouran. As per Chapter 5 of the *Biodiversity and Conservation SEPP*:

- ***development*** *means both development requiring consent and development not requiring consent.*
- ***Murray River*** *means the waters of the main channel of the Murray River and its bed and banks.*
- ***River Murray*** *means the Murray River, the waters and the bed and banks of its tributaries and associated water bodies (including related anabranches, creeks, lagoons, lakes, billabongs and wetlands).*

Specific principles of Chapter 5 of the *Biodiversity and Conservation SEPP* that pertain to protecting biodiversity for the current proposal on riverine land of the River Murray are explored in **Section 5-6**.

3 METHODS

The ecological assessment was carried out in three stages:

(1) An investigation and review of the relevant ecological databases to identify threatened species, populations or ecological communities listed in the NSW *Biodiversity Conservation Act 2016*, *Fisheries Management Act 1994* and/or the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* that have the potential to occur in the study area.

(2) Field survey of the subject site for the purposes of:

- Collating lists of present plant species; with these assisting in the identification of the site's vegetation communities,
- Determining the presence of habitat features, such as rock outcrops, nests, and hollow-bearing trees,
- Determining the presence of fauna species,
- Identifying and documenting the nature and extent of any threatened species or communities and describing its 'viable local population'.

(3) The preparation of a written BAR that describes the impacts of the proposed activity on native vegetation and threatened species, populations, and ecological communities, and provides recommendations to avoid, minimise and mitigate these impacts.

3.1 PERSONNEL

OzArk operates under NSW Scientific Research License 101908, and NSW Department of Primary Industries (DPI) Accreditation of a corporation as an animal research establishment Ref No. AW2022/012.

The field survey was conducted by Senior Ecologist Dr Crystal Graham on the 19th of May 2022. Reporting was conducted by Sam Bulling, with quality control provided by Dr Graham. Key details of personnel are provided in **Table 3-1**.

Table 3-1. Summary of OzArk personnel qualifications.

Name	Position	CV Details
Sam Bulling	Ecologist	❖ Bachelor of Science (Wildlife Conservation Biology) – University of Adelaide ❖ First Aid Training ❖ WH&S Induction Training for Construction Work
Dr Crystal Graham	Senior Ecologist	❖ BAM Accredited Assessor (BAAS22024) ❖ Postdoctoral Fellow – Smithsonian Tropical Research Institute ❖ Doctor of Philosophy (Biology) – University of Sydney ❖ Honours in Biology – University of Sydney ❖ Bachelor of Advanced Science – University of Sydney ❖ 4WD Training ❖ First Aid Training ❖ WH&S Induction Training for Construction Work

3.2 BACKGROUND RESEARCH

Preliminary assessments drew on local experience, previous reporting and information held on government databases and archives. Results of database searches were used to assist in identifying distributions, suitable habitats and known records of threatened species to increase the effectiveness of field investigations. Information sources reviewed included the following:

- ❖ NSW Government online aerial imagery (https://maps.six.nsw.gov.au/)
- ❖ Critical habitat register, available on the DPIE website at: <http://www.environment.nsw.gov.au/criticalhabitat/CriticalHabitatProtectionByDoctype.htm>
- ❖ NSW Government Biodiversity Values Map which identifies land with high biodiversity value, as defined by the Biodiversity Conservation Regulation 2017 <https://www.lmbc.nsw.gov.au>
- ❖ Flora and fauna records and profiles contained in the NSW Threatened Species Database, EPBC Protected Matters Search Tool and DPI threatened fish distribution maps.
- ❖ BioNet Wildlife Atlas and Plant Community Type (VIS) databases <www.bionet.nsw.gov.au>
- ❖ Flora of NSW (Harden 1991-2002) and Flora of NSW Online <https://plantnet.rbgsyd.nsw.gov.au>
- ❖ State Vegetation Type Map: Western Region v1.0 VIS_ID 4492 (OEH, 2016)

Database searches were undertaken before the field assessment to determine the predicted species and those previously recorded within 10 km of the subject site. The results of these searches led to the identification of key species for field survey effort. Results of the database searches are provided in **Appendix A**.

In addition to the above, the following subdiscipline reports and/or plans were reviewed and considered in the preparation of this BAR:

- TTW – Wentworth Health Service Redevelopment – Site Plan. Drawing No. C210, Revision 3.
- TTW – Wentworth Health Service Redevelopment – Cut and Fill Plan. Drawing No. C410, Revision 4.
- TTW – Wentworth Health Service Redevelopment – Erosion and Sediment Control Plan. Drawing No. C100, Revision 1.
- NBRS – Wentworth Health Service Redevelopment – Concept Design Report, Revision 4.
- NBRS - Wentworth Health Service Redevelopment – Schematic Design Report. Revision 2.
- NBRS – Wentworth Health Service Redevelopment – Vision Look and Feel. Drawing No. NBRS-DR-L-1000-1001. Issue B.
- NBRS – Wentworth Health Service Redevelopment – Landscape - General Arrangement Plan – Stage 2. Drawing REF. NBRS-LS-DD-REF-1203. Revision 2.
- NBRS – Wentworth Health Service Redevelopment – Landscape – Planting Plan – Milestone 1A. Drawing REF. NBRS-LS-DD-REF-1601. Revision 2.
- NBRS – Wentworth Health Service Redevelopment – Landscape – Planting Plan – Milestone 1B. Drawing REF. NBRS-LS-DD-REF-1602. Revision 2.
- NBRS – Wentworth Health Service Redevelopment – Landscape – Planting Plan – Stage 2. Drawing REF. NBRS-LS-DD-REF-1603. Revision 2.
- NBRS – Wentworth Health Service Redevelopment – Landscape – Tree Planting Plan – Milestone 1A and 1B. Drawing REF. NBRS-LS-DD-REF-1701. Revision 2.
- NBRS – Wentworth Health Service Redevelopment – Landscape – Tree Removal Plan. Drawing REF. NBRS-LS-DD-REF-1801. Revision 2.
- NBRS – Wentworth Health Service Redevelopment – Landscape – Tree Retention Plan. Drawing REF. NBRS-LS-DD-REF-1802. Revision 2.
- NBRS – Wentworth Health Service Redevelopment – Planting palette. Drawing No. NBRS-DR-L-3000. Issue B.
- NBRS – Wentworth Health Service Redevelopment – Section Key Plan. Drawing No. NBRS-DR-L-6000. Issue F.
- NBRS – Wentworth Health Service Redevelopment – Section A. Drawing No. NBRS-DR-L-6001-6005. Issue B.

A series of other background searches were performed to comply with legal standards (**Table 3-2**).

Table 3-2. Presence and/or proximity of environmental considerations.

Environmental Considerations	In the study area?
Land identified on the Biodiversity Values Map under the NSW *BC Act 2016*?	Yes (see **Appendix A**)
Area of Outstanding Biodiversity Value (AOBV) under the NSW *BC Act 2016*?	No
Critical habitat nationally?	No
An area reserved or dedicated under the *National Parks and Wildlife Act 1974*?	No
Is the proposal located within land reserved or dedicated within the meaning of the *Crown Lands Act 1989* for preservation of other environmental protection purposes?	No
A World Heritage Area?	No
Environmental Protection Zones in environmental planning instruments?	No
Lands protected under *SEPP (Biodiversity and Conservation) 2021?*	Yes (see **Section 2.2.8**)
Land identified as wilderness under the *Wilderness Act 1987* or declared as wilderness under the *National Parks and Wildlife Act 1974*?	No
Aquatic reserves dedicated under the *Fisheries Management Act 1994*?	No
Aquatic Threatened Ecological Community?	Yes (**Appendix D**)
Wetland areas dedicated under the Ramsar Wetlands Convention?	No
Land subject to a conservation agreement under the *National Parks and Wildlife Act 1974*?	No
Land identified as State Forest under the *Forestry Act 1916*?	No
Acid sulphate area?	No
Protected riparian land?	Yes (see **Section 4.3**)
Mapped Key Fish Habitat?	Yes (see **Section 4.3**)

3.3 HABITAT ASSESSMENT

The results of the desktop review and the field assessment were collated and reviewed in the context of local ecological knowledge to determine the likelihood of occurrence of threatened species and ecological communities, and potential impacts of the proposal (**Appendix C**). For instance, some threatened species may be predicted to occur locally but, on assessment of the site, key habitat elements or conditions are not present, in which case the species is assessed as not being present or impacted.

The likelihood of occurrence of threatened species, populations or ecological communities was categorised as follows:

- ‘Present’ – the species was observed or has been previously recorded on the site.
- ‘High’ – a medium to high probability that a species uses the site, based on nearby records and suitable habitat being present.
- ‘Moderate’ – suitable habitat for a species occurs on the site, but the species has not been observed or previously recorded at the site.

- ‘Low’ – a very low likelihood that the species uses the site, based on lack of the preferred type and size of habitat.
- ‘Absent’ – habitat on-site and in the vicinity is unsuitable for the species.

The species considered to have a moderate-high likelihood of occurring at the site (**Appendix C**), were then considered as to whether the extent and type of development would be likely to impact on them. Tests of significance were then completed for these species and ecological communities in accordance with the BC Act (**Appendix D**) and/or the assessment of significance under the EPBC Act (**Appendix E**), and the relevant guidelines for these assessments.

3.4 FIELD SURVEY

The field survey was completed on the 19th of May 2022. The objectives of the field survey were to:

- Identify native species and vegetation communities present.
- Determine the extent of the proposed impact to these communities.
- Describe the quality and value of the vegetation and the flora and fauna habitat at the development site.
- Determine if species, populations, or ecological communities listed as threatened under the BC Act or EPBC Act are/may be present.

3.4.1 Vegetation surveys

When surveying the subject site, the Random Meander Method (Cropper 1993) was employed. This method entails traversing by foot through sites that require investigation, during which notes are made on the structure and floristic composition of the native vegetation, as well as the availability of habitat for threatened species.

Plant identification followed nomenclature in the Royal Botanic Gardens PlantNet online database (Royal Botanic Gardens and Domain Trust, 2023).

Vegetation communities were identified in accordance with the online NSW Master Plant Community Type Classification (DPE, 2023), which is the current state-wide vegetation classification system for Plant Community Types (PCT). This classification system is used for vegetation mapping, development assessment and site planning purposes. It describes over 1,500 PCTs across the state, and groups the vegetation communities into vegetation Class and Formation / Sub-formation as per Keith (2004).

In this study PCTs were identified on the basis of the following inputs:

- State Vegetation Type Map: Western Region v1.0 VIS_ID 4492 which provides predictive mapping of PCTs in and around the subject site. This mapping is indicative only. It is not necessarily accurate at a fine scale for the purposes of the current study.
- Professional ecological knowledge about locally occurring vegetation types and landscape, soil, and topographic patterns, including transitions from one community to another and potential for intergrades between plant communities.
- Field survey results confirming the flora species present, vegetation structure, landscape position and soil type at the subject site and the extent and condition of native vegetation.
- The BioNet Vegetation Classification database was used to identify the candidate vegetation communities likely to be present based on the site conditions (flora species present, vegetation structure, bioregion, and landscape position and soil type) and the relevant published PCT descriptions.

If any of the PCTs were identified as having potential to be part of a Threatened Ecological Community (TEC), the relevant identification guidelines (NSW Scientific Committee listing criteria and Commonwealth identification guides) were consulted to determine the status of the vegetation community present on the subject site. These guidelines provide the identification criteria used to positively identify the community as being part of the TEC. The criteria include location, species present, overstorey species, weed cover, number and type of native species including whether certain 'important' native species are present.

3.4.2 Fauna surveys

The subject site was searched for fauna use while undertaking floristic and habitat surveys. All habitat trees (i.e., hollow-bearing trees or trees containing nests) were GPS tagged, and the size, number of hollows and/or type of nest recorded for each tree where present. Potential habitat such as rocks, logs, loose bark and coarse woody debris was examined for cryptic species. Areas of suitable substrate were searched for animal tracks. Other evidence of fauna presence on the subject site, such as scats, feathers and sloughed skins were also recorded. Herpetological searches were conducted by overturning logs and rocks while traversing the site.

Considering the scope of works proposed, combined with the relative scarcity of mature trees within the subject site, no targeted surveys such as live trapping, nocturnal searches, deployment of bat echolocation detectors and so forth, were carried out.

3.5 LIMITATIONS

This study is based upon the species data available at the time of the study, and the environmental conditions, season, and time constraints imposed by the project for the field survey. Specific limitations on this study include the following:

- The field survey was completed over a single day in May (late Autumn). Therefore, the fauna list included is not considered comprehensive as a greater diversity of species are likely to use the site.
- Fauna trapping, frog surveys, aquatic surveys, nocturnal spotlighting and ultrasonic recordings (for microbats) were not undertaken.
- Certain plant species may not have been visible aboveground at the time of the survey. Additionally, few plant species were flowering, which would have made some species difficult to detect. Therefore, non-detection of threatened flora species cannot be considered as confirmation of their absence.
- The field survey was undertaken in or very near to the subject site and plant community type extents outside of the subject site were not confirmed.

To overcome some of these limitations, a 'precautionary approach' for species presence has been adopted where required. If suitable habitat for a particular threatened species is present on the site or known to occur in the study area, then the species is assumed to also be present, and the impact assessment is completed on that basis (**Appendices D** and **E**).

4 EXISTING ENVIRONMENT

4.1 BIOREGION

The subject site falls within the Murray Scroll Belt subregion of the Riverina Bioregion, as per the Interim Biogeographic Regionalisation of Australia (IBRA) (Thackway & Cresswell, 1995). Three additional subregions (Murray Mallee, South Olary Plain, Robinvale Plains) occur in the wider search area, along with one additional bioregion (Murray Darling Depression).

The geology, landforms, soil types, and vegetation of these subregions are described in **Table 4-1** through **4-4**.

Table 4-1. Description of Murray Scroll Belt subregion.

Bioregion	Riverina Bioregion
Subregion	Murray Scroll Belt
Geology	Quaternary alluvial sediments. Clay dominant, wider plains with larger overflow lakes and salinas. Affected by higher water salinity and summer floods from the Darling River.
Landforms	Wider floodplain with meandering channels, billabongs, levees, and low dunes. Large overflow lakes with large lunettes.
Soils	Red brown earths, grey clays, deep sands, and yellow texture contrast soils.
Vegetation	River red gum on channels and lake margins. Black box, river cooba, oldman saltbush, belah, and lignum on floodplains. White cypress pine, mallee acacias and bluebush on lunettes and sand dunes.

Table 4-2. Description of Murray Mallee subregion.

Bioregion	Murray Darling Depression
Subregion	Murray Mallee
Geology	No published description available
Landforms	No published description available
Soils	No published description available
Vegetation	No published description available

Table 4-3. Description of South Olary Plain subregion.

Bioregion	Murray Darling Depression
Subregion	South Olary Plain
Geology	Quaternary aeolian sands and lake sediments.
Landforms	Dunefields, sandplains, dry lakes, and groundwater basins.
Soils	Deep siliceous and calcareous red to yellow sands, sandy earths, brown texture contrast soils on dunes and sandplains. Saline, gypseous and calcareous clays on lake beds, mixed sands, and pelleted clays in lunettes.
Vegetation	Diverse mallee on sands with: pointed mallee, congoo mallee, red mallee, lerp mallee, slender-

	leaf mallee, yorrell, white cypress pine, mallee cypress pine, belah, rosewood, with porcupine grass and diverse shrubs. Belah, rosewood, black bluebush, pearl bluebush, old man saltbush, on sandplains and heavier soils. Black box fringing depressions, halophytes on salinas, and chenopod shrublands on lunettes, sometimes with white cypress pine.

Table 4-4. Description of Robinvale Plains subregion.

Bioregion	Riverina Bioregion
Subregion	Robinvale Plains
Geology	Quaternary alluvial sediments. Clay dominant. Small overflow lakes.
Landforms	Narrow floodplain with meandering channels, billabongs, levees, and low dunes. Overflow lakes with lunettes.
Soils	Red brown earths, grey clays, deep sands, and yellow texture contrast soils.
Vegetation	River red gum on channels and lake margins. Black box, river cooba, oldman saltbush, belah, and lignum on floodplains. White cypress pine, mallee acacias and bluebush on lunettes and sand dunes.

4.2 NSW LANDSCAPES

The landscapes of NSW - formerly known as the 'Mitchell Landscapes' - were mapped in 2002 to provide a framework for reporting reserve establishment and for determining over-cleared landscapes (Mitchell, 2002). These landscapes broadly describe areas of similar topography, geology, soils, and vegetation. The subject site contains the **Lower Darling Channels and Floodplains** landscape, which has a very low extent of clearance at ~3%.

Lower Darling Channels and Floodplains

Lower Darling River frontage and broad floodplains of Quaternary alluvial sediment. Highly sinuous intermittently flowing anabranches with channels, narrow plains between channel loops, and lateral floodouts, adjacent to the *Nelyambo* land system, with associated channels, billabongs, swamps, lunettes, and plains. Channels incised 10 to 15m. Heavy grey cracking clays with some sandy earths and sands within channel loops. Self-mulching and cracking grey clays with areas of scalded red and brown texture-contrast soils on plains. Lunettes and rises of deep siliceous sands and granulated clay. Grey self-mulching to silty clays; calcareous loamy sand to deep sandy red soils on levees and sand hills.

Sparse to moderate coolibah (*Eucalyptus microtheca*) and black box (*Eucalyptus largiflorens*), with river red gum (*Eucalyptus camaldulensis*) along channel banks; annual forbs, copperburr (*Sclerolaena* sp.) and saltbush (*Atriplex* sp.). Scattered black box and river cooba (*Acacia stenophylla*) with dense lignum (*Muehlenbeckia cunninghamii*) and nitre goosefoot (*Chenopodium nitrariaceum*) on plains. Abundant ephemerals after flooding. Prickly wattle (*Acacia victoriae*), narrow-leaf hopbush (*Dodonaea attenuate*) and occasional bluebush (*Maireana* sp.) on lunettes and sand hills.

4.3 WATERCOURSES

Although no watercourse passes directly through the subject site, the proposal is however positioned at the confluence of southeast Australia's most important river system: the Murray and Darling rivers. The Darling, at its closest, is less than 15 m west of the subject site, while the Murray is 300 m to the south. A tributary of the Darling, Tuckers Creek (a Strahler 3rd order minor perennial watercourse), is 115 m to the north (**Figure 4-1**, **Figure 4-2**). Therefore, the development footprint is flanked on three sides by Key Fish Habitat, as recognised by the DPI, and has Protected Riparian Land to the west and south.

Chapter 5 (River Murray Lands) of the *Biodiversity and Conservation SEPP* aims to *'conserve and enhance the riverine environment of the River Murray for the benefit of all users.'* This Chapter applies to the subject site and is explored further in **Section 2.2.8** and **5.6.**

The vulnerable Murray Crayfish (*Euastacus armatus*), the vulnerable Silver Perch (*Bidyanus bidyanus*), and the endangered Murray-Darling Basin population of the Eel-tailed Catfish (*Tandanus tandanus*), all listed under the FM Act, are mapped as occurring in one or more of the above watercourses. These watercourses also have records for the EPBC Act-listed Vulnerable Murray Cod (*Maccullochella peelii*). Tests of significance have been conducted for these species in **Appendix C** and **E**. Provided that the mitigation methods provided in **Section 7** are adhered to, the proposal is not likely to significantly impact any threatened species or population listed under the FM or EPBC Act.

Figure 4-1. Aerial view of the subject site, showing the Murray River (top left), Darling River (middle), and Tuckers Creek (bottom left).

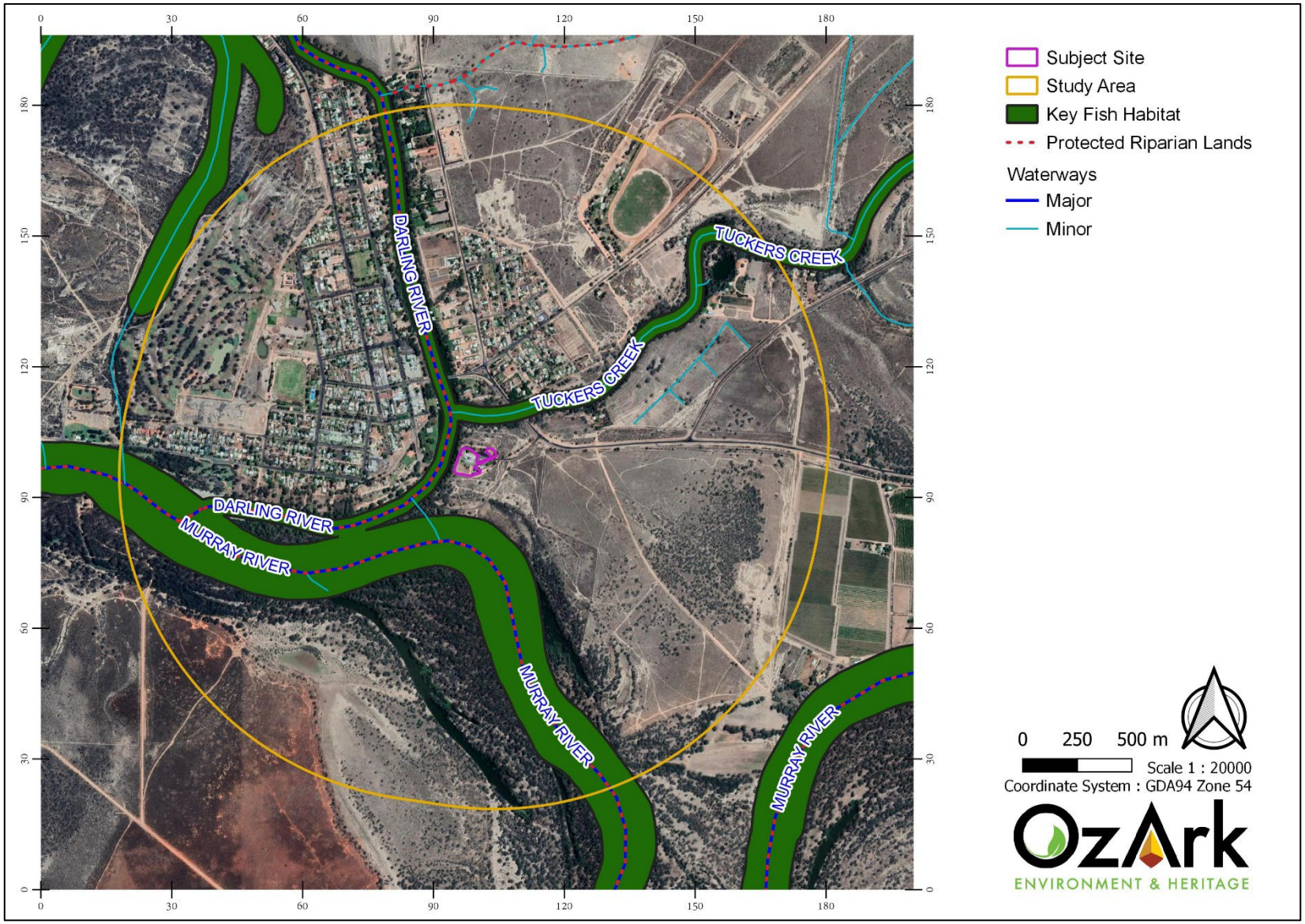


Figure 4-2. Key Fish Habitat, Protected Riparian Land and Watercourses within the study area.

4.4 GROUNDWATER DEPENDENT ECOSYSTEMS

Groundwater plays an important ecological role by supporting vegetation and providing discharge to channels and wetlands.

The degree of groundwater dependence that ecosystems express can be categorised into three broad categories:

– Non-dependent ecosystems, which occur mostly in recharge areas and that have no connection with groundwater,
– Facultative Groundwater Dependant Ecosystems (GDEs) that require groundwater in some locations but not in others, particularly where an alternative source of water can be accessed. Minor changes to the groundwater regime in facultative GDEs with proportional or opportunistic groundwater dependence may not have any adverse impacts but these ecosystems can be damaged or destroyed if a lack of access to groundwater is prolonged.
– Obligate GDEs that are restricted to locations of groundwater discharge and ecosystems located within aquifers (e.g., subterranean cave and stygofauna communities (Kuginis *et al.* 2012). Aquifer ecosystems are inherently groundwater dependent (QLD Department of Environment and Heritage Protection, 2022).

Groundwater dependant ecosystems have been classified into seven types under two broad categories as follows (Kuginis *et al*. 2012):

– Subsurface ecosystems – Underground ecosystems
  - Karst systems and caves (limestone geology)
  - Subsurface aquifer (phreatic) ecosystems
  - Baseflow streams (hyporheic or subsurface component)
– Surface ecosystems – Above ground ecosystems
  - Groundwater dependent wetlands
  - Baseflow surface streams (surface/free-water component)
  - Estuarine and near shore marine ecosystems
  - Groundwater dependent terrestrial ecosystems; dependent on subsurface groundwater.

Areas of high probability for GDEs are predicted to occur within the subject site, and areas of low, medium, and high probability for GDEs are predicted in the wider study area (**Figure 4-2**). While the proposal may involve encountered GDEs during its construction phase, provided that the mitigation measures specified in **Section 7** are adhered to, along with those in the Construction Environmental Management Plan (CEMP) then no significant impacts are anticipated. No impacts are expected during the operational phase of hospital.

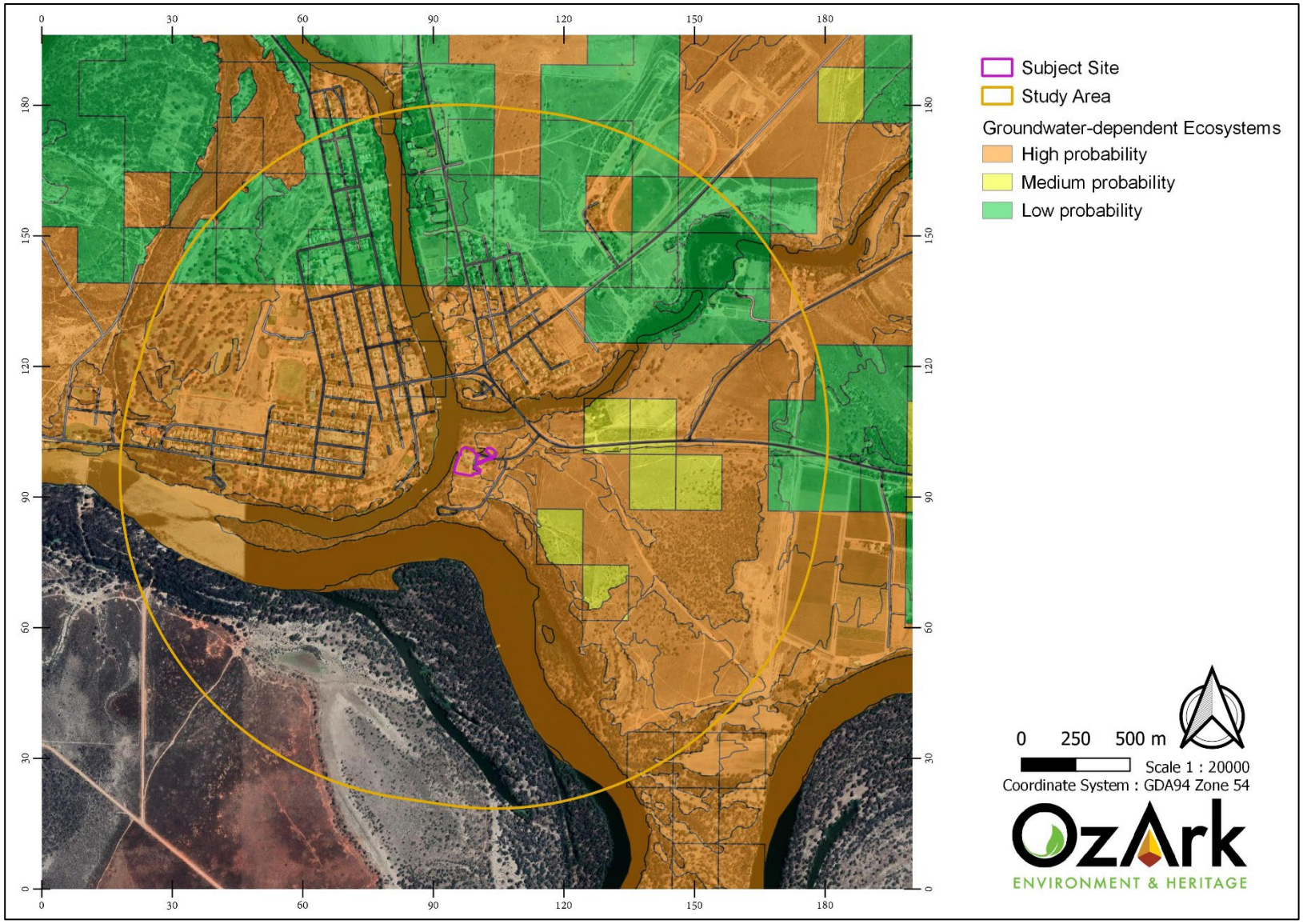


Figure 4-3. Groundwater-dependent ecosystems (GDEs) within the study area and subject site.

4.5 CLIMATE

The nearest weather station to the subject site is 24 km to the east in Mildura, Victoria (076031) (**Figure 4-3**).

The area experiences hot summers and cool winters. The highest average maximum temperature, of 32.3°C, is experienced in January, while the coldest average period is in July, with an average maximum of 15.4°C.

The average annual rainfall at this station is low, at 289.6mm. October records the highest average rainfall, at 28.9mm, followed by September (27.5mm) and November (25.7mm). The lowest monthly rainfall occurs in April (19.3mm), followed by March (20.0mm) and February (22.4mm).

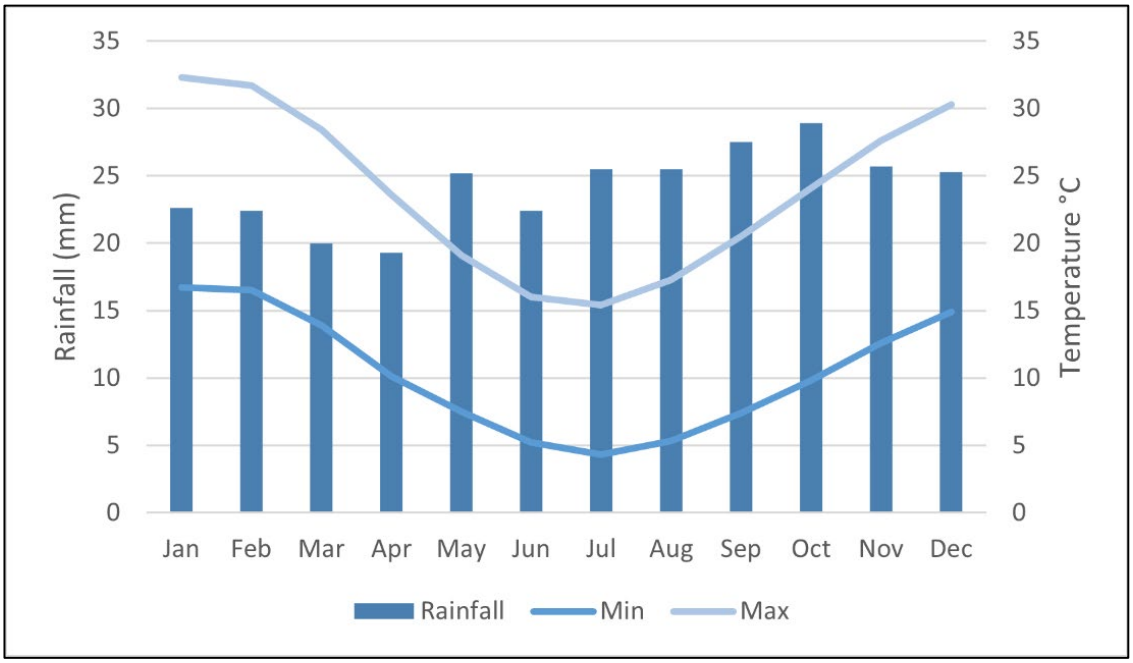


Figure 4-4. Climate data for the Mildura weather station, showing minimum and maximum temperatures and average monthly rainfall.

5 RESULTS

5.1 NATIVE VEGETATION

Computer modelling, through the application of the Regional Scale State Vegetation Map: Western Region v1.0 (OEH, 2016), predicted two Plant Community Types (PCTs) within the study area:

- PCT 11 – River Red Gum – Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion),
- PCT 13 – Black Box – Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion).

Neither of these PCTs, were encountered within the subject site itself (**Figure 5-1**). However, the landscape adjacent to the proposal contained:

- PCT 11 – River Red Gum – Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
- PCT 15 – Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)

Within the subject site itself, there were several areas of plantations containing species native to Australia, although not the Wentworth area. These planted native species included *Eucalyptus cladocalyx* and *E. peninsularis* (endemic to South Australia) and *Corymbia appareinja* (native to central Australia). Although these trees provide potential foraging or nesting habitat for native fauna species, these plantings cannot be assigned to any PCT.

Forty-one flora species were observed during the field survey (**Appendix B**); none of these species are listed as threatened under the BC or EPBC Act. Due to the short duration of the survey, and the lack of detailed targeted surveys conducted during Spring, the non-detection of threatened species cannot be considered as confirmation of their absence. For a full list of plant species encountered and representative photographs see **Appendix B**. Ground-truthed mapping is provided in **Figure 5-1** (non-native vegetation is not shaded), with areas presented in **Table 5-1**.

Table 5-1. Area of occupancy of planted native species within the subject site.

Identification	Extent within Subject Site (ha)
Planted native species	0.053
(Area containing infrastructure and non-native vegetation)	(1.234)
Total	1.287

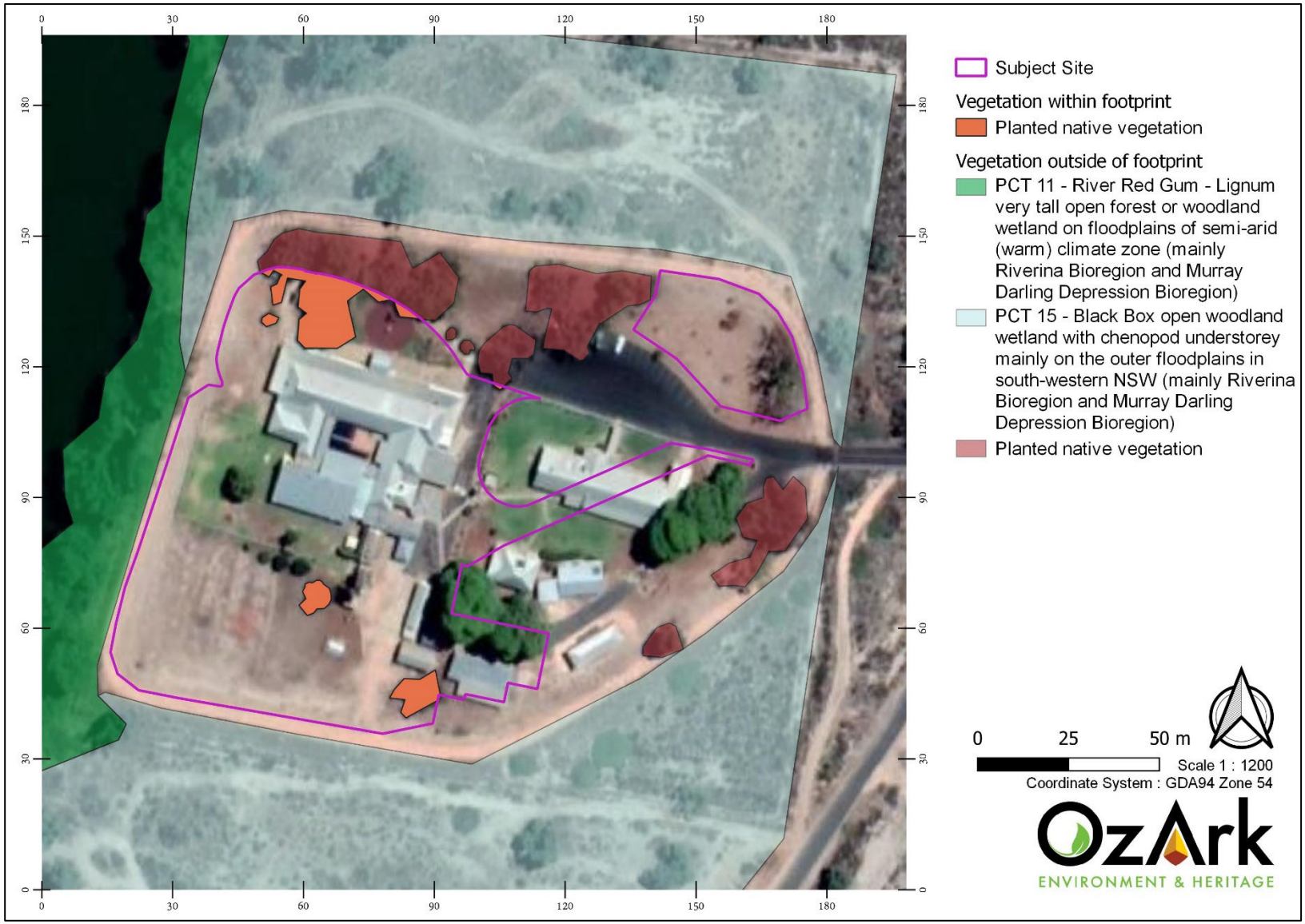


Figure 5-1. Ground-truthed location of planted native vegetation within the subject site and PCTs surrounding the subject site.

5.2 THREATENED ECOLOGICAL COMMUNITIES

No vegetation within, or immediately adjacent to, the subject site is associated with a Threatened Ecological Community (TEC).

5.3 FAUNA AND HABITAT FEATURES

Twenty-eight fauna species were observed during the field survey (**Appendix B**); none of these species are listed as threatened or migratory under the BC and/or EBPC Act. Given the short duration of the field survey, and the lack of targeted surveys, the non-detection of threatened species cannot be considered as confirmation of their absence.

Although the subject site itself contained no hollow-bearing trees, there were six hollow-bearing trees adjacent to the site perimeter along the Darling riverbank. No substantial bush rock deposits were recorded. Substantial amounts of fallen timber were encountered during the field survey, the majority of which is north of the proposal footprint.

5.4 THREATENED SPECIES

A review of the Threatened Species Profiles database found 124 threatened and/or migratory flora and fauna species or populations, listed under the BC, FM and/or the EPBC Act, known or predicted to occur within the:

- Murray Scroll Belt, and Robinvale Plains subregions of the Riverina Bioregion, and
- Murray Mallee, and South Olary Plain subregions of the Murray Darling Depression Bioregion.

Based on the proximity of past records, distribution records, habitat requirements, and the results of the field survey, 16 threatened or migratory bird species, two threatened mammal species, and four threatened aquatic species or populations, were assessed as having a moderate-to-high likelihood of occurring at the subject site (**Appendix C; Table 5-2**). Tests of significance have been conducted for these species in **Appendices D** & **E**.

Table 5-2. BC, FM and EPBC Act-listed species with the potential to be impacted by the proposal.

Species name	Common Name	*NSW Status	+Comm. Status	Records within 10 km?
Stictonetta naevosa	Freckled Duck	V,P		Yes
Botaurus poiciloptilus	Australasian Bittern	E1,P	E	Yes
Haliaeetus leucogaster	White-bellied Sea-Eagle	V,P		Yes
Hieraaetus morphnoides	Little Eagle	V,P		Yes
Grus rubicunda	Brolga	V,P		Yes
Burhinus grallarius	Bush Stone-curlew	E1,P		Yes
Calidris subminuta	Long-toed Stint	P	C,J,K	Yes
Gelochelidon nilotica	Gull-billed Tern	P	C	Yes
Hydroprogne caspia	Caspian Tern	P	J	Yes
^Lophochroa leadbeateri	Major Mitchell's Cockatoo	V,P,2		Yes
^^Glossopsitta porphyrocephala	Purple-crowned Lorikeet	V,P,3		Yes
Pyrrholaemus brunneus	Redthroat	V,P		Yes
Certhionyx variegatus	Pied Honeyeater	V,P		Yes
Epthianura albifrons	White-fronted Chat	V,P		Yes
Daphoenositta chrysoptera	Varied Sittella	V,P		Yes
Artamus cyanopterus cyanopterus	Dusky Woodswallow	V,P		Yes
Antechinomys laniger	Kultarr	E1,P		Yes
Phascolarctos cinereus	Koala	E1,P	E	Yes
Tandanus tandanus	Eel-tailed Catfish	E2		Yes
Euastacus armatus	Murray Crayfish		V	No
Maccullochella peelii	Murray Cod		V	Yes
Bidaynus bidyanus	Silver Perch	V		Yes

***NSW Status:** ^^=Category 2 sensitive species, P=Protected, V=Vulnerable, E1=Endangered, E2=Endangered population, 2=Category 2 sensitive species, 3=Category 3 sensitive species.
+ Comm. Status: C=CAMBA, J=JAMBA, K=ROKAMBA, CE=Critically endangered, E=Endangered, V=Vulnerable

5.5 THREATENED AQUATIC ECOLOGICAL COMMUNITIES

Endangered aquatic ecological communities are determined by the NSW Fisheries Scientific Committee and are listed under the FM Act as aquatic systems that have undergone a very large reduction in ecological function, geographic distribution, or genetic diversity, and continue to be affected by a threatening process (NSW Department of Primary Industries, 2016).

As the subject site falls within the boundaries of the Lowland Darling River aquatic ecological community, the proponent must ensure their adherence, to the greatest extent possible, to the mitigation methods provided in **Section 7** to minimise runoff from the construction site. If adhered to, then the proposal is unlikely to significantly impact this threatened aquatic ecological community.

5.6 IMPACTS ON RIVERINE LAND

Chapter 5 (River Murray Lands) of the *Biodiversity and Conservation SEPP* aims to *'conserve and enhance the riverine environment of the River Murray for the benefit of all users.'* This Chapter applies to the subject site. Specific principles of this Chapter that pertain to protecting biodiversity and the manner in which they have been address in the current proposal is explored in **Table 5-3**.

Table 5-3. Addressing the Specific Principles of Chapter 5 (River Murray Lands) of the Biodiversity and Conservation SEPP.

Pertinent specific principles of Chapter 5 (River Murray Lands) of the *Biodiversity and Conservation SEPP*	How this specific principle has been addressed by this proposal
Bank disturbance	
• *Disturbance to the shape of the bank and riparian vegetation should be kept to a minimum in any development of riverfront land*	• The development will be situated within the existing levee bank, and no native riparian vegetation will be removed. No landscaping works are proposed outside of the existing levee bank.
Flooding	
• Where land is subject to inundation by floodwater the '*the pollution threat represented by any development in the event of a flood*' must be taken into account	• A Flood Study has been carried out by Advisian for the proposal to determine the optimum level for the new proposal as well as outlining strategies to mitigate flood risk.
• *Flood mitigation works constructed to protect new urban development should be designed and maintained to meet the technical specifications of the Department of Water Resources*	• A Flood Study has been carried out by Advisian for the proposal to determine the optimum level for the new proposal as well as outlining strategies to mitigate flood risk.
Land Degradation	
• *Development should seek to avoid land degradation processes such as erosion, native vegetation decline, pollution of ground or surface water, groundwater accession, salination and soil acidity, and adverse effects on the quality of terrestrial and aquatic habitats*	• The proposal avoids removing any riparian vegetation, or any native PCT. Only non-native vegetation, and planted Australian species that are not locally native will be impacted. Supplementary planting with locally appropriate native species will be undertaken to enhance the quality of the existing habitat (see Landscape Report produced by NBRS; **Figure 1-3**). The proposal should not impact salination or soil acidity. There is the potential for the proposal to cause or exacerbate erosion, pollution of ground or surface water, and groundwater accession. This potential will be ameliorated by the mitigation measures in **Table 7-1** and those specified in the CEMP.

Landscape	
• *Measures should be taken to protect and enhance the riverine landscape by maintaining native vegetation along the riverbank and adjacent land, rehabilitating degraded sites and stabilising and revegetating riverbanks with appropriate species*	• The proposal avoids removing any riparian vegetation, or any native PCT. Only non-native vegetation, and planted Australian species that are not locally native will be impacted. Supplementary planting with locally appropriate native species will be undertaken to enhance the quality of the existing habitat (see Landscape Report produced by NBRS).
Water Quality	
• *All decisions affecting the use or management of riverine land should seek to reduce pollution caused by salts and nutrients entering the River Murray and otherwise improve the quality of water in the River Murray*	• There is the potential for the proposal to cause or exacerbate pollution caused by runoff. This potential will be ameliorated by the mitigation measures in **Table 7-1** and those specified in the CEMP.

5.7 WILDLIFE CONNECTIVITY CORRIDORS

The subject site occupies a strategic ecological position, located near to the confluence of the Murray and Darling rivers (<1 km). These watercourses are, with few interruptions, flanked by riparian vegetation for many hundreds of kilometres. Considering that much of the surrounding landscape has been denuded of its original habitat, this corridor allows wildlife to traverse the area without exposure in cleared paddocks or urban areas. However, the proposal, in its current form, will not sever or reduce the ecological value of this connective corridor. Indeed, supplementary planting (**Figure 1-3**) will be undertaken to widen the riparian zone.

5.8 MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE

Under the environmental assessment provisions of the EPBC Act, Matters of National Environmental Significance (MNES) and impacts on Commonwealth land are required to be considered to assist in determining whether the proposal should be referred to the Australian Government.

The EPBC Act protected matters search has identified three wetlands of international importance, three TECs, 27 threatened species and eleven migratory species that could possibly occur in the study area (**Appendix A**). No entities listed under the EPBC Act are likely to be significantly impacted by this proposal (**Appendix E**). A summary of these matters and whether the proposal is likely to impact them is provided in **Table 5-4**.

Table 5-4. Impacts to Matters of National Environmental Significance.

Factor	Potential impact
Any impact on a World Heritage property?	No
Any impact on a National Heritage place?	No
Any impact on a wetland of international importance?	No
Any impact on a listed threatened species or communities?	Yes (non-significant, **Appendix E**)
Any impacts on listed migratory species?	Yes (non-significant, **Appendix E**)
Any impact on a Commonwealth marine area?	No
Does the proposal involve a nuclear action (including uranium mining)?	No
Additionally, any impact (direct or indirect) on Commonwealth land?	No
Any impact on a water resource, in relation to coal seam gas development and large coal mining development?	No

6 IMPACT ASSESSMENT

6.1 CONSTRUCTION IMPACTS

6.1.1 Removal of native vegetation and impacts on TECs

The subject site (1.287 ha) largely consisted of non-native vegetation, existing road surfaces, and the Wentworth District Hospital (1.234 ha). The remaining 0.053 ha contained planted native vegetation that will be removed or disturbed by the proposal.

No TECs were present within the subject site.

The clearing of native vegetation is recognised as a Key Threatening Process under the BC Act. As no naturally occurring native vegetation was present, this impact would not be significant (see **Appendix F**).

6.1.2 Impacts to threatened fauna and associated habitat

Twenty-two BC, FM and/or EPBC Act-listed fauna species were assessed as having a moderate or greater likelihood of occurring within the subject site (**Appendix C**). Given the small impact footprint, lack of habitat features, and lack of PCTs, the proposal is not anticipated to significantly impact threatened fauna that may be present at the subject site (**Appendix D**).

6.1.3 Impacts to threatened flora

No BC and/or EPBC Act-listed threatened flora species or populations were assessed as having a moderate or greater likelihood of occurring within the subject site (**Appendix C**).

6.1.4 Injury and mortality

During the construction phase of the proposal, the removal of vegetation from the subject site may possibly disturb or injure fauna. Further, fauna may become trapped in, or may choose to shelter within, machinery that is stored in the study area overnight. If these animals were to remain inside the machinery, or under the wheels or tracks, they may be injured or die once the machinery is in use. Mitigation measures designed to reduce injury and mortality of fauna are provided in **Section 7.**

6.2 INDIRECT/OPERATIONAL IMPACTS

6.2.1 Wildlife connectivity and habitat fragmentation

The subject site offers a corridor of connectivity along the Darling (and by extension) Murray Rivers. The Vegetated Riparian Zone (VRZ) is already narrow in this area; the Office of Water recommends the VRZ should be 40 m for the Darling River. Supplementary planting with native species will be undertaken to enhance the VRZ, specifically, the planting of River Red Gum

(*Eucalyptus camaldulensis*) and River Cooba (*Acacia stenophylla*) is recommended, as these are the native species that currently dominate the VRZ.

All construction works will be contained within the existing levee bank, so there will be no direct impacts on wildlife connectivity or habitat fragmentation – the only impacts would be indirect. Specifically, there is potential for wildlife to avoid the area due to noise, light, and the presence of humans, however, as the site is already an existing hospital, the increase in magnitude of these effects should be relatively slim. Mitigation measures designed to reduce the impact of the proposal on wildlife connectivity and habitat fragmentation are provided in **Section 7**.

6.2.2 Edge effects on adjacent native vegetation and habitat

Although the proposal would not generate additional habitat edges, the transportation of machinery into the riparian corridor may encourage the spread of weeds that are already present. It is likely that the proposal would facilitate the spread of exotic species into the remnant vegetation outside the direct impact footprint of the proposal. Mitigation measures designed to limit edge effects are provided in **Section 7**.

6.2.3 Invasion and spread of weeds

Proliferation of weed species is a potential indirect impact of proposal activities. The most likely causes of weed dispersal and importation associated with the proposal include earthworks, movement of soil, and attachment of seed (and other propagules) to vehicles and machinery. Clearing of native vegetation creates niches which may be colonised by invasive species. Mitigation measures designed to limit the spread of weeds are provided in **Section 7**.

Of the 14 exotic plant species recorded during the field survey, five are listed as High-threat Exotic species (HTE), four are considered Weeds of National Significance (WoNS), and three are Priority Weeds (PW) for the Western region (**Table 6-1**). The proponent is required to manage the presence of weeds under the *Biosecurity Act 2015.* Of note, Prickly Pear is presently confined to a few instances on the river bank, as such, eradication may be feasible.

Table 6-1. Significant weeds detected during the site survey.

Scientific Name	Common Name	HTE	WoNS	PW
Lycium ferocissimum	African Boxthorn	Y	Y	Y
Olea europaea subsp. *europaea*	Olive	Y	Y	N
Opuntia sp.	Prickly Pear	Y	Y	Y
Tamarix aphylla	Athel Pine	Y	Y	Y
Pinus sp.	Pine Tree	Y	N	N

6.2.4 Invasion and spread of pests

The study area is likely already habitat for a range of pest species, such as European rabbits (*Oryctolagus cuniculus*), foxes (*Vulpes vulpes*), cats (*Felis catus)*, and dogs (*Canis lupus*). Mitigation measures designed to limit the spread of pests are provided in **Section 7.**

6.2.5 Invasion and spread of pathogens and disease

Several pathogens known from NSW have the potential to impact on biodiversity due to their movement and infection during construction. Of these, three are listed as a key threatening process under either the EPBC Act and/or BC Act including:

- Dieback caused by *Phytophthora* (Root Rot; EPBC Act and BC Act)
- Infection of frogs by amphibian chytrid fungus causing the disease chytridiomycosis (EPBC Act and BC Act)
- Introduction and establishment of exotic Rust Fungi of the order Pucciniales on plants of the family Myrtaceae (BC Act).

These pathogens were not observed or tested for in the study area. The most likely causes of pathogen dispersal and importation associated with the proposal include earthworks, movement of soil, and attachment of plant matter to vehicles and machinery. Mitigation measures designed to limit the invasion and spread of pathogens and disease are provided in **Section 7**.

6.2.6 Noise, light and vibration

Given the current levels of noise, light and vibration generated by the Wentworth District Hospital (and by those accessing it by vehicle), it is unlikely that there would be a significant increase following its redevelopment. There are, however, potential short-term impacts from noise and vibration during construction, which may result in fauna temporarily avoiding habitats adjacent. Mitigation measures intending to mitigate these outcomes are provided in **Section 7.**

6.3 CUMULATIVE IMPACTS

The potential impacts of this proposal must be considered as part of the wider loss of biodiversity in NSW. Rather than acting in isolation, this proposal would be an additive part contributing to biodiversity loss. The incremental effects of multiple impacts – past, present, and future – are referred to as cumulative impacts. This BAR provides an opportunity to consider the proposal within a greater strategic context.

Historic vegetation clearing for agriculture and infrastructure have caused significant biodiversity losses in the local area. Ongoing works, such as the redevelopment of the Silver City Highway, the expansion of irrigated horticulture, modifications to Lock and Weir 10 (Wentworth) and the Yelta solar energy generation facility, will continue to reduce remaining biodiversity values into

the future. The proposal, by itself, would not significantly impact regional biodiversity, given that it only intends to impact planted vegetation. It must, however, be appreciated that the proposal does not occur in isolation, and that its implementation may have larger cumulative effects.

6.4 ASSESSMENTS OF SIGNIFICANCE

An Assessment of Significance has been conducted for each BC, FM and EPBC Act-listed threatened species or communities that are considered to have a moderate-high likelihood of occurring within the subject site due to the presence of suitable habitat (**Appendices C, D & E**).

6.5 IMPACT SUMMARY

Based on the assessments above, the proposal is unlikely to have a significant impact on biodiversity, including on predicted populations of threatened species and threatened ecological communities (**Appendices D** & **E**). Opportunities to avoid and minimise impacts should be considered in finalising the proposal.

7 AVOID, MINIMISE AND MITIGATE IMPACTS

A key part of the proponent's management of biodiversity for this proposal is the application of the 'avoid, minimise, mitigate and offset' hierarchy, as follows:

1. Avoid and minimise impacts as the highest priority
2. Mitigate impacts where avoidance is not feasible or practicable in the circumstance
3. Offset where residual, significant unavoidable impacts would occur

7.1 AVOIDANCE AND MINIMISATION

The following steps have been taken to avoid impacts to biodiversity:

- The development will avoid impacts to native PCTs and will therefore not impact any TEC,
- The development will avoid all hollow-bearing and nest-bearing trees,
- The development will be placed within the existing levee bank to reduce impacts on the riparian zone and the surrounding watercourses.

The following general avoid and minimisation measures are proposed:

- To avoid impacts associated with weed introduction and spread, inspect all machinery before entering and exiting the subject site. Machinery must be clean of all mud, soil and vegetation material.
- The construction works and vehicle access to the construction site is to be constrained to the minimum area practical. The proposed access should provide the sole access to the construction site. Use of previously cleared areas for stockpile sites is recommended.
- Material stockpiles, equipment and machinery storage and laydown areas will be consolidated within a defined impact area to minimise the overall impact footprint.
- The impact footprint will be minimised by restricting access across the site to the defined development footprint, including avoiding unnecessary vehicle and personnel movements across unused land.

7.2 MITIGATION MEASURES

Mitigation measures should be undertaken during the construction and operational phases, including managing the vegetation clearing process, weed management, and installation of erosion and sediment controls.

The following mitigation measures are recommended for implementation (see **Table 7-1**):

Table 7-1. Mitigation measures and environmental safeguards.

Aspect	Environmental safeguards	Responsibility	Timing
General	1. Any change in design outside the assessed impact footprint (subject site) will require further ecological survey and assessment. 2. All personnel working on site will be made aware of the environmental sensitivities of the site and safeguards/mitigations to be implemented, e.g., site induction and 'toolbox' style briefings. This includes all native vegetation, potential threatened flora and fauna, Key Fish Habitat and Protected Riparian Land. Evidence of all personnel receiving an induction will be kept on file (e.g., signed induction sheets).	Proponent/ Contractor	Pre-construction, construction, operation
Clearing of native vegetation	3. All construction personnel should be inducted to be aware that any deliberate or accidental damage of a stand of native vegetation outside the subject site has legislative consequences under Part 4 or 5 of the EP&A Act. Evidence of all personnel receiving this induction would be kept on file (signed induction sheets etc.). 4. All hollow bearing trees are to be avoided (as per the current footprint). 5. Before starting work, a physical vegetation clearing boundary at the approved clearing limit is to be demarcated and implemented. The delineation of such a boundary may include the use of temporary fencing, parawebbing or similar. 6. Vegetation would be removed in such a way as to avoid damage to surrounding vegetation. 7. Groundcover disturbance would be kept to a minimum. 8. Any stockpile and compound sites should be located using the following criteria: • At least 40 m away from the nearest waterway • In areas of low ecological conservation significance (i.e. previously disturbed land) • On relatively level ground • Outside the one in 10-year Average Recurrence Interval (ARI) floodplain 9. Stockpiling materials and equipment and parking vehicles would be avoided within the dripline (extent of foliage cover) of any tree. 10. Where possible, vegetation to be removed would be mulched on-site and re-used to stabilise disturbed areas.	Proponent / Contractor	Pre-construction, construction
Direct impacts on fauna	11. A fauna spotter catcher should be present during the clearing process to ensure that no animals are injured. The fauna spotter catcher should conduct a preclearance check of all fallen timber, bushrock, and surface debris to be removed. 12. Where fauna is encountered, the fauna spotter catcher will remove the animal(s) and relocate them nearby, or if necessary, deliver them to a veterinarian or wildlife carer for rehabilitation. 13. If threatened fauna are discovered, stop works immediately and contact a suitably qualified ecologist for advice.	Proponent / Contractor	Construction, operation
Indirect impacts on	14. It is preferable for construction works to only take place during daylight hours to minimise disturbance to nocturnal animals.	Proponent /	Construction,

Aspect	Environmental safeguards	Responsibility	Timing
fauna	15. Consideration should be given to minimising noise and vibration during the spring when birds are nesting, and at dawn/dusk when birds are leaving/returning to their roosts. 16. Any night lighting should be directed down and into the site to reduce light spill on nearby nests and hollows.	Contractor	operation
Light	17. Any artificial lighting to be used during construction or operation should follow the Best Practice Lighting Design within the National Light Pollution Guidelines (DoEE 2020). In particular, all lighting should be kept close to the ground, directed, and shielded to avoid light spill.	Proponent / Contractor	Construction, operation
Soil Management	18. An Erosion and Sediment Control Plan is required. Install erosion and sediment controls in line with Landcom's Managing Urban Stormwater, Soils & Construction Guidelines (The Blue Book. Landcom 2004). 19. Where practicable, spread mulch made from vegetation cleared on site on areas of bare soil to stabilise, preventing dust and erosion. 20. Erosion and sedimentation controls are to be checked and maintained on a regular basis. This includes clearing of sediment from behind barriers and after heavy rainfall events. 21. Erosion and sediment control measures are not to be removed until the works are complete and areas are stabilised. 22. Stockpile topsoil removed to be redistributed across site at completion of construction. 23. Implement dust suppression measures.	Proponent / Contractor	Construction, operation
Introduction and spread of priority weeds and pathogens	24. Construction crew should be briefed on the identification of priority weeds that occur on site during inductions (see list of species in **Table 6-1**). 25. Priority weeds will be managed according to the requirements of the *Biosecurity Act 2015.* 26. Construction machinery (bulldozers, excavators, trucks, loaders and graders) will be cleaned using a high-pressure washer or other suitable device before entering and exiting work sites. 27. Machinery will be inspected by designated personnel following washdown to ensure no soil, mud, or vegetative material remains. Records of inspections are to be maintained. 28. All pesticides will be used in accordance with the requirements on the label. Any person carrying out pesticide (including herbicide) application will be trained to do so and have the proper certificate of completion/competency or statement of attainment issued by a registered training organisation. 29. Records of all weed control activities are to be maintained.	Contractor	Construction
Disturbance to fallen timber, dead wood, and bush rock	30. Any fallen timber, dead wood, and bush rock encountered on site would be left *in situ* (where possible) or relocated to a suitable place nearby. 31. Rock would be removed with suitable machinery so as not to damage the underlying rock or result in excessive soil disturbance.	Contractor	Construction
Rehabilitating cleared	32. Revegetation of any bare soil or cleared areas with locally occurring native flora species typical of the original habitat types is recommended, particularly within the Riparian Zone. It is recommended that the	Proponent /	Construction,

Aspect	Environmental safeguards	Responsibility	Timing
areas	VRZ be enhanced by planting River Red Gum (*Eucalyptus camaldulensis*) and River Cooba (*Acacia stenophylla*) – these are the native overstorey species that currently dominate the VRZ. 33. Stockpiled topsoil is to be re-spread over cleared areas.	Contractor	post-construction
Exacerbating invasive fauna	34. All food scraps and rubbish are to be appropriately disposed of in sealed receptacles so as not to encourage foraging foxes, rats, dogs, and cats.	Contractor	Construction
Increased risk of fire	35. If any "hot works" are to be undertaken, these activities will not take place on days of extreme fire danger (where possible).	Contractor	Construction
Degradation of Riparian Vegetation and Water Quality	36. Implement the above mitigation measures to reduce erosion, and sedimentation. 37. Implement the above mitigation measures to improve the VRZ. 38. Implement stormwater controls to ensure runoff during construction and operation (e.g., from the car park) does not introduce pollutants to the watercourses.	Proponent / Contractor	Pre-construction, construction and post-construction

8 CONCLUSION

OzArk has been engaged by Mostyn Copper, who are acting on behalf of NSW Health Infrastructure, to complete a BAR regarding their proposal to undertake the Wentworth Health Service Redevelopment project at 24 Hospital Road, Wentworth, NSW, within the Wentworth Shire LGA. This BAR assesses the impacts of the development on local biodiversity and has been undertaken in accordance with Part 5 of the EP&A Act and Clause 171 of the EP&A Regulation (2021).

A field survey of the site was conducted by a BAM-accredited OzArk Ecologist on the 19th of May 2022. The subject site (1.287 ha) largely consisted of non-native vegetation, existing road surfaces, and the existing Wentworth District Hospital (1.234 ha). The remaining 0.053 ha contained planted native vegetation that will be removed or disturbed by the proposal. This native vegetation consisted of species native to Australia, though not to the Wentworth area. Although these trees provide potential foraging or nesting habitat for native fauna, these plantings cannot be assigned to any PCT.

The vegetation surrounding the subject site was assigned to PCT 11 and PCT 15 will not be directly impacted by the current proposal. No vegetation within, or immediately adjacent to, the subject site is associated with a TEC under either the BC Act, or the EPBC Act. The subject site does contain areas mapped as being of high terrestrial biodiversity value under the Wentworth LEP.

No flora species or populations listed as threatened under the BC or EPBC Act were observed during the field survey. Given the short duration of the field survey, and the lack of targeted surveys, the non-detection of threatened flora species cannot be considered as confirmation of their absence. However, following a desktop review of nearby records and habitat requirements for predicted threatened flora, no species were considered to have a moderate-high probability of occurrence within the subject site.

The native vegetation surrounding the subject site offers a corridor of connectivity along the Darling (and by extension) Murray Rivers. The VRZ is already narrow in this area; the Office of Water recommends the VRZ should be 40 m for the Darling River. Supplementary planting with native species will be undertaken to enhance the VRZ, specifically, the planting of River Red Gum (*Eucalyptus camaldulensis*) and River Cooba (*Acacia stenophylla*) is recommended, as these are the native species that currently dominate the VRZ.

Twenty-eight fauna species were observed during the field survey; none of these species are listed as threatened or migratory under the BC, FM, and/or EBPC Act. Given the short duration of the field survey, and the lack of targeted surveys, the non-detection of threatened fauna species cannot be considered as confirmation of their absence. Based on the proximity of past records, distribution records, habitat requirements, and the results of the field survey, 16

threatened or migratory bird species and two threatened mammal species, were assessed as having a moderate-to-high likelihood of occurring at the subject site. Tests of significance have been conducted for these species under the BC and/or EPBC Act; these tests concluded that due to the small size of the impact footprint, the lack of native PCTs impacted, and the absence of habitat trees from within the footprint, the proposal would not result in a significant impact to any threatened entity.

Although no watercourse passes directly through the subject site, the proposal is positioned at the confluence of southeast Australia's most important river system: the Murray and Darling rivers. The Darling, at its closest, is less than 15 m from the subject site, while the Murray is 300 m to the south. A tributary of the Darling, Tuckers Creek (a Strahler 3rd order minor perennial watercourse), is 115 m to the north. Therefore, the development footprint is flanked on three sides by KFH and has PRL to the west and south. Furthermore, the subject site falls within the boundaries of the endangered Lowland Darling River aquatic ecological community. In addition, Chapter 5 (River Murray Lands) of the *Biodiversity and Conservation SEPP* applies to this land. For any works that involve dredging or reclamation, the proponent must provide the Minister with written notice of the proposed work prior to undertaking any works.

The vulnerable Murray Crayfish, the vulnerable Silver Perch, and the endangered Murray-Darling Basin population of the Eel-tailed Catfish, all listed under the FM Act, are mapped as occurring in one or more of the above watercourses. These watercourses also have records for the EPBC Act-listed Vulnerable Murray Cod. Tests of significance have been conducted for these species and the endangered Lowland Darling River aquatic ecological community under the FM or EPBC Act. Provided that the proposed mitigation methods are adhered to, the proposal is not likely to significantly impact any threatened aquatic species, population or community listed under the FM or EPBC Act.

This assessment covers the current form of the proposal. Any change to the scope of work may require re-assessment. If entry into the NSW Biodiversity Offsets Scheme is triggered by a changed scope, additional field work and reporting completed according to the BAM may be required.

9 BIBLIOGRAPHY

Briggs, J and Leigh, J 1996, *Rare or Threatened Australian Plants*, CSIRO Publishing, Collingwood, Victoria

Bureau of Meteorology 2023a, *Bureau of Meteorology Climate Averages*, viewed January 2023, <http://www.bom.gov.au/climate/averages>

– 2023b, *Atlas of Groundwater Dependent Ecosystems*, viewed January 2023 http://www.bom.gov.au/water/groundwater/gde/map.shtml

Churchill, S 2008, *Australian bats - 2nd Edition*, Allen and Unwin, Crows Nest, NSW

Cogger, H 2014, *Reptiles and Amphibians of Australia,* CSIRO Publishing, Collingwood, Victoria

Cropper, S 1993, *Management of Endangered Plants*, CSIRO Publishing, Collingwood, Victoria

Cunningham, GM., Mulham, WE., Milthorpe, Pl. and Leigh, JH 1992, *Plants of Western New South Wales.* CSIRO Publishing, Collingwood, Victoria

Department of the Environment 2013, *Matters of National Environmental Significance: Significant Impact Guidelines 1.1 Environment Protection and Biodiversity Conservation Act 1999*, viewed January 2023, <http://www.environment.gov.au/system/files/resources/42f84df4-720b-4dcf-b262-48679a3aba58/files/nes-guidelines_1.pdf>

Department of the Environment and Energy 2023a, *Protected Matters Search Tool*, viewed January 2023, <http://www.environment.gov.au/epbc/db/index.html>

– 2023b, *Species profile and threats database*, viewed January 2023, <http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl>

– 2023c, *Register of Critical Habitat*, viewed January 2023, <http://www.environment.gov.au/cgi-bin/sprat/public/publicregisterofcriticalhabitat.pl>

– 2023d, *Weeds of National Significance*, viewed January 2023, <http://www.environment.gov.au/biodiversity/invasive/weeds/weeds/lists/wons.html>

Department of Environment and Climate Change 2007, *Threatened species assessment guidelines: The assessment of significance*, Department of Environment and Climate Change, Hurstville, NSW

Department of Environment and Conservation 2004 [Working draft], *Threatened Species Survey and Assessment: Guidelines for developments and activities*, New South Wales Department of Environment and Conservation, Hurstville, NSW

Department of Land and Water Conservation 2021, *The NSW State Groundwater Dependent Ecosystems Policy,* viewed January 2023, <http://www.water.nsw.gov.au/__data/assets/pdf_file/0005/547844/groundwater_dependent_ecosystem_policy_300402.pdf>

Department of Planning and Environment 2023, *Spatial Layer of Probably Vegetation Groundwater Dependent Ecosystems in NSW.* Downloaded January 2023. <https://datasets.seed.nsw.gov.au/dataset/spatial-layer-of-probable-vegetation-groundwater-dependent-ecosystems>

Department of Planning and Environment 2023, *State Vegetation Map: Western Region v1.0*. Downloaded January 2023. < https://datasets.seed.nsw.gov.au/dataset/state-vegetation-type-map-western-region-v1-0-vis_id-4492>

Department of Primary Industries 2013, *Policy and guidelines for fish habitat conservation and management* (update 2013), viewed January 2023, <http://www.dpi.nsw.gov.au/__data/assets/pdf_file/0009/468927/Policy-and-guidelines-for-fish-habitat.pdf>

– 2016, *Grasses of the New South Wales slopes and adjacent plains*. Department of Primary Industries

– 2023a, *NSW WeedWise: Priority weeds for the Western*, viewed January 2023, <https://weeds.dpi.nsw.gov.au/WeedBiosecurities?AreaId=137>

– 2023b, *Freshwater threatened species distribution maps*, viewed January 2023 <https://www.dpi.nsw.gov.au/fishing/threatened-species/threatened-species-distributions-in-nsw/freshwater-threatened-species-distribution-maps>

Fairfull, S and Witheridge, G 2003, *Why do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings*, NSW Fisheries, Cronulla, NSW, viewed January 2023, <https://www.dpi.nsw.gov.au/__data/assets/pdf_file/0004/633505/Why-do-fish-need-to-cross-the-road_booklet.pdf>

Fairfull, S. (2013). *Policy and Guidelines for Fish Habitat Conservation and Management.* Sydney: NSW Department of Primary Industries.

Frith, HJ (Ed) 2007, *Complete book of Australian birds*, Readers Digest, Surry Hills, NSW

Harden, G (Ed) 1992-2002, *Flora of New South Wales Vols 1, 2, 3 and 4*, NSW University Press, Kensington, NSW

Keith, D. 2004, *Ocean Shores to Desert Dunes: The Vegetation of New South Wales and the ACT.* Department of Environment and Conservation NSW.

Lintermans, M 2007, *Fishes of the Murray-Darling Basin: An introductory guide.*

Mitchell. 2002, *Descriptions for NSW (Mitchell) Landscapes.* NSW: Department of Environment and Climate Change.

Office of Environment and Heritage 2016, *NSW Guide to Surveying Threatened Plants*, Office of Environment and Heritage, Sydney South, NSW, viewed January 2023, <http://www.environment.nsw.gov.au/resources/threatenedspecies/160129-threatened-plants-survey-guide.pdf>

– 2018, *Threatened Species Test of Significance Guidelines*, viewed January 2023, <https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals-and-plants/Threatened-species/threatened-species-test-significance-guidelines-170634.pdf>

– 2018, *Glossary of Biobanking terms*, viewed January 2023 <https://www.environment.nsw.gov.au/topics/animals-and-plants/biodiversity/biobanking/glossary-of-biobanking-terms>

– 2023a, *BioNet Vegetation Classification database*, viewed January 2023, <https://www.environment.nsw.gov.au/NSWVCA20PRapp/>

– 2023b, *BioNet (Atlas of NSW Wildlife) Database*, data downloaded January 2023, <http://www.environment.nsw.gov.au/atlaspublicapp/UI_Modules/ATLAS_/AtlasSearch.aspx>

– 2023c, *Threatened Biodiversity Data Collection* database, viewed January 2023, <https://data.nsw.gov.au/data/dataset/nsw-bionet-threatened-entity-profile-data-collection8f027>

– 2023d, *Bioregions of NSW*. Retrieved from Office of Environment and Heritage, January 2023: <https://www.environment.nsw.gov.au/bioregions/NSWSouthWesternSlopesBioregion.htm>

– 2023e, *Threatened biodiversity profile search*, viewed January 2023, <http://www.environment.nsw.gov.au/threatenedSpeciesApp/>

– 2023f, *Critical Habitat Register*, viewed January 2023, <http://www.environment.nsw.gov.au/criticalhabitat/CriticalHabitatProtectionByDoctype.htm>

Richardson, F.J., Richardson, R.G. and Shepherd, R.C.H. 2011, *Weeds of the south-east: An identification guide for Australia*. R.G and F.J. Richardson, Meredith, Victoria.

The Royal Botanic Gardens and Domain Trust 2023, *PlantNET*. viewed January 2023, <www.plantnet.rbgsyd.nsw.gov.au>

Simpson, K and Day, N 2010, *Field guide to the birds of Australia*, 8th Edition, Penguin Books Australia, Victoria

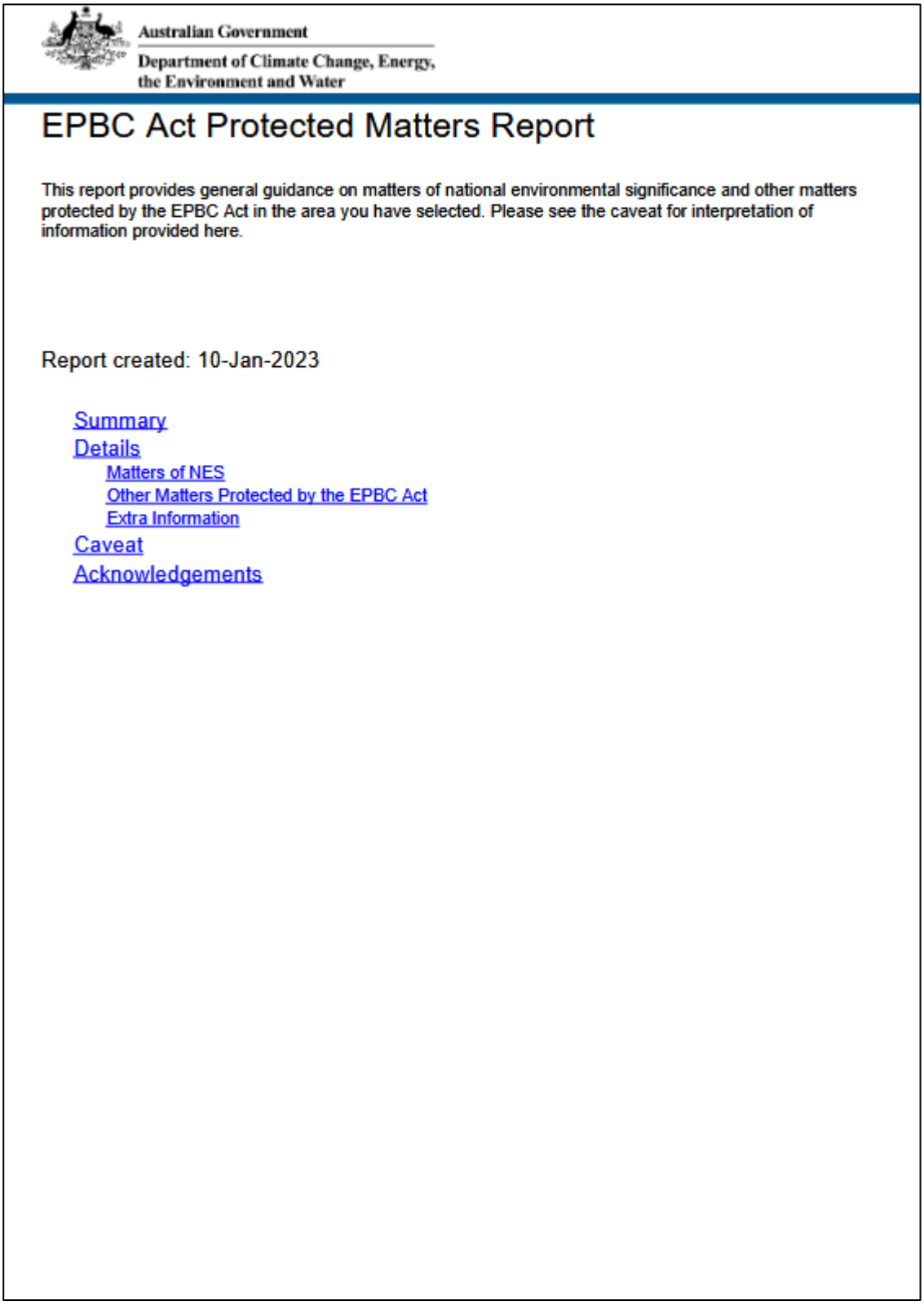
Thackway, R and Cresswell I.D 1995, *An Interim Biogeographic Regionalisation for Australia: A Framework for Setting Priorities in the National Reserves System Cooperative Program*, Australian Nature Conservation Agency, Canberra, viewed January 2023, <https://www.environment.gov.au/system/files/resources/4263c26f-f2a7-4a07-9a29-b1a81ac85acc/files/ibra-framework-setting-priorities-nrs-cooperative-program.pdf>

Triggs, B 1996, *Tracks, scats and other traces: a field guide to Australian mammals*, Oxford University Press, Melbourne, Victoria

Van Dyck, S and Strahan, R (Eds) 2008, *The mammals of Australia (3rd edition)*. Reed New Holland, Sydney, NSW

APPENDIX A – DATABASE SEARCH RESULTS

EPBC Act Protected Matters Report



Australian Government
Department of Climate Change, Energy, the Environment and Water

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. Please see the caveat for interpretation of information provided here.

Report created: 10-Jan-2023

Summary
Details
- Matters of NES
- Other Matters Protected by the EPBC Act
- Extra Information

Caveat
Acknowledgements

Summary

Matters of National Environment 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 (Ramsar	3
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	3
Listed Threatened Species:	27
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

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 Lands:	1
Commonwealth Heritage Places:	None
Listed Marine Species:	20
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

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

State and Territory Reserves:	3
Regional Forest Agreements:	None
Nationally Important Wetlands:	1
EPBC Act Referrals:	8
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar Wetlands) [Resource Information]

Ramsar Site Name	Proximity	Buffer Status
Banrock station wetland complex	100 - 150km upstream from Ramsar site	In feature area
Riverland	50 - 100km upstream from Ramsar site	In feature area
The coorong, and lakes alexandrina and albert wetland	200 - 300km upstream from Ramsar site	In feature area

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.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text	Buffer Status
Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions	Endangered	Community may occur within area	In feature area
Coolibah - Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions	Endangered	Community may occur within area	In buffer area only
Mallee Bird Community of the Murray Darling Depression Bioregion	Endangered	Community likely to occur within area	In buffer area only

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat may occur within area	In feature area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat known to occur within area	In feature area
Manorina melanotis Black-eared Miner [449]	Endangered	Species or species habitat likely to occur within area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Pedionomus torquatus Plains-wanderer [906]	Critically Endangered	Species or species habitat may occur within area	In feature area
Pezoporus occidentalis Night Parrot [59350]	Endangered	Species or species habitat may occur within area	In buffer area only
Polytelis anthopeplus monarchoides Regent Parrot (eastern) [59612]	Vulnerable	Breeding likely to occur within area	In feature area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area	In feature area
FISH			
Bidyanus bidyanus Silver Perch, Bidyan [76155]	Critically Endangered	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Craterocephalus fluviatilis Murray Hardyhead [56791]	Endangered	Species or species habitat known to occur within area	In feature area
Galaxias rostratus Flathead Galaxias, Beaked Minnow, Flat-headed Galaxias, Flat-headed Jollytail, Flat-headed Minnow [84745]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Maccullochella macquariensis Trout Cod [26171]	Endangered	Species or species habitat may occur within area	In feature area
Maccullochella peelii Murray Cod [66633]	Vulnerable	Species or species habitat known to occur within area	In feature area
Macquaria australasica Macquarie Perch [66632]	Endangered	Species or species habitat may occur within area	In feature area
FROG			
Litoria raniformis Growling Grass Frog, Southern Bell Frog, Green and Golden Frog, Warty Swamp Frog, Golden Bell Frog [1828]	Vulnerable	Species or species habitat likely to occur within area	In feature area
MAMMAL			
Nyctophilus corbeni Corben's Long-eared Bat, South-eastern Long-eared Bat [83395]	Vulnerable	Species or species habitat likely to occur within area	In feature 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]	Endangered	Species or species habitat likely to occur within area	In feature area
PLANT			
Brachyscome papillosa Mossgiel Daisy [6625]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Lepidium monoplocoides Winged Pepper-cress [9190]	Endangered	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Pterostylis xerophila Desert Greenhood [7997]	Vulnerable	Species or species habitat may occur within area	In feature area
Solanum karsense Menindee Nightshade [7776]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Swainsona murrayana Slender Darling-pea, Slender Swainson, Murray Swainson-pea [6765]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Swainsona pyrophila Yellow Swainson-pea [56344]	Vulnerable	Species or species habitat likely to occur within area	In feature area
REPTILE			
Hemiaspis damelii Grey Snake [1179]	Endangered	Species or species habitat may occur within area	In feature area

Listed Migratory Species		[Resource Information]	
Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Migratory Terrestrial Species			
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area	In feature area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area	In feature area
Migratory Wetlands Species			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
Calidris ruficollis Red-necked Stint [860]		Species or species habitat known to occur within area	In buffer area only
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area	In feature area

Other Matters Protected by the EPBC Act

Commonwealth Lands [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.

Commonwealth Land Name	State	Buffer Status
Communications, Information Technology and the Arts - Telstra Corporation Limited		
Commonwealth Land - Australian Telecommunications Commission [15187]	NSW	In buffer area only

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris ruficollis Red-necked Stint [860]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat likely to occur within area overfly marine area	In feature area
Charadrius ruficapillus Red-capped Plover [881]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area overfly marine area	In feature area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area	In feature area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area overfly marine area	In feature area
Neophema chrysostoma Blue-winged Parrot [726]		Species or species habitat known to occur within area overfly marine area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Recurvirostra novaehollandiae Red-necked Avocet [871]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area overfly marine area	In feature area

Extra Information

State and Territory Reserves			[Resource Information]
Protected Area Name	Reserve Type	State	Buffer Status
Murray - Sunset	National Park	VIC	In buffer area only
River Murray Reserve	Natural Features Reserve	VIC	In buffer area only
Wargan-Mallee B.R.	Natural Features Reserve	VIC	In buffer area only

Nationally Important Wetlands		[Resource Information]
Wetland Name	State	Buffer Status
Wallpolla Island	VIC	In buffer area only

EPBC Act Referrals				[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				
Great Darling Anabranch - pipeline construction and environmental water flow ma	2004/1319	Controlled Action	Post-Approval	In feature area
Wallpolla Island Floodplain Restoration Project	2020/8750	Controlled Action	Assessment Approach	In buffer area only
Not controlled action				
Conversion of the North Western Victoria rail system from broad gauge to standar	2002/657	Not Controlled Action	Completed	In buffer area only
Improving environmental flows at Horseshoe Lagoon	2006/2548	Not Controlled Action	Completed	In buffer area only
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
INDIGO Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed	In feature area
Modifications to Lock and Weir 10 Wentworth	2004/1367	Not Controlled Action	Completed	In feature area
Not controlled action (particular manner)				
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval	In feature area

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and 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

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

Where little information is available for a 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 detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

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

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

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

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

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.

BioNET Atlas search – threatened species predicted to occur within the Murray Mallee, Murray Scrolls, Robinvale Plains and South Olary Plain subregions of the Murray Darling Depression and Riverina Bioregions.

Class	Scientific Name	Common Name	NSW status*	Comm. status+	Records
Amphibia	*Crinia sloanei*	Sloane's Froglet	V,P	E	P
Amphibia	*Litoria raniformis*	Southern Bell Frog	E1,P	V	53
Amphibia	*Neobatrachus pictus*	Painted Burrowing Frog	E1,P		14
Reptilia	*Lucasium stenodactylum*	Crowned Gecko	V,P		2
Reptilia	*Strophurus elderi*	Jewelled Gecko	V,P		158
Reptilia	*Aprasia inaurita*	Mallee Worm-lizard	E1,P		80
Reptilia	*Delma australis*	Marble-faced Delma	E1,P		99
Reptilia	*Ctenotus brooksi*	Wedgesnout Ctenotus	V,P		8
Reptilia	*Cyclodomorphus melanops elongatus*	Mallee Slender Blue-tongue Lizard	E1,P		22
Reptilia	*Lerista xanthura*	Yellow-tailed Plain Slider	V,P		35
Reptilia	*Tympanocryptis lineata*	Canberra Grassland Earless Dragon	E4A,P	E	38
Reptilia	*Ramphotyphlops endoterus*	Interior Blind Snake	E1,P		2
Reptilia	*Echiopsis curta*	Bardick	E1,P		4
Reptilia	*Pseudonaja modesta*	Ringed Brown Snake	E1,P		58
Aves	*Leipoa ocellata*	Malleefowl	E1,P	V	318
Aves	*Oxyura australis*	Blue-billed Duck	V,P		37
Aves	*Stictonetta naevosa*	Freckled Duck	V,P		52
Aves	*Apus pacificus*	Fork-tailed Swift	P	C,J,K	1
Aves	*Botaurus poiciloptilus*	Australasian Bittern	E1,P	E	3
Aves	*Circus assimilis*	Spotted Harrier	V,P		36
Aves	*Haliaeetus leucogaster*	White-bellied Sea-Eagle	V,P		58
Aves	*^^Hamirostra melanosternon*	Black-breasted Buzzard	V,P,3		15
Aves	*Hieraaetus morphnoides*	Little Eagle	V,P		102
Aves	*^^Lophoictinia isura*	Square-tailed Kite	V,P,3		13
Aves	*^Falco hypoleucos*	Grey Falcon	E1,P,2		15
Aves	*Falco subniger*	Black Falcon	V,P		12
Aves	*Grus rubicunda*	Brolga	V,P		2
Aves	*Ardeotis australis*	Australian Bustard	E1,P		6
Aves	*Burhinus grallarius*	Bush Stone-curlew	E1,P		42
Aves	*Pluvialis fulva*	Pacific Golden Plover	P	C,J,K	2
Aves	*Rostratula australis*	Australian Painted Snipe	E1,P	E	6
Aves	*Actitis hypoleucos*	Common Sandpiper	P	C,J,K	1
Aves	*Arenaria interpres*	Ruddy Turnstone	P	C,J,K	5
Aves	*Calidris acuminata*	Sharp-tailed Sandpiper	P	C,J,K	28
Aves	*Calidris canutus*	Red Knot	P	E,C,J,K	1

Class	Scientific Name	Common Name	NSW status*	Comm. status+	Records
Aves	*Calidris ferruginea*	Curlew Sandpiper	E1,P	CE,C,J,K	16
Aves	*Calidris melanotos*	Pectoral Sandpiper	P	J,K	5
Aves	*Calidris ruficollis*	Red-necked Stint	P	C,J,K	16
Aves	*Calidris subminuta*	Long-toed Stint	P	C,J,K	4
Aves	*Limicola falcinellus*	Broad-billed Sandpiper	V,P	C,J,K	1
Aves	*Gallinago hardwickii*	Latham's Snipe	P	J,K	1
Aves	*Limosa lapponica*	Bar-tailed Godwit	P	C,J,K	2
Aves	*Limosa limosa*	Black-tailed Godwit	V,P	C,J,K	4
Aves	*Tringa glareola*	Wood Sandpiper	P	C,J,K	3
Aves	*Numenius minutus*	Little Curlew	P	C,J,K	3
Aves	*Tringa nebularia*	Common Greenshank	P	C,J,K	30
Aves	*Tringa stagnatilis*	Marsh Sandpiper	P	C,J,K	12
Aves	*Gelochelidon nilotica*	Gull-billed Tern	P	C	21
Aves	*Hydroprogne caspia*	Caspian Tern	P	J	140
Aves	*^Lophochroa leadbeateri*	Major Mitchell's Cockatoo	V,P,2		645
Aves	*^^Glossopsitta porphyrocephala*	Purple-crowned Lorikeet	V,P,3		11
Aves	*^^Lathamus discolor*	Swift Parrot	E1,P,3	CE	1
Aves	*Neophema splendida*	Scarlet-chested Parrot	V,P		9
Aves	*^^Polytelis anthopeplus monarchoides*	Regent Parrot (eastern subspecies)	E1,P,3	V	778
Aves	*^^Polytelis swainsonii*	Superb Parrot	V,P,3	V	1
Aves	*^^Ninox connivens*	Barking Owl	V,P,3		3
Aves	*^^Tyto novaehollandiae*	Masked Owl	V,P,3		P
Aves	*Climacteris picumnus victoriae*	Brown Treecreeper (eastern subspecies)	V,P		397
Aves	*Calamanthus campestris*	Rufous Fieldwren	V,P		1
Aves	*Pyrrholaemus brunneus*	Redthroat	V,P		15
Aves	*Chthonicola sagittata*	Speckled Warbler	V,P		2
Aves	*Hylacola cautus*	Shy Heathwren	V,P		108
Aves	*Certhionyx variegatus*	Pied Honeyeater	V,P		39
Aves	*Lichenostomus cratitius*	Purple-gaped Honeyeater	V,P		3
Aves	*Manorina melanotis*	Black-eared Miner	E4A,P	E	26
Aves	*Epthianura albifrons*	White-fronted Chat	V,P		157
Aves	*Melithreptus gularis gularis*	Black-chinned Honeyeater (eastern subspecies)	V,P		12
Aves	*Cinclosoma castanotum*	Chestnut Quail-thrush	V,P		491
Aves	*Daphoenositta chrysoptera*	Varied Sittella	V,P		135
Aves	*Pachycephala inornata*	Gilbert's Whistler	V,P		367
Aves	*Pachycephala rufogularis*	Red-lored Whistler	E4A,P	V	3
Aves	*Artamus cyanopterus cyanopterus*	Dusky Woodswallow	V,P		91

Class	Scientific Name	Common Name	NSW status*	Comm. status+	Records
Aves	*Melanodryas cucullata cucullata*	Hooded Robin (south-eastern form)	V,P		241
Aves	*Petroica phoenicea*	Flame Robin	V,P		3
Aves	*Drymodes brunneopygia*	Southern Scrub-robin	V,P		205
Mammalia	*Antechinomys laniger*	Kultarr	E1,P		2
Mammalia	*Dasyurus maculatus*	Spotted-tailed Quoll	V,P	E	2
Mammalia	*Ningaui yvonneae*	Southern Ningaui	V,P		1363
Mammalia	*Phascogale calura*	Red-tailed Phascogale	E4,P	V	1
Mammalia	*Sminthopsis macroura*	Stripe-faced Dunnart	V,P		13
Mammalia	*Chaeropus ecaudatus*	Pig-footed Bandicoot	E4,P	X	2
Mammalia	*Macrotis lagotis*	Bilby	E4,P	V	2
Mammalia	*Phascolarctos cinereus*	Koala	E1,P	E	3
Mammalia	*Lasiorhinus latifrons*	Southern Hairy-nosed Wombat	E1,P		2
Mammalia	*Cercartetus concinnus*	Western Pygmy Possum	E1,P		371
Mammalia	*Bettongia lesueur graii*	Boodie, Burrowing Bettong (mainland)	E4,P	X	1
Mammalia	*Lagorchestes leporides*	Eastern Hare-wallaby	E4,P	X	1
Mammalia	*Onychogalea fraenata*	Bridled Nailtail Wallaby	E4,P	E	16
Mammalia	*Onychogalea lunata*	Crescent Nailtail Wallaby	E4,P	X	1
Mammalia	*Saccolaimus flaviventris*	Yellow-bellied Sheathtail-bat	V,P		30
Mammalia	*Chalinolobus picatus*	Little Pied Bat	V,P		564
Mammalia	*Myotis macropus*	Southern Myotis	V,P		P
Mammalia	*Nyctophilus corbeni*	Corben's Long-eared Bat	V,P	V	2
Mammalia	*Vespadelus baverstocki*	Inland Forest Bat	V,P		2099
Mammalia	*Leporillus conditor*	Greater Stick-nest Rat	E4,P	V	4
Mammalia	*Notomys mitchellii*	Mitchell's Hopping-mouse	E4,P		1
Mammalia	*Pseudomys bolami*	Bolam's Mouse	E1,P		175
Mammalia	*Pseudomys desertor*	Desert Mouse	E4A,P		3
Mammalia	*Pseudomys gouldii*	Gould's Mouse	E4,P	X	1
Mammalia	*Pseudomys hermannsburgensis*	Sandy Inland Mouse	V,P		7
Mammalia	*Rattus villosissimus*	Long-haired Rat	V,P		1
Flora	*Brachyscome papillosa*	Mossgiel Daisy	V	V	20
Flora	*Calotis moorei*	A burr-daisy	E1	E	P
Flora	*Cratystylis conocephala*	Bluebush Daisy	E1		120
Flora	*Erodiophyllum elderi*	Koonamore Daisy	E1		P
Flora	*Kippistia suaedifolia*	Fleshy Minuria	E1		4
Flora	*Leptorhynchos waitzia*	Button Immortelle	E1		P
Flora	*Lepidium monoplocoides*	Winged Peppercress	E1	E	3
Flora	*Atriplex acutiloba*		E4		1
Flora	*Atriplex infrequens*	A saltbush	V	V	1

Class	Scientific Name	Common Name	NSW status*	Comm. status+	Records
Flora	*Swainsona colutoides*	Bladder Senna	E1		30
Flora	*Swainsona pyrophila*	Yellow Swainson-pea	V	V	8
Flora	*Swainsona sericea*	Silky Swainson-pea	V		7
Flora	*Acacia acanthoclada*	Harrow Wattle	E1		118
Flora	*Acacia carneorum*	Purple-wood Wattle	V	V	55
Flora	*Lasiopetalum behrii*	Pink Velvet Bush	E4A		2
Flora	*^Pterostylis cobarensis*	Greenhood Orchid	V,P,2		5
Flora	*Austrostipa metatoris*	A spear-grass	V	V	6
Flora	*Austrostipa nullanulla*	A spear-grass	E1		27
Flora	*Santalum murrayanum*	Bitter Quandong	E1		130
Flora	*Dodonaea stenozyga*	Desert Hopbush	E4A		21
Flora	*Casuarina obesa*	Swamp She-oak		10	10
Flora	*Eucalyptus leucoxylon subsp. pruinosa*	Yellow Gum		1	1
Flora	*Senecio behrianus*		E4	E	1
Flora	*Tetratheca pilosa subsp. pilosa*		E4		1
Flora	*Solanum karsense*	Menindee Nightshade	V	V	17
Flora	*Austrostipa metatoris*	A spear-grass	V	V	2
Flora	*Pimelea serpyllifolia subsp. serpyllifolia*	Thyme Rice-Flower	E1		10

***NSW Status:** P=Protected, P13=Protected native plant, V=Vulnerable, E1=Endangered, E2=Endangered population, E4=Extinct, E4A=Critically endangered, 2=Category 2 sensitive species, 3=Category 3 sensitive species.
+ Comm. Status: C=CAMBA, J=JAMBA, K=ROKAMBA, CE=Critically endangered, E=Endangered, V=Vulnerable.
- Number of Records: P = predicted to occur.

BioNET Atlas search – threatened communities predicted to occur within the Murray Mallee, Murray Scrolls, Robinvale Plains and South Olary Plain subregions of the Murray Darling Depression and Riverina Bioregions.

Community Name	NSW status*	Comm. Status+	Records
Acacia melvillei Shrubland in the Riverina and Murray-Darling Depression bioregions	E		K
Allocasuarina luehmannii Woodland in the Riverina and Murray-Darling Depression Bioregions	E		K
Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions		E	K
Coolibah – Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions		E	K
Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia		E	K
Plains mallee box woodlands of the Murray Darling Depression, Riverina, and Naracoorte Coastal Plain Bioregion		CE	K
Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions	E		P
Tecticornia lylei, Wiry Glasswort, low open-shrubland in the Murray Darling Depression Bioregion	E		K
Weeping Myall Woodlands		E	K

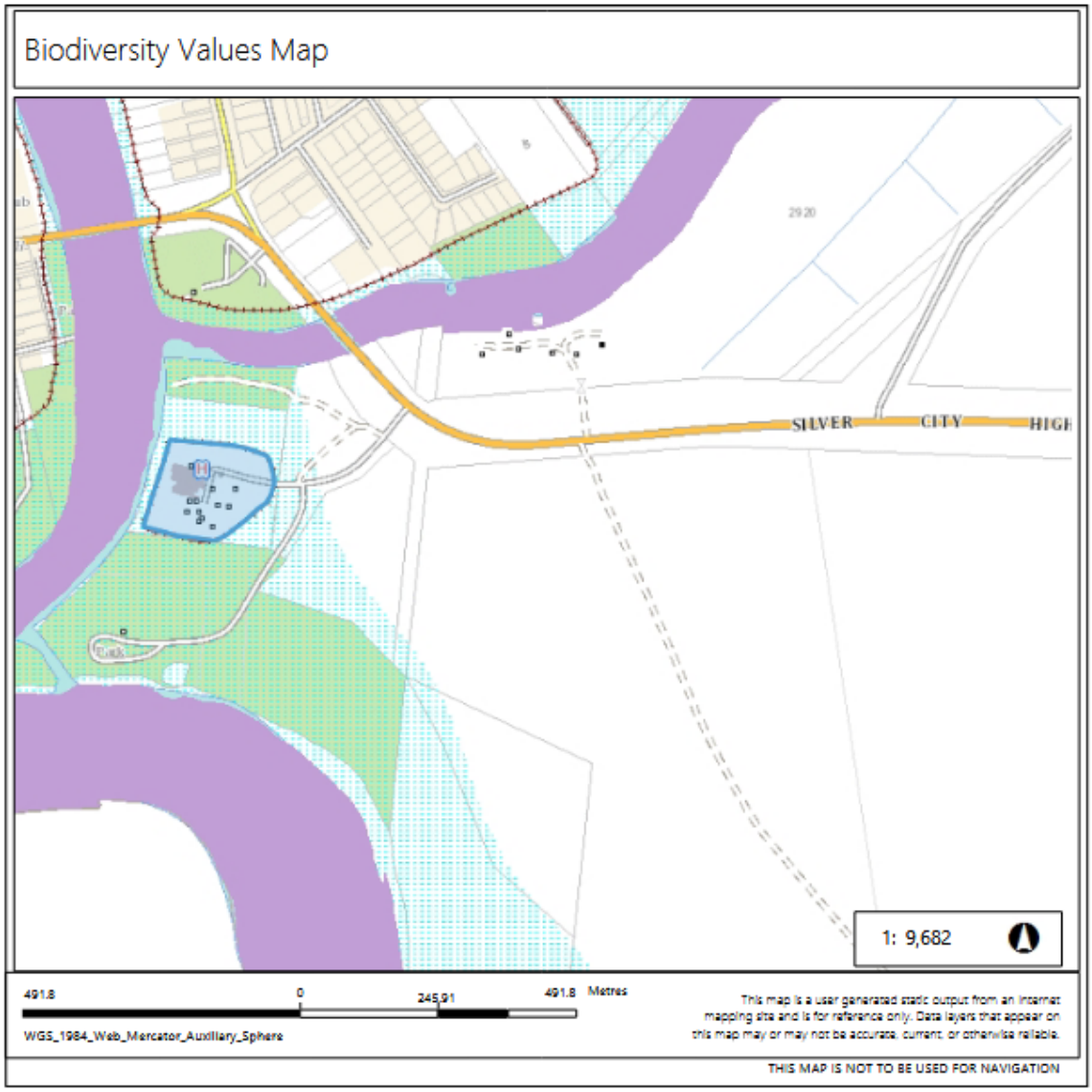
***NSW Status**: E=Endangered.
+Comm. Status: CE=Critically endangered, E=Endangered.
- Records: K = Known to occur, P = predicted to occur.

BioNET Atlas search – key threatening processes predicted to occur within the Murray Mallee, Murray Scrolls, Robinvale Plains and South Olary Plain subregions of the Murray Darling Depression and Riverina Bioregions.

Threats	NSW status	Comm. status	Records
Aggressive exclusion of birds from woodland and forest habitat by abundant Noisy Miners, *Manorina melanocephala* (Latham, 1802)	KTP	KTP	P
Alteration of habitat following subsidence due to longwall mining	KTP		P
Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands	KTP		P
Anthropogenic Climate Change	KTP	KTP	P
Bushrock removal	KTP		P
Clearing of native vegetation	KTP	KTP	P
Competition and grazing by the feral European Rabbit, *Oryctolagus cuniculus* (L.)	KTP	KTP	P
Competition and habitat degradation by Feral Goats, *Capra hircus* Linnaeus 1758	KTP	KTP	P
Competition from feral honey bees, *Apis mellifera* L.	KTP		P
Forest eucalypt dieback associated with over-abundant psyllids and Bell Miners	KTP		P
Habitat degradation and loss by Feral Horses (brumbies, wild horses), *Equus caballus* Linnaeus 1758	KTP		P
Herbivory and environmental degradation caused by feral deer	KTP		P
High frequency fire resulting in the disruption of life cycle processes in plants and animals and loss of vegetation structure and composition	KTP		P
Importation of Red Imported Fire Ants *Solenopsis invicta* Buren 1972	KTP	KTP	P
Infection by Psittacine Circoviral (beak and feather) Disease affecting endangered psittacine species and populations	KTP	KTP	P
Infection of frogs by amphibian chytrid causing the disease chytridiomycosis	KTP	KTP	P
Infection of native plants by *Phytophthora cinnamomi*	KTP	KTP	P
Introduction of the Large Earth Bumblebee *Bombus terrestris* (L.)	KTP		P
Invasion and establishment of exotic vines and scramblers	KTP		P
Invasion and establishment of Scotch Broom (*Cytisus scoparius*)	KTP		P
Invasion and establishment of the Cane Toad (*Bufo marinus*)	KTP	KTP	P
Invasion of native plant communities by African Olive O*lea europaea subsp. cuspidata* (Wall. ex G. Don) Cif.	KTP		P
Invasion of native plant communities by *Chrysanthemoides monilifera*	KTP		P
Invasion of native plant communities by exotic perennial grasses	KTP		P
Invasion of the Yellow Crazy Ant, *Anoplolepis gracilipes* (Fr. Smith) into NSW	KTP		P
Invasion, establishment and spread of Lantana (*Lantana camara L. sens.* Lat)	KTP		P
Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants	KTP	KTP	P
Loss of Hollow-bearing Trees	KTP		P
Loss or degradation (or both) of sites used for hill-topping by butterflies	KTP		P
Predation and hybridisation by Feral Dogs, *Canis lupus familiaris*	KTP		P
Predation by *Gambusia holbrooki* Girard, 1859 (Plague Minnow or Mosquito Fish)	KTP		P
Predation by the European Red Fox *Vulpes vulpes* (Linnaeus, 1758)	KTP	KTP	P
Predation by the Feral Cat *Felis catus* (Linnaeus, 1758)	KTP	KTP	P

- Records: P = predicted to occur.

Biodiversity Values Map



NSW GOVERNMENT

Biodiversity Values Map and Threshold Report

Results Summary

Date of Calculation	10/01/2023 4:17 PM		**BDAR Required***
Total Digitised Area	20,831.5	sqm	
Minimum Lot Size Method	Lot size		
Minimum Lot Size 10,000sqm = 1ha	39,657	sqm	
Area Clearing Threshold 10,000sqm = 1ha	5,000	sqm	
Area clearing trigger Area of native vegetation cleared	Unknown #		Unknown #
Biodiversity values map trigger Impact on biodiversity values map(not including values added within the last 90 days)?	no		no
Date of the 90 day Expiry	N/A		

*If BDAR required has:

- at least one 'Yes': you have exceeded the BOS threshold. You are now required to submit a Biodiversity Development Assessment Report with your development application. Go to https://customer.lmbc.nsw.gov.au/assessment/AccreditedAssessor to access a list of assessors who are accredited to apply the Biodiversity Assessment Method and write a Biodiversity Development Assessment Report
- 'No': you have not exceeded the BOS threshold. You may still require a permit from local council. Review the development control plan and consult with council. You may still be required to assess whether the development is '"likely to significantly affect threatened species' as determined under the test in s. 7.3 of the Biodiversity Conservation Act 2016. You may still be required to review the area where no vegetation mapping is available.

Where the area of impact occurs on land with no vegetation mapping available, the tool cannot determine the area of native vegetation cleared and if this exceeds the Area Threshold. You will need to work out the area of native vegetation cleared - refer to the BMAT user guide for how to do this.

On and after the 90 day expiry date a BDAR will be required.

Disclaimer

This results summary and map can be used as guidance material only. This results summary and map is not guaranteed to be free from error or omission. The State of NSW and Department of Planning and Environment and its employees disclaim liability for any act done on the information in the results summary or map and any consequences of such acts or omissions. It remains the responsibility of the proponent to ensure that their development application complies will all aspects of the *Biodiversity Conservation Act 2016*.

The mapping provided in this tool has been done with the best available mapping and knowledge of species habitat requirements. This map is valid for a period of 30 days from the date of calculation (above).

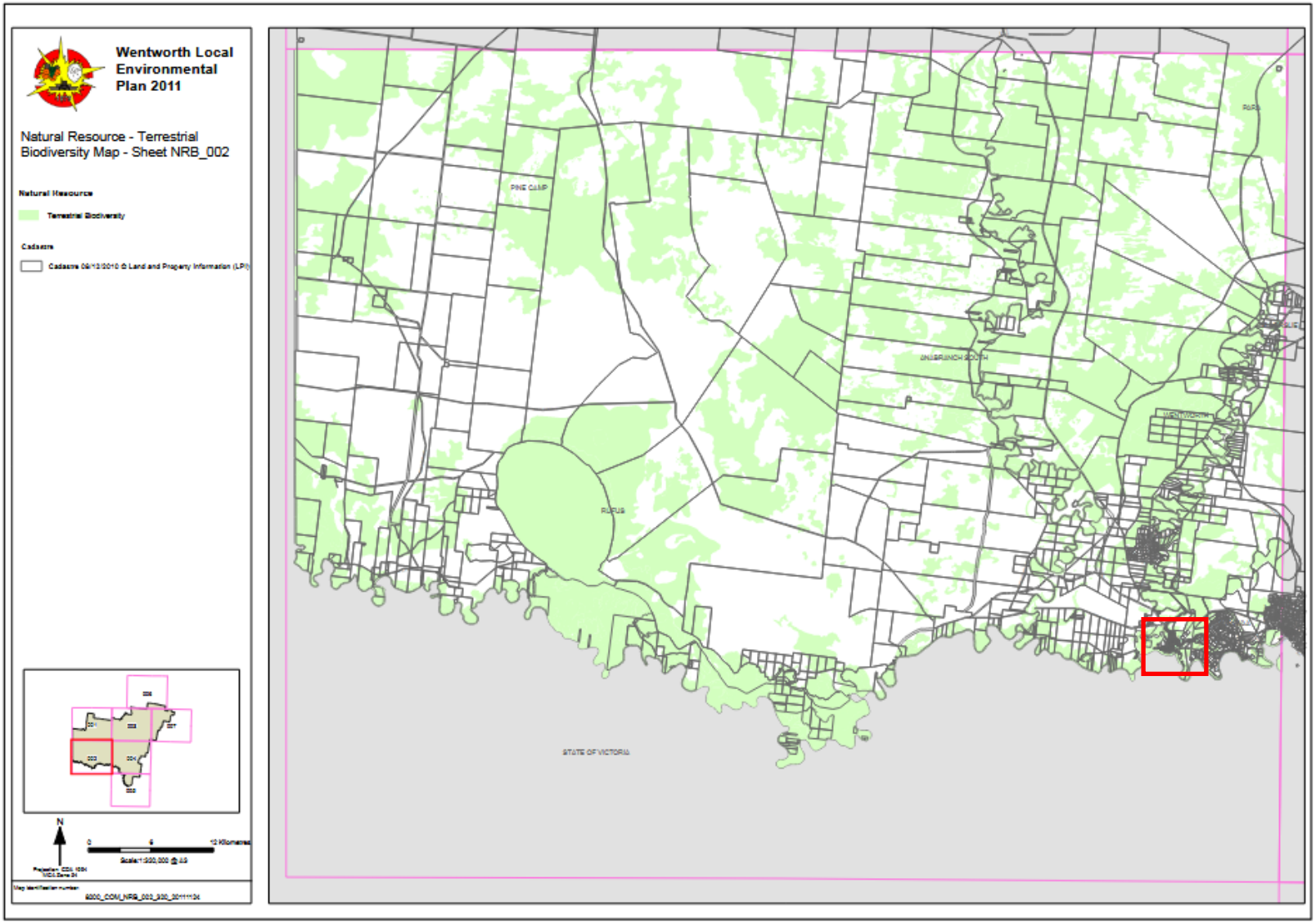
Acknowledgement

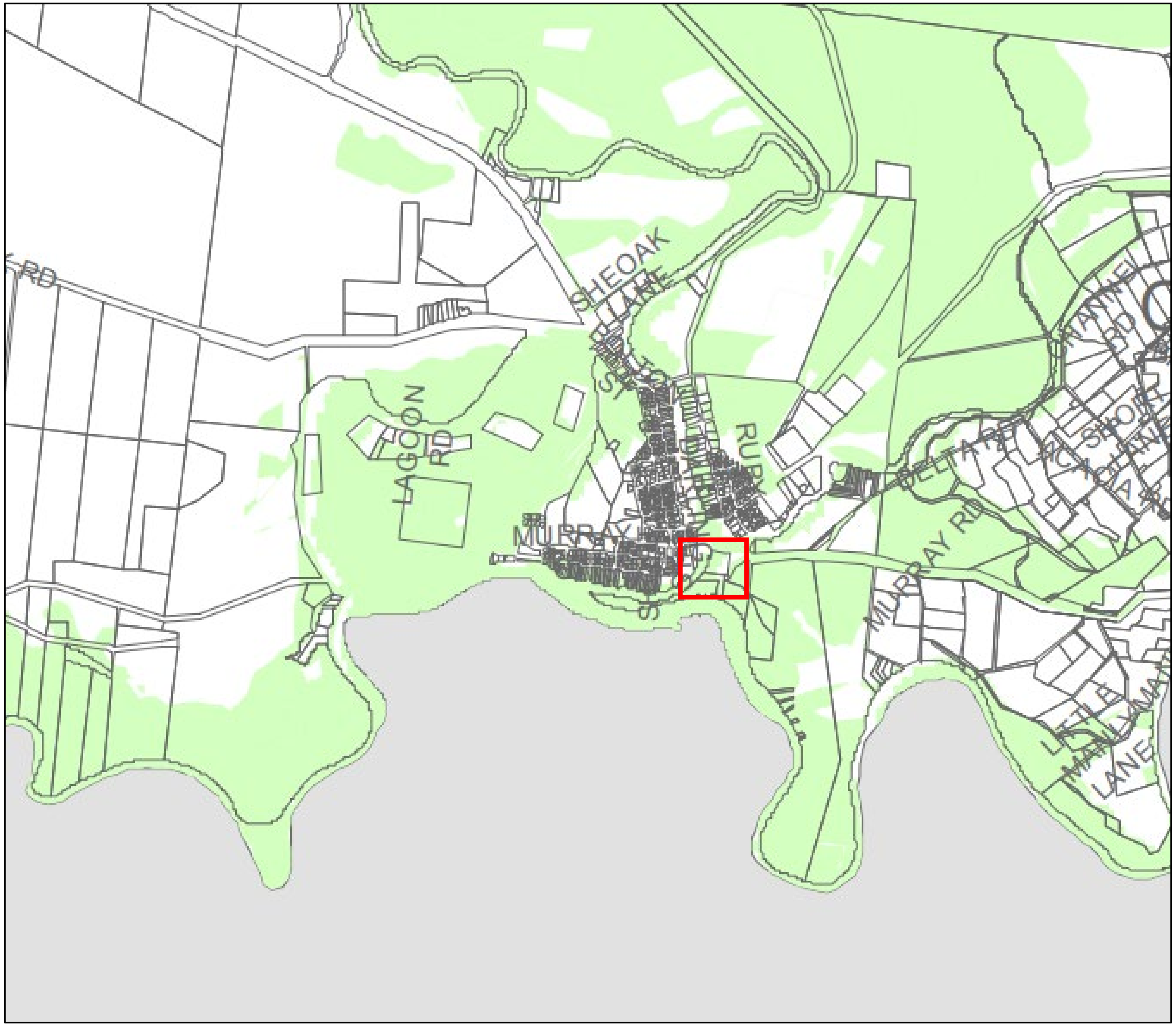
I as the applicant for this development, submit that I have correctly depicted the area that will be impacted or likely to be impacted as a result of the proposed development.

Signature_____ Date: 10/01/2023 04:17 PM

Terrestrial Biodiversity Values from Wentworth LEP 2011

Areas shaded Green are areas of high terrestrial biodiversity. The red polygon indicates the subject site. See overleaf for a magnified version. The subject site contains areas mapped as being of high terrestrial biodiversity value under the LEP




SHEOAK
LAGOON
RD
LITTLE
LANE

APPENDIX B – FIELD SURVEY RESULTS

Flora species list

In total, 41 plant species were detected during the May 2022 field survey. Of this number, 27 (65.85%) were native and 14 (34.15%) were introduced. Five of the introduced species are listed as High-threat Exotic species (HTE), four are also listed as Weeds of National Significance (WoNS) and three are listed as Priority Weeds (PW) for the Western region. A full list of flora species encountered, and their status, is provided below. Note: some of the below species were recorded in the wider Wentworth Hospital property, not within the subject site itself.

[1]Growth Form	Common Name	Scientific Name	[2]Status	[3]HTE	[4]WoNS	[5]PW
FG	*Conyza bonariensis*	Flaxleaf Fleabane	I	No	No	No
FG	*Disphyma crassifolium* subsp. *clavellatum*	Pig Face	N	-	-	-
FG	*Einadia nutans* subsp. *nutans*	Climbing Saltbush	N	-	-	-
FG	*Medicago* sp.	Medic	N	-	-	-
FG	*Oxalis pes-caprae*	Soursob	I	No	No	No
FG	*Roepera similis*	Twinleaf	N	-	-	-
FG	*Solanum esuriale*	Quena	N	-	-	-
FG	*Solanum nigrum*	Black-Berry Nightshade	I	No	No	No
FG	*Sonchus* sp.	Sowthistle	I	No	No	No
FG	*Urtica urens*	Small Nettle	I	No	No	No
SG	*Atriplex nummularia*	Old Man Saltbush	N	-	-	-
SG	*Atriplex vesicaria*	Bladder Saltbush	N	-	-	-
SG	*Chenopodium nitrariaceum*	Nitre Goosefoot	N	-	-	-
SG	*Dodonaea viscosa* subsp. *angustissima*	Narrow-Leaved Hopbush	N	-	-	-
SG	*Duma florulenta*	Lignum	N	-	-	-
SG	*Enchylaena tomentosa*	Ruby Saltbush	N	-	-	-
SG	*Lycium ferocissimum*	African Boxthorn	I	Yes	Yes	Yes
SG	*Maireana pyramidata*	Black Bluebush	N	-	-	-
SG	*Myoporum montanum*	Western Boobialla	N	-	-	-
SG	*Nerium oleander*	Oleander	I	No	No	No
SG	*Olea europaea* subsp. *europaea*	Olive	I	Yes	Yes	No
SG	*Opuntia* sp.	Prickly Pear	I	Yes	Yes	Yes
SG	*Rhagodia spinescens*	Spiny Saltbush	N	-	-	-
SG	*Salsola australis*	Buckbush	N	-	-	-
SG	*Sclerolaena tricuspis*	Giant Redburr	N	-	-	-

[1]Growth Form	Common Name	Scientific Name	[2]Status	[3]HTE	[4]WoNS	[5]PW
SG	*Tecticornia triandra*	Dessert Glasswort	N	-	-	-
TG	*Acacia stenophylla*	River Cooba	N	-	-	-
TG	*Brachychiton populneus*	Kurrajong	N	-	-	-
TG	*Tamarix aphylla*	Athel Pine	I	Yes	Yes	Yes
TG	*Corymbia* sp.	Ghost Gum	N	-	-	-
TG	*Eucalyptus camaldulensis*	River Red Gum	N	-	-	-
TG	*Eucalyptus cladocalyx*	Sugar Gum	N	-	-	-
TG	*Eucalyptus famelica*		N	-	-	-
TG	*Eucalyptus largiflorens*	Black Box	N	-	-	-
TG	*Eucalyptus leucoxylon* subsp. *leucoxylon*	Yellow Gum	N	-	-	-
TG	*Eucalyptus peninsularis*	Cummins Mallee	N	-	-	-
TG	*Eucalyptus sideroxylon*	Mugga Ironbark	N	-	-	-
TG	*Lagunaria patersonia*	Norfolk Island Hibiscus	I	No	No	No
TG	*Melia azedarach*	White Cedar	I	No	No	No
TG	*Pinus* sp.	Pine	I	Yes	No	No
TG	*Syagrus romanzoffiana*	Cocos Palm	I	No	No	No

[1]Growth form: FG = forb, GG = grass and grass-like, SG = shrub, TG = tree, EG = fern, OG = other. [2]Status: N = native, I = introduced. [3]High-threat exotic species (Yes/No). [4]Weed of National Significance (Yes/No). [5]Priority weed for the Central West (Yes/No).

Fauna species list

In total, 28 fauna species were detected during the May 2022 field survey (below). Of this number, 29 (92.86%) were native and 2 (7.14%) were introduced.

Class	Scientific name	Common name	Native (N) or Introduced (I)
Aves	*Cacatua galerita*	Sulphur-crested Cockatoo	N
Aves	*Cacatua sanguinea*	Little Corella	N
Aves	*Chenonetta jubata*	Australian Wood Duck	N
Aves	*Columba livia*	Rock Dove	I
Aves	*Coracina novaehollandiae*	Black-faced Cuckoo-Shrike	N
Aves	*Corvus coronoides*	Australian Raven	N
Aves	*Cracticus nigrogularis*	Pied Butcherbird	N
Aves	*Egretta garzetta*	Little Egret	N
Aves	*Entomyzon cyanotis*	Blue-faced Honeyeater	N
Aves	*Grallina cyanoleuca*	Magpie-Lark	N
Aves	*Gymnorhina tibicen*	Australian Magpie	N
Aves	*Haliastur sphenurus*	Whistling Kite	N
Aves	*Hirundo neoxena*	Welcome Swallow	N
Aves	*Lichenostomus penicillatus*	White-plumed Honeyeater	N
Aves	*Malurus cyaneus*	Superb Fairy-Wren	N
Aves	*Manorina melanocephala*	Noisy Miner	N
Aves	*Milvus migrans*	Black Kite	N
Aves	*Ocyphaps lophotes*	Crested Pigeon	N
Aves	*Pelecanus conspicillatus*	Australian Pelican	N
Aves	*Phalacrocorax sulcirostris*	Little Black Cormorant	N
Aves	*Phalacrocorax varius*	Australian Pied Cormorant	N
Aves	*Platalea flavipes*	Yellow-billed Spoonbill	N
Aves	*Platalea regia*	Royal Spoonbill	N
Aves	*Psephotus haematonotus*	Red-rumped Parrot	N
Aves	*Rhipidura leucophrys*	Willy Wagtail	N
Aves	*Trichoglossus moluccanus*	Rainbow Lorikeet	N
Mammalia	*Oryctolagus cuniculus*	European Rabbit	I
Mammalia		Macropod tracks	N

APPENDIX C – BC, FM & EPBC ACT HABITAT ASSESSMENT FOR THREATENED SPECIES AND COMMUNITIES PREDICTED TO OCCUR

List generated by conducting a vegetation associations report for the Murray Scroll, Murray Mallee, South Olary Plain, Robinvale Plains Subregions of the Riverina or Murray Darling Depression Bioregion. To determine whether any threatened species were known to occur near the subject site, BioNet Atlas records of threatened species within these subregions were downloaded and the records clipped to within 10 km of the subject site in QGIS.

Likelihood of occurrence description is sourced from https://www.environment.nsw.gov.au/threatenedSpeciesApp

The likelihood of occurrence of threatened species, populations or ecological communities was categorised as follows:

- 'Present' – the species was observed or has been previously recorded on the site.
- 'High' – a medium to high probability that a species uses the site, based on nearby records and suitable habitat being present.
- 'Moderate' – suitable habitat for a species occurs on the site, but the species has not been observed or previously recorded at the site.
- 'Low' – a very low likelihood that the species uses the site, based on lack of the preferred type and size of habitat.

Likelihood of occurrence table for BC, FM and EPBC Act listed threatened species and populations

Scientific Name	Common Name	*NSW status	+Comm. Status	Records within 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
Crinia sloanei	Sloane's Froglet	V,P	E	No	Sloane's Froglet has been recorded from widely scattered sites in the floodplains of the Murray-Darling Basin, with the majority of records in the Darling Riverine Plains, NSW South Western Slopes and Riverina bioregions in New South Wales. It has not been recorded recently in the northern part of its range and has only been recorded infrequently in the southern part of its range in NSW. It is typically associated with periodically inundated areas in grassland, woodland, and disturbed habitats. **Low – Search area is within the species predicted distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	No
Litoria raniformis	Southern Bell Frog	E1,P	V	No	In NSW the species was once distributed along the Murray and Murrumbidgee Rivers and their tributaries, the southern slopes of the Monaro district and the central southern tablelands as far north as Tarana, near Bathurst. Currently, the species is known to exist only in isolated populations in the Coleambally Irrigation Area, the Lowbidgee floodplain and around Lake Victoria. A few yet unconfirmed records have also been made in the Murray Irrigation Area in recent years. The species is also found in Victoria, Tasmania and South Australia, where it has also become endangered. 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. **Low – Search area is within the species predicted distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	No
Neobatrachus pictus	Painted Burrowing Frog	E1,P		No	This species is widespread in south eastern South Australia and western Victoria but has been found at only two locations in NSW. These are Scotia Sanctuary, adjacent to the South Australian border and in an area to the west of Pooncarie. To date, less than 30 individuals have been found in NSW, though this number is possibly an under-estimation based on the difficulty of identification and also limited access to suitable habitat following rainfall events when the animals are active. **Low – Search area is within the species known distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	No
Lucasium	Crowned	V,P		No	In NSW, known from four separate locations in the state's far west. These are Sturt	No

stenodactylum	Gecko				National Park, Mutawintji National Park, Loch Lilly, 125km south of Broken Hill, and Thurloo Downs, 145km east of Tibooburra. **Low – Search area is within the species known distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	
Strophurus elderi	Jewelled Gecko	V,P		No	The species is found in a range of habitats throughout the arid areas of central Australia, though all have Spinifex present as the ground layer. Extends east to the 'Murray Mallee' in South Australia and south west NSW where it occurs in spinifex mallee (and rarely in pine with spinifex understorey). In this region they have been recorded from near Menindee and Coombah in the north south to near the Murray River, and from the NSW-SA border east to near Hatfield. **Low – Search area is within the species known distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	No
Aprasia inaurita	Mallee Worm-lizard	E1,P		No	This species has been recorded across the four southern mainland states, though its distribution in both Western Australian and New South Wales is restricted. Most records in NSW are from the south west corner of the state, though there are two records from the central mallee (Pulletop and Gubbata NRs) from 1999. Most records are from the mallee between Balranald and Gol Gol centred on Mallee Cliffs NP, though recent surveys in the Scotia mallee have also recorded this species. Inhabits semi-arid, mallee woodlands on red sands. Often shelters in sand, beneath mallee stumps, in leaf litter or in the nests of ants and other insects; thought to be dependent on Spinifex (*Triodia scariosa*). **Low – Search area is within the species known distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	No
Delma australis	Marble-faced Delma	E1,P		No	This species is widely distributed from Western Australia, through much of South Australia extending into the southern Northern Territory and in north-western Victoria and south-western NSW. In NSW, most records are either from the Scotia mallee west of the Darling River in the far southwest or from the central Murray centred on Round Hill and Nombinnie Nature Reserves. Recent surveys have detected this species east of the Darling River to the north of Wentworth and, more surprisingly, in spinifex occurring on rocky hillsides to the northwest of Broken Hill. **Low – Search area is within the species known distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	No
Ctenotus brooksi	Wedgesnout *Ctenotus*	V,P		No	In NSW, the species is known from few records, all from Sturt and Paroo-Darling National Parks. It is likely that the Wedgesnout *Ctenotus* also occurs in similar habitat adjacent to these reserves. **Low – Search area is within the species known distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	No
Cyclodomorphus	Mallee	E1,P		No	The species is widely distributed in inland areas of all mainland states (except	No

melanops elongatus	Slender Blue-tongue Lizard				Victoria) and the Northern Territory, with the subspecies *elongatus* occurring from southern Western Australia to central Queensland. In NSW it is restricted to the far southwest with records scattered from mallee areas either side of the Darling River (including the Scotia mallee and Mungo and Mallee Cliffs National Parks). Recent surveys have detected this species in spinifex occurring on rocky hillsides to the northwest of Broken Hill, a range extension over 100 kilometres in NSW. **Low – Search area is within the species known distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	
Lerista xanthura	Yellow-tailed Plain Slider	V,P		No	In NSW, the species is known from two disjunct populations. One population occurs between Tarawi Nature Reserve, Ivanhoe, and Broken Hill, and the other in the north-west corner of the state. Since the 1970s, it has only been recorded from Kinchega, Sturt and Mutawintji National Parks, Tarawi Nature Reserve, and one record from Broken Hill. **Low – Search area is within the species known distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	No
Tympanocryptis lineata	Canberra Grassland Earless Dragon	E4A,P	E	No	Historically, the Grassland Earless Dragon ranged from Bathurst to Cooma, including the ACT region. The only populations now known are in the ACT and adjacent NSW at Queanbeyan, and on the Monaro Basalt Plains between Cooma and south-west of Nimmitabel. Formerly known from Victoria, though no recent records. **Low – Search area is within the species known distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	No
Ramphotyphlops endoterus	Interior Blind Snake	E1,P		No	Known from Mutawintji and Sturt NPs in far northwest NSW. Recent surveys have trapped this species west of Pooncarie in the State's south-west; and on Toorale NP west of Bourke. **Low – Search area is within the species known distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	No
Echiopsis curta	Bardick	E1,P		No	This species occurs in three regions, all in the semi-arid regions of southern Australia. These are in southwestern Western Australia, the Eyre Peninsula in South Australia and in the mallee regions of eastern South Australia, north-western Victoria, and southwestern NSW. There are three known records from NSW, a Museum specimen from the 'Balranald district' in 1974, a sighting northwest of Balranald in 1983 and a 2006 capture during pitfall surveys on a property northeast of Mildura. **Low – Search area is within the species known distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	No
Pseudonaja modesta	Ringed Brown Snake	E1,P		No	Determined on the basis of only limited records until recently, it is thought to occupy the north-west portion of the state having been recorded from Tarawi Nature Reserve, 140km south of Broken Hill, Silverton, Tibooburra, Wanaaring and from Kilberoo, 140km north-west of Bourke. Recent surveys have identified a large population in the	No

					Scotia Sanctuary-Tarawi NR region. **Low – Search area is within the species known distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	
Leipoa ocellata	Malleefowl	E1,P	V	No	The stronghold for this species in NSW is the mallee in the southwest centred on Mallee Cliffs NP and extending east to near Balranald and scattered records as far north as Mungo NP. West of the Darling River a population also occurs in the Scotia mallee including Tarawi NR and Scotia Sanctuary and is part of a larger population north of the Murray River in South Australia. The population in central NSW has been significantly reduced through land clearance and fox predation and now occurs chiefly in Yathong, Nombinnie and Round Hill NRs and surrounding areas, though birds continue to survive in Loughnan NR. To the south of this area the species is probably locally extinct in such reserves as Pulletop NR (last recorded 1989), Ingalba NR (1982) and Buddigower NR (1990) and the intensely studied population at Yalgogrin was still known to have at least one active mound in 2017. Further east, a population continues to persist in the Goonoo forest near Dubbo, though the size of this population is unknown. Outside these areas, occasional records have been made in the Pilliga forests (most recently 1999), around Cobar (1991) and Goulburn River NP (1989) though the extent and status of populations in these areas are unknown. 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. **Low – Search area is within the species known distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	No
Oxyura australis	Blue-billed Duck	V,P		No	The Blue-billed Duck is endemic to south-eastern and south-western Australia. It is widespread in NSW, but most common in the southern Murray-Darling Basin area. Birds disperse during the breeding season to deep swamps up to 300 km away. It is generally only during summer or in drier years that they are seen in coastal areas. The Blue-billed Duck prefers deep water in large permanent wetlands and swamps with dense aquatic vegetation. The species is completely aquatic, swimming low in the water along the edge of dense cover. **Low – Search area is within the species known distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	No
Stictonetta naevosa	Freckled Duck	V,P		Yes	The Freckled Duck is found primarily in south-eastern and south-western Australia, occurring as a vagrant elsewhere. It breeds in large temporary swamps created by floods in the Bulloo and Lake Eyre basins and the Murray-Darling system, particularly along the Paroo and Lachlan Rivers, and other rivers within the Riverina. The duck is forced to disperse during extensive inland droughts when wetlands in the Murray River basin provide important habitat. The species may also occur as far as coastal NSW and Victoria during such times. Prefer permanent freshwater swamps and creeks with heavy growth of Cumbungi, Lignum or Tea-tree. During drier times they move from	Yes

					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. Feed at dawn and dusk and at night on algae, seeds and vegetative parts of aquatic grasses and sedges and small invertebrates. Nesting usually occurs between October and December but can take place at other times when conditions are favourable. Nests are usually located in dense vegetation at or near water level. **Moderate – Search area is within the species known distribution and there are records from within 10 km. There are, however, no associated vegetation communities present.**	
Botaurus poiciloptilus	Australasian Bittern	E1,P	E	Yes	Australasian Bitterns are widespread but uncommon over south-eastern Australia. In NSW they may be found over most of the state except for the far north-west. Favours permanent freshwater wetlands with tall, dense vegetation, particularly bullrushes (*Typha* spp.) and spikerushes (*Eleocharis* spp.). Hides during the day amongst dense reeds or rushes and feed mainly at night on frogs, fish, yabbies, spiders, insects, and snails. Feeding platforms may be constructed over deeper water from reeds trampled by the bird; platforms are often littered with prey remains. Breeding occurs in summer from October to January; nests are built in secluded places in densely vegetated wetlands on a platform of reeds; there are usually six olive-brown eggs to a clutch. **Moderate – Search area is within the species known distribution and there are records from within 10 km. There are, however, no associated vegetation communities present.**	Yes
Circus assimilis	Spotted Harrier	V,P		No	The Spotted Harrier occurs throughout the Australian mainland, except in densely forested or wooded habitats of the coast, escarpment, and ranges, and rarely in Tasmania. Individuals disperse widely in NSW and comprise a single population. 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. **Low – Search area is within the species known distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	No
Haliaeetus leucogaster	White-bellied Sea-Eagle	V,P		Yes	The White-bellied Sea-eagle is distributed around the Australian coastline, including Tasmania, and well inland along rivers and wetlands of the Murray Darling Basin. In New South Wales it is widespread along the east coast, and along all major inland rivers and waterways. Habitats are characterised by the presence of large areas of open water including larger rivers, swamps, lakes, and the sea. Occurs at sites near the sea or seashore, such as around bays and inlets, beaches, reefs, lagoons, estuaries and mangroves; and at, or in the vicinity of freshwater swamps, lakes, reservoirs, billabongs and saltmarsh. Terrestrial habitats include coastal dunes, tidal flats, grassland, heathland, woodland, and forest (including rainforest). Breeding habitat consists of mature tall open forest, open forest, tall woodland, and swamp	Yes

					sclerophyll forest close to foraging habitat. Nest trees are typically large emergent eucalypts and often have emergent dead branches or large dead trees nearby which are used as 'guard roosts'. Nests are large structures built from sticks and lined with leaves or grass. Feed mainly on fish and freshwater turtles, but also waterbirds, reptiles, mammals, and carrion. Hunts its prey from a perch or whilst in flight (by circling slowly, or by sailing along 10–20 m above the shore). Prey is usually carried to a feeding platform or (if small) consumed in flight, but some items are eaten on the ground. May be solitary or live in pairs or small family groups consisting of a pair of adults and dependent young. Typically lays two eggs between June and September with young birds remaining in the nest for 65-70 days. **Moderate – Search area is within the species known distribution and there are records from within 10 km. There are, however, no associated vegetation communities present.**	
^^*Hamirostra melanosternon*	Black-breasted Buzzard	V,P,3		No	The Black-breasted Buzzard is found sparsely in areas of less than 500mm rainfall, from north-western NSW and north-eastern South Australia to the east coast at about Rockhampton, then across northern Australia south almost to Perth, avoiding only the Western Australian deserts. 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. **Low – Search area is within the species known distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	No
Hieraaetus morphnoides	Little Eagle	V,P		Yes	The Little Eagle is found throughout the Australian mainland excepting the most densely forested parts of the Dividing Range escarpment. It occurs as a single population throughout NSW. Occupies open eucalypt forest, woodland, or open woodland. Sheoak or Acacia woodlands and riparian woodlands of interior NSW are also used. **Moderate – Search area is within the species known distribution and there are records from within 10 km. There are, however, no associated vegetation communities present.**	Yes
^^*Lophoictinia isura*	Square-tailed Kite	V,P,3		No	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. **Low – Search area is within the species known distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	No

^Falco hypoleucos	Grey Falcon	E1,P,2		No	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. **Low – Search area is within the species known distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	No
Falco subniger	Black Falcon	V,P		No	The Black Falcon is widely, but sparsely, distributed in New South Wales, mostly occurring in inland regions. Some reports of 'Black Falcons' on the tablelands and coast of New South Wales are likely to be referable to the Brown Falcon. 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. **Low – Search area is within the species known distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	No
Grus rubicunda	Brolga	V,P		Yes	The Brolga was formerly found across Australia, except for the south-east corner, Tasmania and the south-western third of the country. It is still abundant in the northern tropics, but very sparse across the southern part of its range. 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. They feed using their heavy straight bill as a 'crowbar' to probe the ground or turn it over, primarily on sedge roots and tubers. They will also take large insects, crustaceans, molluscs, and frogs. **Moderate – Search area is within the species known distribution and there are records from within 10 km. There are, however, no associated vegetation communities present.**	Yes
Ardeotis australis	Australian Bustard	E1,P		No	The Australian Bustard mainly occurs in inland Australia and is now scarce or absent from southern and south-eastern Australia. In NSW, they are mainly found in the north-west corner and less often recorded in the lower western and central west plains regions. Occasional vagrants are still seen as far east as the western slopes and Riverine plain. Breeding now only occurs in the north-west region of NSW. 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. Breeds on bare ground on low sandy ridges or stony rises in ecotones between	No

					grassland and protective shrubland cover; roosts on ground among shrubs and long grasses or under trees. **Low – Search area is within the species known distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	
Burhinus grallarius	Bush Stone-curlew	E1,P		Yes	The Bush Stone-curlew is found throughout Australia except for the central southern coast and inland, the far south-east corner, and Tasmania. Only in northern Australia is it still common however and, in the south-east, it is either rare or extinct throughout its former range. Inhabits open forests and woodlands with a sparse grassy ground layer 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. Two eggs are laid in spring and early summer. **Moderate – Search area is within the species known distribution and there are records from within 10 km. There are, however, no associated vegetation communities present.**	Yes
Pluvialis fulva	Pacific Golden Plover	P	C,J,K	No	Within Australia, the Pacific Golden Plover is widespread in coastal regions, though there are also a number of inland records (in all states), sometimes far inland and usually along major river systems, especially the Murray and Darling Rivers and their tributaries. As the species breeds overseas, in non-breeding grounds in Australia this species usually inhabits coastal habitats, though it occasionally occurs around inland wetlands. **Low – Search area is within the species predicted distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	No
Rostratula australis	Australian Painted Snipe	E1,P	E	No	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. Prefers fringes of swamps, dams, and nearby marshy areas where there is a cover of grasses, lignum, low scrub, or open timber. Nests on the ground amongst tall vegetation, such as grasses, tussocks, or reeds. Forages nocturnally on mudflats and in shallow water. Feeds on worms, molluscs, insects, and some plant-matter. **Low – Search area is within the species known distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	No
Actitis hypoleucos	Common Sandpiper	P	C,J,K	No	Found along all coastlines of Australia and in many areas inland, the Common Sandpiper is widespread in small numbers. The population when in Australia is	No

					concentrated in northern and western Australia. The species utilises a wide range of coastal wetlands and some inland wetlands, with varying levels of salinity, and is mostly found around muddy margins or rocky shores and rarely on mudflats. The Common Sandpiper has been recorded in estuaries and deltas of streams, as well as on banks farther upstream; around lakes, pools, billabongs, reservoirs, dams and claypans, and occasionally piers and jetties. The muddy margins utilised by the species are often narrow and may be steep. The species is often associated with mangroves, and sometimes found in areas of mud littered with rocks or snags. **Low – Search area is within the species predicted distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	
Arenaria interpres	Ruddy Turnstone	P	C,J,K	No	Ruddy Turnstone's typically occur in tropical and sub-tropical oceans across the Pacific and Indian Oceans. **Low – Search area is within the species predicted distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	No
Calidris acuminata	Sharp-tailed Sandpiper	P	C,J,K	No	The Sharp-tailed Sandpiper spends the non-breeding season in Australia with small numbers occurring regularly in New Zealand. Most of the population migrates to Australia, mostly to the south-east and are widespread in both inland and coastal locations and in both freshwater and saline habitats. Many inland records are of birds on passage. In Australasia, the Sharp-tailed Sandpiper prefers muddy edges of shallow fresh or brackish wetlands, with inundated or emergent sedges, grass, saltmarsh, or other low vegetation. This includes lagoons, swamps, lakes and pools near the coast, and dams, waterholes, soaks, bore drains and bore swamps, saltpans and hypersaline salt lakes inland. They also occur in saltworks and sewage farms. They use flooded paddocks, sedgelands and other ephemeral wetlands, but leave when they dry. They use intertidal mudflats in sheltered bays, inlets, estuaries or seashores, and swamps and creeks lined with mangroves. They tend to occupy coastal mudflats mainly after ephemeral terrestrial wetlands have dried out, moving back during the wet season. They may be attracted to mats of algae and water weed either floating or washed up around terrestrial wetlands. **Low – Search area is within the species predicted distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	No
Calidris canutus	Red Knot	P	E,C,J,K	No	The Red Knot is migratory, breeding overseas. The omnivorous species feeds predominantly within wetland and coastal environments. There are no sites of international importance for the species listed within NSW. **Low – Search area is within the species predicted distribution. There are,**	No

					however, no associated vegetation communities present or records from within 10 km.	
Calidris ferruginea	Curlew Sandpiper	E1,P	CE,C,J,K	No	In Australia, Curlew Sandpipers occur around the coasts and are also quite widespread inland, though in smaller numbers. Records occur in all states during the non-breeding period, and also during the breeding season when many non-breeding one-year old birds remain in Australia rather than migrating north. In NSW, they are widespread east of the Great Divide, especially in coastal regions. They are occasionally recorded in the Tablelands and are widespread in the Riverina and south-west NSW, with scattered records elsewhere. Curlew Sandpipers mainly occur on intertidal mudflats in sheltered coastal areas, such as estuaries, bays, inlets and lagoons, and also around non-tidal swamps, lakes and lagoons near the coast, and ponds in saltworks and sewage farms. They are also recorded inland, though less often, including around ephemeral and permanent lakes, dams, waterholes and bore drains, usually with bare edges of mud or sand. They occur in both fresh and brackish waters. Occasionally they are recorded around floodwaters. **Low – Search area is within the species predicted distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	No
Calidris melanotos	Pectoral Sandpiper	P	J,K	No	The Pectoral Sandpiper breeds in northern Russia and North America. Within Australasia, the Pectoral Sandpiper prefers shallow fresh to saline wetlands. In New South Wales (NSW), the Pectoral Sandpiper is widespread, but scattered. Records exist east of the Great Divide, from Casino and Ballina, south to Ulladulla. West of the Great Divide, the species is widespread in the Riverina and Lower Western regions. The species is usually found in coastal or near coastal habitat but occasionally found further inland. It prefers wetlands that have open fringing mudflats and low, emergent, or fringing vegetation, such as grass or samphire. The species has also been recorded in swamp overgrown with lignum. They forage in shallow water or soft mud at the edge of wetlands. **Low – Search area is within the species predicted distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	No
Calidris ruficollis	Red-necked Stint	P	C,J,K	No	In Australasia, the Red-necked Stint is mostly found in coastal areas, including in sheltered inlets, bays, lagoons, and estuaries with intertidal mudflats, often near spits, islets, and banks and, sometimes, on protected sandy or coralline shores. They also occur in saltworks and sewage farms; saltmarsh; ephemeral or permanent shallow wetlands near the coast or inland, including lagoons, lakes, swamps, riverbanks, waterholes, bore drains, dams, soaks, and pools in salt flats. They sometimes use flooded paddocks or damp grasslands. They have occasionally been recorded on dry	No

					gibber plains, with little or no perennial vegetation. **Low – Search area is within the species predicted distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	
Calidris subminuta	Long-toed Stint	P	C,J,K	Yes	The Long-toed Stint is a regular summer visitor to Australia, but uncommon in the east. The Long-toed Stint is irregular with widely scattered records in NSW. The species has been recorded at the estuary of the Richmond River, Kooragang Island, Pitts Town Lagoon, McGrath's Hill, Bushell's Lagoon, the Hawkesbury River, Shell Point, Botany Bay, Parkes, Fivebough Swamp, Tullakool Saltworks, Dareton, Mortanally Billabong, Wentworth, and Cobar. The Long-toed Stint occurs in a variety of terrestrial wetlands. They prefer shallow freshwater or brackish wetlands including lakes, swamps, river floodplains, streams, lagoons and sewage ponds. The species is also fond of areas of muddy shoreline, growths of short grass, weeds, sedges, low or floating aquatic vegetation, reeds, rushes, and occasionally stunted samphire. It has also been observed at open, less vegetated shores of larger lakes and ponds and is common on muddy fringes of drying ephemeral lakes and swamps. The Long-toed Stint also frequents permanent wetlands such as reservoirs and artificial lakes. They are uncommon, but not unknown, at tidal estuaries, saline lakes, salt ponds and bore swamps. **Moderate – Search area is within the species predicted distribution and there are records from within 10 km. There are, however, no associated vegetation communities present.**	Yes
Limicola falcinellus	Broad-billed Sandpiper	V,P	C,J,K	No	The eastern form of this species breeds in northern Siberia before migrating southwards in winter to Australia. In Australia, Broad-billed Sandpipers overwinter on the northern coast, particularly in the north-west, with birds located occasionally on the southern coast. In NSW, the main site for the species is the Hunter River estuary, with birds occasionally reaching the Shoalhaven estuary. There are few records for inland NSW. Broad-billed Sandpipers favour sheltered parts of the coast such as estuarine sandflats and mudflats, harbours, embayments, lagoons, saltmarshes, and reefs as feeding and roosting habitat. Occasionally, individuals may be recorded in sewage farms or within shallow freshwater lagoons. Broad-billed Sandpipers roost on banks on sheltered sand, shell, or shingle beaches **Low – Search area is within the species predicted distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	No
Gallinago hardwickii	Latham's Snipe	P	J,K	No	Latham's Snipe is a non-breeding visitor to south-eastern Australia and is a passage migrant through northern Australia (i.e., it travels through northern Australia to reach non-breeding areas located further south). The species has been recorded along the	No

					east coast of Australia from Cape York Peninsula through to south-eastern South Australia (including the Adelaide plains and Mount Lofty Ranges, and the Eyre Peninsula). The range extends inland over the eastern tablelands in south-eastern Queensland (and occasionally from Rockhampton in the north), and to west of the Great Dividing Range in New South. The species is widespread in Tasmania and is found in all regions of Victoria except for the north-west. Most birds spend the non-breeding period at sites located south of the Richmond River in New South Wales. In Australia, Latham's Snipe occurs in permanent and ephemeral wetlands up to 2000 m above sea-level. They usually inhabit open, freshwater wetlands with low, dense vegetation (e.g., swamps, flooded grasslands or heathlands, 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. **Low – Search area is within the species predicted distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	
Limosa lapponica	Bar-tailed Godwit	P	C,J,K	No	Bar-tailed Godwits arrive in Australia each year in August from breeding grounds in the northern hemisphere. Birds are more numerous in northern Australia. Bar-tailed Godwits inhabit estuarine mudflats, beaches, and mangroves. They are common in coastal areas around Australia. They are social birds and are often seen in large flocks and in the company of other waders. **Low – Search area is within the species predicted distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	No
Limosa limosa	Black-tailed Godwit	V,P	C,J,K	No	The Black-tailed Godwit is a migratory wading bird that breeds in Mongolia and Eastern Siberia and flies to Australia for the southern summer, arriving in August and leaving in March. In NSW, it is most frequently recorded at Kooragang Island (Hunter River estuary), with occasional records elsewhere along the coast, and inland. Records in western NSW indicate that a regular inland passage is used by the species, as it may occur around any of the large lakes in the western areas during summer, when the muddy shores are exposed. The species has been recorded within the Murray-Darling Basin, on the western slopes of the Northern Tablelands and in the far north-western corner of the state. Primarily a coastal species. **Low – Search area is within the species predicted distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	No
Tringa glareola	Wood Sandpiper	P	C,J,K	No	Wood Sandpipers are more numerous in the north than the south of Australia and are also found in New Guinea, Africa, the Indian subcontinent, and South-east Asia. They	No

					breed widely across the north of Europe and Asia, mostly in Scandinavia, Baltic countries, and Russia. They are the most abundant migratory wader in non-coastal areas of Asia. Wood Sandpipers are seen in small flocks or singly on inland shallow freshwater wetlands, often with other waders. They prefer ponds and pools with emergent reeds and grass, surrounded by tall plants or dead trees and fallen timber. **Low – Search area is within the species predicted distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	
Numenius minutus	Little Curlew	P	C,J,K	No	The Little Curlew is widespread in the north of Australia and scattered elsewhere. It is an irregular visitor to New Zealand and Tasmania. It breeds in Siberia and is seen on passage through Mongolia, China, Japan, Indonesia, and New Guinea. Little Curlews may gather in large flocks on coastal and inland grasslands and black soil plains in northern Australia, near swamps and flooded areas. They also feed on playing fields, paddocks, and urban lawns. **Low – Search area is within the species predicted distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	No
Tringa nebularia	Common Greenshank	P	C,J,K	No	The Common Greenshank does not breed in Australia; however, the species occurs in all types of wetlands and has the widest distribution of any shorebird in Australia. The Common Greenshank is found in a wide variety of inland wetlands and sheltered coastal habitats of varying salinity. It occurs in sheltered coastal habitats, typically with large mudflats and saltmarsh, mangroves, or seagrass. Habitats include embayment's, harbours, river estuaries, deltas and lagoons and are recorded less often in round tidal pools, rock-flats, and rock platforms. The species uses both permanent and ephemeral terrestrial wetlands, including swamps, lakes, dams, rivers, creeks, billabongs, waterholes, and inundated floodplains, claypans and salt flats. It will also use artificial wetlands, including sewage farms and saltworks dams, inundated rice crops and bores. The edges of the wetlands used are generally of mud or clay, occasionally of sand, and may be bare or with emergent or fringing vegetation, including short sedges and saltmarsh, mangroves, thickets of rushes, and dead or live trees. It was once recorded with Black-winged Stilts (*Himantopus himantopus*) in pasture but are generally not found in dry grassland. **Low – Search area is within the species predicted distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	No
Tringa stagnatilis	Marsh Sandpiper	P	C,J,K	No	The Marsh Sandpiper is found on coastal and inland wetlands throughout Australia. The species is widespread in coastal Queensland, but few records exist north of Cooktown. It is recorded in all regions of NSW but especially the central and south coasts and (inland) on the western slopes of Great Divide and western plains. The	No

					Marsh Sandpiper lives in permanent or ephemeral wetlands of varying salinity, including swamps, lagoons, billabongs, saltpans, saltmarshes, estuaries, pools on inundated floodplains, and intertidal mudflats and also regularly at sewage farms and saltworks. They are recorded less often at reservoirs, waterholes, soaks, bore-drain swamps and flooded inland lakes. In north Australia they prefer intertidal mudflats (Higgins & Davies 1996), although surveys in Kakadu National Park recorded more birds around shallow freshwater lakes than in areas influenced by tide (Bamford 1988). At the Top End they often use ephemeral pools on inundated freshwater and tidal floodplains (Higgins & Davies 1996). Three of the five sites with highest recorded numbers are saltwater habitats (Hunter Estuary, NSW; Port Hedland Saltworks, Western Australia; Tullakool Evaporation Ponds, NSW) (Watkins 1993). In the south-east Gulf of Carpentaria, they have been recorded round both saline and fresh waters (Garnett 1989). Elsewhere they said to avoid, or rarely occur in, tidal habitats, and rarely occur on beaches. In Western Australia they prefer freshwater to marine environments. In south-east Australia they prefer inland saline lakes and coastal saltworks. They are found infrequently around mangroves (Higgins & Davies 1996). **Low – Search area is within the species predicted distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	
Gelochelidon nilotica	Gull-billed Tern	P	C	Yes	The Gull-billed Tern occurs on all continents except Antarctica. Gull-billed Terns are found in freshwater swamps, brackish and salt lakes, beaches and estuarine mudflats, floodwaters, sewage farms, irrigated croplands, and grasslands. They are only rarely found over the ocean. **Moderate – Search area is within the species predicted distribution and there are records from within 10 km. There are, however, no associated vegetation communities present.**	Yes
Hydroprogne caspia	Caspian Tern	P	J	Yes	Within Australia, the Caspian Tern has a widespread occurrence and can be found in both coastal and inland habitat (Higgins & Davies 1996). The following table presents the distribution and breeding sites of the Caspian Tern in Australia. Widespread east of the Great Divide, mainly in coastal regions, and also in the Riverina and Lower and Upper Western Regions, with occasional records elsewhere (Higgins & Davis 1996). The Caspian Tern is mostly found in sheltered coastal embayment's (harbours, lagoons, inlets, bays, estuaries, and river deltas) and those with sandy or muddy margins are preferred. They also occur on near-coastal or inland terrestrial wetlands that are either fresh or saline, especially lakes (including ephemeral lakes), waterholes, reservoirs, rivers, and creeks. They also use artificial wetlands, including reservoirs, sewage ponds and saltworks. In offshore areas the species prefers sheltered situations, particularly near islands, and is rarely seen beyond reefs **Moderate – Search area is within the species predicted distribution and there**	Yes

					are records from within 10 km. There are, however, no associated vegetation communities present.	
^*Lophochroa leadbeateri*	Major Mitchell's Cockatoo	V,P,2		Yes	Found across the arid and semi-arid inland, from south-western Queensland south to north-west Victoria, through most of South Australia, north into the south-west Northern Territory and across to the west coast between Shark Bay and about Jurien. In NSW it is found regularly as far east as about Bourke and Griffith, and sporadically further east than that. 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. Normally found in pairs or small groups, though flocks of hundreds may be found where food is abundant. Nesting, in tree hollows, occurs throughout the second half of the year; nests are at least 1 km apart, with no more than one pair every 30 square kilometres. **Moderate – Search area is within the species known distribution and there are records from within 10 km. There are, however, no associated vegetation communities present.**	Yes
^^*Glossopsitta porphyrocephala*	Purple-crowned Lorikeet	V,P,3		Yes	The Purple-crowned Lorikeet occurs across the southern parts of the continent from Victoria to south-west Western Australia. It is uncommon in NSW, with records scattered across the box-ironbark woodlands of the Riverina and southwest slopes, the River Red Gum forests and mallee of the Murray Valley as far west as the South Australian border, and, more rarely, the forests of the South Coast. The species is nomadic and most, if not all, records from NSW are associated with flowering events. 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. Breeds away from feeding areas, utilising hollow branches or holes in trees. Also roosts in dense vegetation up to several kilometres away from feeding areas. **Moderate – Search area is within the species known distribution and there are records from within 10 km. There are, however, no associated vegetation communities present.**	Yes
^^*Lathamus discolor*	Swift Parrot	E1,P,3	CE	No	Breeds in Tasmania during spring and summer, migrating in the autumn and winter months to south-eastern Australia from Victoria and the eastern parts of South Australia to south-east Queensland. 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 are 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*, Forest Red Gum *E. tereticornis*, Mugga Ironbark *E. sideroxylon*, and White Box *E. albens.* **Low – Search area is within the species known distribution. There are, however,**	No

					no associated vegetation communities present or records from within 10 km.	
Neophema splendida	Scarlet-chested Parrot	V,P		No	Thinly distributed across the arid interior of southern Australia from far western NSW to the vicinity of Kalgoorlie (WA), extending as far north as southern Northern Territory. Sometimes locally common and subject to local irruptions. Rarely recorded in NSW, with historical records from Menindee Lakes (1849), the 'Darling River' (1863), Bourke (1892) and near Broken Hill (1952). More recently, this species has been recorded occasionally in Danggali Conservation Park (SA) and in the adjoining Scotia Mallee (Tarawi NR, Scotia Sanctuary) in NSW. **Low – Search area is within the species known distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	No
^^*Polytelis anthopeplus monarchoides*	Regent Parrot (eastern subspecies)	E1,P,3	V	No	The species nests within River Red Gum forests along the Murray, Wakool, and lower Murrumbidgee Rivers, and possibly the Darling River downstream of Pooncarie. Typical nest trees are large, mature healthy trees with many spouts (though dead trees are used) and are usually located close to a watercourse. Principal foraging habitat is mallee woodlands, though foraging also occurs in riverine forests and woodlands. Mallee woodland within 20 kilometres of nesting sites is critical foraging habitat for breeding birds. They may utilise cereal crops and will feed on spilt grain. Is claimed to be a pest in almond orchards. **Low – Search area is within the species known distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	No
^^*Polytelis swainsonii*	Superb Parrot	V,P,3	V	No	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. The other main breeding sites are in the Riverina along the corridors of the Murray, Edward, and Murrumbidgee Rivers where birds are present all year round. This species inhabits Box-Gum, Box-Cypress-pine and Boree Woodlands and River Red Gum Forest. In the Riverina the birds' nest in the hollows of large trees (dead or alive) mainly in tall riparian River Red Gum Forest or Woodland. On the South West Slopes nest trees can be in open Box-Gum Woodland or isolated paddock trees. Species known to be used are Blakely's Red Gum, Yellow Box, Apple Box and Red Box. May forage up to 10 km from nesting sites, and feed in trees and understorey shrubs and on the ground and their diet consists mainly of grass seeds and herbaceous plants. **Low – Search area is outside of the species distribution, there are no associated vegetation communities present, or records from within 10 km.**	No
^^*Ninox connivens*	Barking Owl	V,P,3		No	The Barking Owl is found throughout continental Australia except for the central arid regions. Although common in parts of northern Australia, the species has declined greatly in southern Australia and now occurs in a wide but sparse distribution in NSW. Core populations exist on the western slopes and plains and in some northeast	No

					coastal and escarpment forests. Many populations crashed as woodland on fertile soils was cleared over the past century, leaving linear riparian strips of remnant trees as the last inhabitable areas. Surveys in 2001 demonstrated that the Pilliga Forest supported the largest population in southern Australia. The owls sometimes extend their home range into urban areas, hunting birds in garden trees and insects attracted to streetlights. 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 on these fertile riparian soils. **Low – Search area is within the species known distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	
^^*Tyto novaehollandiae*	Masked Owl	V,P,3		No	Extends from the coast where it is most abundant to the western plains. Overall records for this species fall within approximately 90% of NSW, excluding the most arid north-western corner. There is no seasonal variation in its distribution. 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. **Low – Search area is within the species known distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	No
Climacteris picumnus victoriae	Brown Treecreeper (eastern subspecies)	V,P		Yes	The Brown Treecreeper is endemic to eastern Australia and occurs in eucalypt forests and woodlands of inland plains and slopes of the Great Dividing Range. It is less commonly found on coastal plains and ranges. The western boundary of the range of *Climacteris picumnus victoriae* runs approximately through Corowa, Wagga Wagga, Temora, Forbes, Dubbo, and Inverell and along this line the subspecies intergrades with the arid zone subspecies of Brown Treecreeper *Climacteris picumnus picumnus* which then occupies the remaining parts of the state. The eastern subspecies lives in eastern NSW in eucalypt woodlands through central NSW and in coastal areas with drier open woodlands such as the Snowy River Valley, Cumberland Plains, Hunter Valley and parts of the Richmond and Clarence Valleys. The population density of this subspecies has been greatly reduced over much of its range, with major declines recorded in central NSW and the northern and southern tablelands. Declines have occurred in remnant vegetation fragments smaller than 300 hectares, that have been isolated or fragmented for more than 50 years. **Low – There are records within 10 km, however, the search area is outside of the species distribution and there are no associated vegetation communities present.**	No
Calamanthus campestris	Rufous Fieldwren	V,P		No	The taxonomy of the Fieldwrens is complicated, but currently eight subspecies are recognised for the Rufous Fieldwren (though the subspecies *montanellus* is	No

					sometimes considered a separate species - the Western Fieldwren). These are distributed through arid and in the west coastal southern Australia. In NSW most records are of the subspecies *isabellinus* and are centred in the Broken Hill/Mutawintji/Fowlers Gap area. There are records near the Murray River, but these remain unconfirmed (surveys near Lake Victoria have recorded Redthroats rather than Fieldwrens at the known sites) though suitable habitat probably does occur. These records may refer to the subspecies *campestris* which otherwise occurs between extreme northwest Victoria (Lake Tyrrell) and eastern Western Australia (Balladonia). Overall, the limits of this species' distribution in NSW is poorly known, and it is potentially under-surveyed. **Low – Search area is within the species predicted distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	
Pyrrholaemus brunneus	Redthroat	V,P		Yes	Endemic to southern mainland Australia in all States and the NT, the Redthroat is a sedentary species with no known large-scale seasonal movements. In NSW, the species is confined to the far west of the state, with populations known from four main areas, though the species is probably under-recorded due to its shy habits and low observer numbers within its distribution. A population exists in the Bulloo Overflow to the east of Tibooburra, with occasional records further to the west in Sturt NP. There are records from around Broken Hill extending at least as far north as Mutawintji NP. The two areas in the southwest of NSW are in chenopod shrublands (particularly Old Man Saltbush) to the north of Penarie, 25 kilometres north of Balranald and around the Great Darling Anabranch (particularly around Nearie Lake NR) to the north of Wentworth. Scattered records are known from other locations, such as around Lake Victoria and near Oxley, so further survey may reveal greater numbers in NSW. **Moderate – Search area is within the species predicted distribution and there are records from within 10 km. There are, however, no associated vegetation communities present.**	Yes
Chthonicola sagittata	Speckled Warbler	V,P		No	The Speckled Warbler has a patchy distribution throughout south-eastern Queensland, the eastern half of NSW and into Victoria, as far west as the Grampians. The species is most frequently reported from the hills and tablelands of the Great Dividing Range, and rarely from the coast. There has been a decline in population density throughout its range, with the decline exceeding 40% where no vegetation remnants larger than 100ha survive. 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. The diet consists of seeds and insects, with most foraging taking place on the ground around	No

					tussocks and under bushes and trees. Pairs are sedentary and occupy a breeding territory of about ten hectares, with a slightly larger home-range when not breeding. The rounded, domed, roughly built nest of dry grass and strips of bark is located in a slight hollow in the ground or the base of a low dense plant, often among fallen branches and other litter. A side entrance allows the bird to walk directly inside. A clutch of 3-4 eggs is laid, between August and January, and both parents feed the nestlings. The eggs are a glossy red brown, giving rise to the unusual folk names 'Blood Tit' and 'Chocolatebird'. Some cooperative breeding occurs. The species may act as host to the Black-eared Cuckoo. Speckled Warblers often join mixed species feeding flocks in winter, with other species such as Yellow-rumped, Buff-rumped, Brown and Striated Thornbills. **Low – Search area is outside of the species distribution, there are no associated vegetation communities present, or records from within 10 km.**	
Hylacola cautus	Shy Heathwren	V,P		No	Occurs across southern Australia extending from the wheatbelt in southern Western Australia east to central NSW, including Kangaroo Island. Two subspecies occur in NSW. The first (*macrorhyncha*) is confined to central NSW between Griffith, Roto, Nymagee, and West Wyalong, with most records within OEH managed reserves (including Yathong, Nombinnie, Round Hill and The Charcoal Tank Nature Reserves and Cocoparra National Park). The nominate subspecies (*cautus*) occurs in the far southwest between Balranald and Trentham Cliffs (including Mallee Cliffs National Park), north into the Scotia Mallee (including Tarawi Nature Reserve and Scotia Sanctuary). This subspecies also occurs in northwest Victoria and eastern South Australia (as far west as the Flinders Ranges). Inhabits mallee woodlands with a relatively dense understorey of shrubs and heath plants. The central NSW population (for example in Cocoparra NP) also occurs at low densities in rocky hilltop vegetation with a thick shrub layer such as Broombush or Tea-tree. **Low – Search area is within the species known distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	No
Certhionyx variegatus	Pied Honeyeater	V,P		Yes	Pied Honeyeater is widespread throughout acacia, mallee, and spinifex scrubs of arid and semi-arid Australia. Occasionally occurs further east, on the slopes and plains and the Hunter Valley, typically during periods of drought. 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. Highly nomadic, following the erratic flowering of shrubs; can be locally common at times. **Moderate – Search area is within the species predicted distribution and there are records from within 10 km. There are, however, no associated vegetation**	No

					communities present.	
Lichenostomus cratitius	Purple-gaped Honeyeater	V,P		No	Occurs in disjunct populations across southern Australia east from southern Western Australia, with the eastern population largely occurring south of the Murray River. NSW forms the extreme north-east of its range, with occasional sightings in the far southwest. **Low – Search area is within the species known distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	No
Manorina melanotis	Black-eared Miner	E4A,P	E	No	The Black-eared Miner is restricted to the Murray Mallee region, with the largest populations in the Riverland (formerly Bookmark) Biosphere Reserve north of the Murray River in South Australia. Smaller populations occur in north-western Victoria, with the largest numbers remaining in the Murray Sunset NP. In NSW, it is restricted to old growth mallee in the Scotia region, particularly within Scotia Sanctuary. Prior to European settlement, the species may have been present in suitable mallee habitat throughout south-west NSW (as far east as Euston). **Low – Search area is within the species known distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	No
Epthianura albifrons	White-fronted Chat	V,P		Yes	The White-fronted Chat is found across the southern half of Australia, from southernmost Queensland to southern Tasmania, and across to Western Australia as far north as Carnarvon. Found mostly in temperate to arid climates and very rarely sub-tropical areas, it occupies foothills and lowlands up to 1000 m above sea level. In NSW, it occurs mostly in the southern half of the state, in damp open habitats along the coast, and near waterways in the western part of the state. Along the coastline, it is found predominantly in saltmarsh vegetation but also in open grasslands and sometimes in low shrubs bordering wetland areas. **Moderate – Search area is within the species predicted distribution and there are records from within 10 km. There are, however, no associated vegetation communities present.**	Yes
Melithreptus gularis gularis	Black-chinned Honeyeater (eastern subspecies)	V,P		No	The Black-chinned Honeyeater has two subspecies, with only the nominate (*gularis*) occurring in NSW. The eastern subspecies extends south from central Queensland, through NSW, Victoria into south eastern South Australia, though it is very rare in the last state. In NSW it is widespread, with records 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 (*Eucalyptus sideroxylon*), White Box *(E. albens*), Inland Grey Box (*E. microcarpa*), Yellow Box (*E. melliodora*), Blakely's Red Gum (*E. blakelyi*) and Forest Red Gum (*E. tereticornis*). Also inhabits open forests of smooth-barked gums, stringybarks, ironbarks, river sheoaks (nesting habitat) and tea-trees. A gregarious species usually seen in pairs and small groups of	No

					up to 12 birds. Feeding territories are large making the species locally nomadic. Recent studies have found that the Black-chinned Honeyeater tends to occur in the largest woodland patches in the landscape as birds forage over large home ranges of at least 5 hectares. Moves quickly from tree to tree, foraging rapidly along outer twigs, underside of branches and trunks, probing for insects. Nectar is taken from flowers, and honeydew is gleaned from foliage. Breeds solitarily or co-operatively, with up to five or six adults, from June to December. The nest is placed high in the crown of a tree, in the uppermost lateral branches, hidden by foliage. It is a compact, suspended, cup-shaped nest. **Low – Search area is within the species predicted distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	
Cinclosoma castanotum	Chestnut Quail-thrush	V,P		No	Throughout its distribution it occurs in a wide range of arid and semi-arid habitats, mainly in the low shrubs and undergrowth of mallee scrub, but also in Acacia scrubs, dry sclerophyll woodland, heath, and native pine. However, in NSW it seems to occur almost exclusively in mallee habitats, with understorey dominated by spinifex, chenopods or other shrubs including Acacia species. Only rarely, such as in Cocoparra NP, is it recorded in other types of woodland, and in these areas a dense understorey may be a prerequisite. Occupies vegetation with a wide range of fire histories, though appears to occur at highest densities in areas two to fifteen years post fire. There is some evidence from the Victorian mallee that if the interval between fires is too short (less than fifteen years) local declines may occur. **Low – Search area is within the species predicted distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	No
Daphoenositta chrysoptera	Varied Sittella	V,P		Yes	The Varied Sittella is sedentary and inhabits most of mainland Australia except the treeless deserts and open grasslands. Distribution in NSW is nearly continuous from the coast to the far west. The Varied Sittella's population size in NSW is uncertain but is believed to have undergone a moderate reduction over the past several decades. Inhabits eucalypt forests and woodlands, especially those containing rough-barked species and mature smooth-barked gums with dead branches, mallee, and Acacia woodland. **Moderate – Search area is within the species predicted distribution and there are records from within 10 km. There are, however, no associated vegetation communities present.**	Yes
Pachycephala inornata	Gilbert's Whistler	V,P		No	The Gilbert's Whistler is sparsely distributed over much of the arid and semi-arid zone of inland southern Australia, from the western slopes of NSW to the Western Australian wheatbelt. The species was probably once distributed almost continuously	No

					across the woodlands and mallee of southern NSW, but this range has been greatly reduced. 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. Within the mallee the species is often found in association with an understorey of spinifex and low shrubs including wattles, hakeas, sennas and hopbushes. In woodland habitats, the understorey comprises dense patches of shrubs, particularly thickets of regrowth Callitris pine. Parasitic 'cherries' (*Exocarpus* species) appear to be an important habitat component in Belah and Red Gum communities, though in the latter case other dense shrubs, such as Lignum and wattles, are also utilised. **Low – Search area is within the species known distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	
Pachycephala rufogularis	Red-lored Whistler	E4A,P	V	No	Occurs in and around Round Hill and Nombinnie Nature Reserves in central NSW. There are a small number of relatively old records from the of the Scotia Mallee and Tarawi Nature Reserve in the far southwest corner of the state. The current status of the species in this area is unknown. A third population at Pulletop Nature Reserve is now considered extinct at that locality. Found in mallee woodland with a shrub layer, usually of Broombush and native pine such as Mallee Pine (Callitris verrucosa), with occasional patches of spinifex and emergent mallee, forming a relatively dispersed canopy. **Low – Search area is within the species known distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	No
Artamus cyanopterus cyanopterus	Dusky Woodswallow	V,P		Yes	Dusky woodswallows are widespread in eastern, southern, and southwestern Australia. The species occurs throughout most of New South Wales, but is sparsely scattered in, or largely absent from, much of the upper western region. Most breeding activity occurs on the western slopes of the Great Dividing Range. 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. **Moderate – Search area is within the species predicted distribution and there are records from within 10 km. There are, however, no associated vegetation communities present.**	Yes
Melanodryas cucullata cucullata	Hooded Robin (south-	V,P		No	The Hooded Robin is widespread, found across Australia, except for the driest deserts and the wetter coastal areas - northern and eastern coastal Queensland and	No

	eastern form)				Tasmania. However, it is common in few places, and rarely found on the coast. It is considered a sedentary species, but local seasonal movements are possible. The south-eastern form (subspecies *cucullata*) is found from Brisbane to Adelaide and throughout much of inland NSW, with the exception of the extreme north-west, where it is replaced by subspecies *picata*. Two other subspecies occur outside NSW. 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. **Low – Search area is within the species predicted distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	
Petroica phoenicea	Flame Robin	V,P		No	The Flame Robin is endemic to south-eastern Australia, and ranges from near the Queensland border to southeast South Australia and also in Tasmania. In NSW, it breeds in upland areas and in winter, many birds move to the inland slopes and plains. It is likely that there are two separate populations in NSW, one in the Northern Tablelands, and another ranging from the Central to Southern Tablelands. Breeds in upland tall moist eucalypt forests and woodlands, often on ridges and slopes. Prefers clearings or areas with open understoreys. Prefers clearings or areas with open understoreys. 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), in dry forests, open woodlands and in pastures and native grasslands, with or without scattered trees. **Low – Search area is within the species predicted distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	No
Drymodes brunneopygia	Southern Scrub-robin	V,P		No	This species is restricted to mallees and shrublands across southern Australia and in NSW is confined to two main areas. The first is in central NSW and is centred on Round Hill and Nombinnie Nature Reserves, though suitable habitat probably exists on adjoining leasehold lands. This population once extended south and east to near Griffith and West Wyalong but clearing appears to have led to its local extinction in most of this region. The final record from The Charcoal Tank NR was in 1993, while in Pulletop NR it has not been observed since 1982. The other population occurs in the far southwest of NSW, mainly within the Scotia mallee centred on Tarawi NR and Scotia Sanctuary. Records east of the Darling River are more scattered, with recent confirmation in Mallee Cliffs NP, and a new population recently detected on leasehold land to the north of Euston. Other populations may still occur in other areas of mallee, particularly those with a well-developed shrub layer in the southwest corner of the state. **Low – Search area is within the species known distribution. There are, however,**	No

					no associated vegetation communities present or records from within 10 km.	
Antechinomys laniger	Kultarr	E1,P		Yes	Widespread across arid and semi-arid NSW but present in very low numbers. Records typically derive from captures by domestic cats or are collected after falling into steep-sided holes. Recent records have come primarily from the Cobar and Brewarrina region. A terrestrial insectivore that inhabits open country, especially claypans among Acacia woodlands. **Moderate – Search area is within the species predicted distribution and there are records from within 10 km. There are, however, no associated vegetation communities present.**	Yes
Dasyurus maculatus	Spotted-tailed Quoll	V,P	E	No	The range of the Spotted-tailed Quoll has contracted considerably since European settlement. It is now found in eastern NSW, eastern Victoria, south-east and north-eastern Queensland, and Tasmania. Only in Tasmania is it still considered relatively common. Recorded across a range of habitat types, including rainforest, open forest, woodland, coastal heath, and inland riparian forest, from the sub-alpine zone to the coastline. Individual animals use hollow-bearing trees, fallen logs, small caves, rock outcrops and rocky-cliff faces as den sites. **Low – Search area is outside of the species distribution, there are no associated vegetation communities present, or records from within 10 km.**	No
Ningaui yvonneae	Southern Ningaui	V,P		No	Recorded from scattered locations across southern Western Australia, South Australia, north-western Victoria, and south-western New South Wales. Within this area it appears to be patchily distributed but can be locally common (as is the case in some locations in NSW). In NSW most records are from the far southwest, including the Scotia mallee (Tarawi Nature Reserve, Scotia Sanctuary, and surrounding properties) and east of the Darling River (Mungo and Mallee Cliffs National Parks and many surrounding properties). An apparently isolated population occurs in central NSW mallee with most records from Nombinnie, Round Hill and western Yathong Nature Reserves and one single record from remnant mallee near Taleeban (southwest of West Wyalong). **Low – Search area is within the species known distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	No
Phascogale calura	Red-tailed Phascogale	E4,P	V	No	Prior to agricultural expansion in the 1800s, the Red-tailed Phascogale was widespread throughout Western Australia and extended eastward to the Murray Darling basin in NSW. It was previously found in most arid and semi-arid regions of Australia. However, it suffered a significant range contraction following European settlement and is now known to occur only in the central and southern wheatbelt areas of Western Australia an area which receives an annual rainfall of between 350 and 600 mm. **Absent – This species is considered extinct to be extinct in the wild.**	No

Sminthopsis macroura	Stripe-faced Dunnart	V,P		No	Throughout much of inland central and northern Australia, extending into central and northern NSW, western Queensland, Northern Territory, South Australia, and Western Australia. They are rare on the NSW Central West Slopes and North West Slopes with the most easterly records of recent times located around Dubbo, Coonabarabran, Warialda and Ashford. Native dry grasslands and low dry shrublands, often along drainage lines where food and shelter resources tend to be better. **Low – Search area is within the species known distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	No
Chaeropus ecaudatus	Pig-footed Bandicoot	E4,P	X	No	The Pig-footed Bandicoot was native to western New South Wales and Victoria, the southern part of the Northern Territory as well as South Australia and Western Australia. It inhabited a wide range of habitat types: from grassy woodland and grassland plains to the spinifex country and arid flats of central Australia. Despite its wide range, the species had a sparse distribution and was never abundant. **Absent – This species is considered to be extinct.**	No
Macrotis lagotis	Bilby	E4,P	V	Yes	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. Once widespread in arid, semi-arid and relatively fertile areas, the Bilby is now restricted to arid regions and remains a threatened species. The Bilby prefers arid habitats because of the spinifex grass and acacia shrub. **Absent – This species is considered to be extinct in the wild.**	No
Phascolarctos cinereus	Koala	E1,P	E	Yes	The Koala has a fragmented distribution throughout eastern Australia from north-east Queensland to the Eyre Peninsula in South Australia. In New South Wales, koala populations are found on the central and north coasts, southern highlands, southern and northern tablelands, Blue Mountains, southern coastal forests, with some smaller populations on the plains west of the Great Dividing Range. Inhabit eucalypt woodlands and forests. **Moderate– Search area is outside the species known distribution, there are no associated vegetation communities present, but there is one record from within 10 km.**	Yes
Lasiorhinus latifrons	Southern Hairy-nosed Wombat	E1,P		No	Distribution has become fragmented and contracted in the last 200 years. Once regarded as common in south-western NSW but the current size of this population is unknown. **Low – Search area is within the species known distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	No
Cercartetus	Western	E1,P		No	The Western Pygmy Possum occurs in temperate to arid woodlands across southern	No

concinnus	Pygmy Possum				Australia, extending from the southwest corner of Western Australia, through South Australia and western Victoria, with the eastern limit in south-western NSW. In NSW it was first trapped in Mallee Cliffs National Park in surveys in 1996, though subsequent investigations revealed a specimen in the National Museum of Victoria collected near Gol Gol in 1958. A number of trapping programs conducted since 1996 have captured this species at a number of sites in woodlands east of the Darling River, with many on Mallee Cliffs NP and surrounding properties and more scattered records to the north and east of this reserve. Recently confirmed in Mungo National Park. West of the Darling River it appears to occur at much lower densities, with less than ten records from both Tarawi Nature Reserve and Scotia Sanctuary. Based on trapping results in NSW the numbers in the local population appear to vary significantly from year to year, though the factors causing this are not known (though fluctuations elsewhere are suspected to be linked to rainfall and subsequent food availability). **Low – Search area is within the species known distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	
Bettongia lesueur graii	Boodie, Burrowing Bettong (mainland)	E4,P	X	No	The mainland subspecies (*graii*) is now extinct; however, two subspecies occur on islands off the coast of Western Australia; one undescribed subspecies on Boodie and Barrow Islands off the Pilbara coast; the other (*lesueur*) on Bernier and Dorre Islands off Shark Bay. Both these subspecies are listed nationally as vulnerable. It is the latter subspecies that has been used to establish a population in feral-free enclosures at the Australian Wildlife Conservancy run Scotia Sanctuary in south-western New South Wales. The Boodie once lived in a range of dry subtropical and tropical habitats, from open Eucalyptus and Acacia woodlands to arid spinifex grasslands. In its current range on the islands, it seems to prefer open *Triodia* (spinifex) and dune habitats but will burrow anywhere except places with rocky substrate. **Absent – This subspecies is considered extinct. The related *lesueur* subspecies has been reintroduced to NSW, although there are no wild populations.**	No
Lagorchestes leporides	Eastern Hare-wallaby	E4,P	X	No	This species once inhabited the interior of New South Wales, Victoria, and the Murray River region of South Australia. It was common in the level country between the Murray and Darling rivers, as well as the Liverpool Plains. The Eastern Hare-wallaby preferred habitat that consisted of open plains and grasslands. It was a strictly nocturnal animal which led a solitary lifestyle. During the day it sat still in a well-formed 'seat', usually in the shelter of a saltbush or a tussock. If approached too closely, it would bound off at great speed. **Absent – This species is considered to be extinct.**	No
Onychogalea fraenata	Bridled Nailtail Wallaby	E4,P	E	No	The distribution of the Bridled Nailtail Wallaby has declined rapidly since European settlement and now only occurs in a small area of central Queensland. At the time of European settlement, Bridled Nail-tail Wallabies were apparently common in eastern	No

					Australia to the west of the Great Dividing Range. In the mid-nineteenth century the species ranged from the Murray River region of north-western Victoria through central NSW, and north to Charters Towers in Queesnland. The species' range has declined dramatically during the last century; it is currently presumed extinct in NSW and for over 30 years the species was believed to be extinct across its range. In 1973 researchers confirmed a population of Bridled Nailtail Wallabies on a property in central Queensland. New populations of the wallaby have been re-introduced to habitats it once occupied to aid recovery of the species. In 1996 Bridled Nailtails were introduced to Idalia National Park and in 2005 the population was estimated at over 300 individuals. Captive breeding enclosures have also been constructed on a large private property in Queensland south of Emerald. The property has been converted to a Nature Refuge and is now home to a third free ranging population of about 100 wallabies. **Absent – This species is considered to be extinct in the wild in NSW.**	
Onychogalea lunata	Crescent Nailtail Wallaby	E4,P	X	No	The Crescent Nailtail Wallaby was once quite common in a variety of habitats throughout much of central, southern, and south-western Australia, but was unable to withstand the changes wrought by European settlement. The wallaby remained common, even in agricultural districts in the south-west of Western Australia, until about 1900. It had begun a steep decline by 1908, when the last wallaby was caught in the area. The last specimen of this wallaby to be collected alive was caught in a dingo trap on the Nullarbor Plain in 1928. It to Taronga Zoo in Sydney and the animal ended up in the Australian Museum. **Absent – This species is considered to be extinct.**	No
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	V,P		No	The Yellow-bellied Sheathtail-bat is a wide-ranging species found across northern and eastern Australia. In the most southerly part of its range - most of Victoria, south-western NSW, and adjacent South Australia - it is a rare visitor in late summer and autumn. There are scattered records of this species across the New England Tablelands and North West Slopes. Roosts singly or in groups of up to six, in tree hollows and buildings; in treeless areas they are known to utilise mammal burrows. When foraging for insects, flies high and fast over the forest canopy, but lower in more open country. Forages in most habitats across its very wide range, with and without trees; appears to defend an aerial territory. Breeding has been recorded from December to mid-March when a single young is born. Seasonal movements are unknown; there is speculation about a migration to southern Australia in late summer and autumn. **Low – Search area is within the species predicted distribution. There are, however, no associated vegetation communities present, nor records from within 10 km.**	No

Chalinolobus picatus	Little Pied Bat	V,P		No	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. **Low – Search area is within the species predicted distribution. There are, however, no associated vegetation communities present, nor records from within 10 km.**	No
Myotis macropus	Southern Myotis	V,P		No	The Southern 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. **Low – Search area is within the species predicted distribution. There are, however, no associated vegetation communities present, nor records from within 10 km.**	No
Nyctophilus corbeni	Corben's Long-eared Bat	V,P	V	No	Overall, the distribution of the south-eastern form coincides approximately with the Murray Darling Basin with the Pilliga Scrub region being the distinct stronghold for this species. Inhabits a variety of vegetation types, including mallee, bulloke *Allocasuarina leuhmann*i 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. **Low – Search area is within the species known distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	No
Vespadelus baverstocki	Inland Forest Bat	V,P		No	Because of the difficulty of identification, the distribution of this species, particularly in NSW, is very poorly known. Believed to occur widely in all the mainland states, generally in areas with annual rainfall less than 400 millimetres. In Victoria it is confined to the extreme northwest. In NSW it has been most regularly captured in the far southwest, north from the Murray River to Menindee, and at least as far east as the Balranald-Ivanhoe Road. There is some evidence to suggest that this species also occurs in the central NSW mallee, centred on Nombinnie Nature Reserve, although there has been very little recent survey in this part of the state. There are also records just south of the Queensland border around the Culgoa River, though whether this connects with other NSW populations, or is the southern extent of a northern population is unknown. There are records further east in NSW but the identification of these records has not been confirmed. There are relatively few records of any *Vespadelus* species in the northwest of NSW and so whether this species does occur here is unknown. Some of the gaps in knowledge on the distribution of this and other bat species in western NSW probably reflects the lack of survey effort in most of this	No

					region. **Low – Search area is within the species predicted distribution. There are, however, no associated vegetation communities present, nor records from within 10 km.**	
Leporillus conditor	Greater Stick-nest Rat	E4,P	V	Yes	The Greater Stick-nest Rat were once found through much of arid and semi-arid Australia, from Shark Bay to western New South Wales and north-western Victoria. By the 1930s Greater Stick-nest Rats were extinct on the mainland. A small population survived only on East and West Franklin Islands, off the far west coast of South Australia. In an effort to save the species, captive-bred animals from these islands have been released in other South Australian sites as well as on Salutation Island, in Henri Freycinet Harbour, and on Heirisson Prong, both in the Shark Bay World Heritage Area. They are found nowhere else in the world. **Absent – This species is considered to be extinct in the wild in NSW.**	No
Notomys mitchellii	Mitchell's Hopping-mouse	E4,P		No	*Notomys mitchellii* was first discovered in the junction of the Murray and Murrumbidgee rivers, New South Wales. In some areas, including the Nullarbor region of South Australia, the species inhabits areas of malle vegetation which lack a significant understorey. In other parts of its range, such as the Eyre Peninsula, eastern South Australia and western Victoria, *N.mitchellii* is found in areas with a relatively dense understorey, typically mallee-broombush and malle-*Triodia* associations. In Western Australia, the species has been found in similar habitat, including malle *Melaleuca* and malle-Leptospermum associations. Although the species is considered to be 'secure' nationally, it has been estimated that between of 50-60 per cent of *N. mitchellii*'s range has been cleared for agricultural purposes. This range reduction has occurred principally in the eastern and western extremes of *N. mitchelli*'s distribution, and the species appears to be confined to remnant patches of native vegetation, where disturbance has been minimal. **Absent – This species is considered extinct in the wild in NSW.**	No
Pseudomys bolami	Bolam's Mouse	E1,P		No	This species is found in southern Western Australia and South Australia, extending east into the south-western corner of NSW. It was collected by Krefft in Victoria in 1857 but has not been recorded in that state since. Records in NSW are centred on the Scotia Mallee including Tarawi Nature Reserve, Nanya Station, Scotia Sanctuary and surrounding properties. A smaller number of records have also been made on leasehold land to the south east of Mungo National Park. Subfossil remains are also known from Mutawintji National Park, 200km further north, and more recently, this species was trapped during surveys conducted to the east of Broken Hill. This record extended the distribution and identified new habitat for this species in NSW, although it is known from similar habitat in South Australia directly west of Broken Hill. **Low – Search area is within the species known distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	No

Pseudomys desertor	Desert Mouse	E4A,P		No	The Desert Mouse once ranged from the Murray-Darling region in NSW through the Flinders Ranges to the Gibson and Great Sandy Deserts, Nullarbor Plain, and west coast and Bernier Island of Western Australia, in areas receiving a median rainfall of <600mm. Since the arrival of Europeans, the range of the Desert Mouse has apparently contracted to the central deserts. Until recently, there have been no confirmed records of the Desert Mouse in NSW since 1857. Early records of the abundance of the species in NSW are limited, although it was described by Gerard Krefft as being present in 'large numbers' at a location between Gol Gol Creek (near Buronga) and the Darling River. In September 2008, a single male Desert Mouse was captured in a pitfall trap in Sturt National Park, in the extreme north-west corner of NSW. Despite intensive surveys in this area over an extended period, the species was only found at the one location. The total number of mature individuals of the species is inferred to be extremely low in New South Wales. **Low – Search area is within the species known distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	No
Pseudomys gouldii	Gould's Mouse	E4,P	X	No	Sightings of live animals and reports of subfossil remains indicate that Gould's Mouse was formerly distributed throughout south-west Western Australia, eastern South Australia, and New South Wales. Little is known of Gould's Mouse. The species is reported to have preferred sandhills and plains, and to make burrows under bushes in loose soil. **Absent – The species is considered to be extinct.**	No
Pseudomys hermannsburgensis	Sandy Inland Mouse	V,P		No	Widely but very sparsely distributed over the arid and semi-arid zones of inland Australia. NSW occurrences are only in the far north-west where it is known from seven widely scattered localities including Fowlers Gap, Sturt National Park, Tibooburra, east of Enngonia, Mutawintji National Park (as subfossil remains), just east of Mutawintji National Park and near Kajuligah Nature Reserve (north of Ivanhoe). **Low – Search area is within the species known distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	No
Rattus villosissimus	Long-haired Rat	V,P		No	The species has been recorded over vast areas of western NSW. Strongholds are north-west of NSW, with plagues spreading south and east along river channels. Otherwise, the species is found in scattered localities in low numbers. **Low – Search area is outside of the species distribution, there are no associated vegetation communities present, or records from within 10 km.**	No
Brachyscome papillosa	Mossgiel Daisy	V	V	No	The Mossgiel Daisy is endemic to NSW and chiefly occurs within the Riverina Bioregion, from Mossgiel in the north, Murrumbidgee Valley (Yanga) National Park in the southwest to Urana in the southeast. Sites are scattered across this Bioregion including the Jerilderie area, the Hay Plain (Maude and Oxley) and around Darlington	No

					Point. In addition, there are a number of records from the Willandra Lakes World Heritage Area (including Mungo National Park) with a north-western outlier at Byrnedale Station, north of Menindee. The only known site on South Western Slopes is Ganmain Reserve. **Low – Search area is within the species predicted distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	
Calotis moorei	A burr-daisy	E1	E	No	The species is confined to NSW and is known from only four populations in NSW, the type locality north-west of Louth near the homestead of Mt Mulyan sheep station, west of Wilcannia, around the Menindee area and an old record at Zara Station near Deniliquin. **Low – Search area is within the species predicted distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	No
Cratystylis conocephala	Bluebush Daisy	E1		No	Very rare in NSW, restricted to a few small populations in the Wentworth district in the far south-western plains. Most records are from the Scotia mallee near the South Australian border, including Tarawi Nature Reserve, Scotia Sanctuary and Nanya Station. It has also been recorded from near Lake Victoria and from Garston Station between the Darling River and the Great Darling Anabranch. The species is also rare in Victoria, known from only seven plants in three reserves in the far north-west. Bluebush Daisy is more common in South Australia, Western Australia and the Northern Territory. **Low – Search area is outside of the species distribution, there are no associated vegetation communities present or records from within 10 km.**	No
Erodiophyllum elderi	Koonamore Daisy	E1		No	Occurs south from the Broken Hill district, at localities including Mazar Station south of Broken Hill and just east of the South Australian border. Also distributed throughout southern SA (including Koonamore Station, approx. 400 km NNE of Adelaide, from where the species gets its common name) and Western Australia. **Low – Search area is outside of the species distribution, there are no associated vegetation communities present or records from within 10 km.**	No
Kippistia suaedifolia	Fleshy Minuria	E1		No	Recorded from several collections near Conoble in the Ivanhoe district. This locality is an open-cast gypsum mine (Marlow Gypsum Mine), located 22 km north of Conoble railway siding. Also reported from the Scotia mapsheet area in far south-western NSW. **Low – Search area is outside of the species distribution, there are no associated vegetation communities present or records from within 10 km.**	No
Leptorhynchos waitzia	Button Immortelle	E1		No	Only known in NSW from early records in the Darling River region and a more recent collection from Kinchega National Park. It also occurs in western Victoria and SA.	No

					Low – Search area is outside of the species distribution, there are no associated vegetation communities present or records from within 10 km.	
Lepidium monoplocoides	Winged Peppercress	E1	E	No	Widespread in the semi-arid western plains' regions of NSW. Collected from widely scattered localities, with large numbers of historical records but few recent collections. There is a single collection from Broken Hill and only two collections since 1915, the most recent being 1950. Also previously recorded from Bourke, Cobar, Urana, Lake Cargelligo, Balranald, Wanganella, and Deniliquin. Recorded more recently from the Hay Plain, south-eastern Riverina, and from near Pooncarie. **Low – Search area is within the species known distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	No
Atriplex acutiloba		E4		No	Only limited collections in far western NSW, west of Broken Hill, other collections in South Australia. **Absent – The species is considered to be extinct in NSW.**	No
Atriplex infrequens	A saltbush	V	V	No	*Atriplex infrequens* is confined to the NSW far western plains. North-western records recorded from east of Tibooburra, southeast of Brewarrina and near Wilcannia with isolated collections from the Pooncarie area in the south. Also recorded in 1917 in South Australia. Flowering time has not been recorded; however, seeding is recorded in December. **Low – Search area is within the species known distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	No
Swainsona colutoides	Bladder Senna	E1		No	Confined to the NSW far western plains. North-western records recorded from east of Tibooburra, southeast of Brewarrina and near Wilcannia with isolated collections from the Pooncarie area in the south. Also recorded in 1917 in South Australia. **Low – Search area is within the species known distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	No
Swainsona pyrophila	Yellow Swainson-pea	V	V	No	Occurs in the south-western plain's regions of NSW and into Victoria and SA. The species is distributed in the south-eastern half of SA, along the Murray River valley into north-western Victoria, with isolated occurrences northward. **Low – Search area is within the species known distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	No
Swainsona sericea	Silky Swainson-pea	V		No	Silky Swainson-pea has been recorded from the Northern Tablelands to the Southern Tablelands and further inland on the slopes and plains. There is one isolated record from the far north-west of NSW. Its stronghold is on the Monaro. Also found in South Australia, Victoria, and Queensland. **Low – Search area is outside of the species distribution, there are no associated vegetation communities present or records from within 10 km.**	No
Acacia acanthoclada	Harrow Wattle	E1		No	The Harrow Wattle occurs across southern Australia, with the nominate subspecies occurring sporadically in south west NSW and far north west Victoria and more frequently in South Australia and southern Western Australia. The other subspecies	No

					(*glaucescens*) is restricted to the last state. Most records in NSW are either in the Scotia mallee (Scotia Sanctuary and adjoining properties) or from an area to the northeast of Buronga (the area between Mallee Cliffs and Mungo National Parks but not within either of these reserves). Some of these sites occur within Southern Mallee Reserves on leasehold land which stock grazing excluded. A single (dead) plant has also recently been recorded west of Lake Victoria, so additional survey may expand the number of known populations in southwestern NSW. **Low – Search area is within the species known distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	
Acacia carneorum	Purple-wood Wattle	V	V	No	Occurs in the far western plains, south from west of Tibooburra to the Menindee area. Also has a limited distribution in SA. **Low – Search area is within the species known distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	No
Lasiopetalum behrii	Pink Velvet Bush	E4A		No	Pink Velvet Bush is known in NSW from a single record made in 1997 on leasehold land to the southeast of Pooncarie in the far southwestern plains. The species is common in mallee areas of north-western Victoria, with an outlier in the whipstick mallee near Bendigo. It is also widespread in south-eastern South Australia. **Low – Search area is within the species known distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	No
^Pterostylis cobarensis	Greenhood Orchid	V,P,2		No	Recorded from Bourke, Nyngan, Cobar, Nymagee, Warren, Gilgandra, Narrabri, Coonabarabran districts. Recorded from a number of reserves and state forests including Mutawintji, Gundabooka, Culgoa, Warrumbungles National Parks, Quanda, Yathong Nature Reserves, Mt Grenfell Historic Site and Bimbilwindi and Pilliga East State Forests. There are also records from the Darling Downs district of Queensland. **Low – Search area is within the species known distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	No
Austrostipa metatoris	A spear-grass	V	V	No	Most records occur in the Murray Valley with sites including Cunninyeuk Station, Stony Crossing, Kyalite State Forest (now part of Murrumbidgee Valley Regional Park) and Lake Benanee. Scattered records also occur in central NSW including Lake Cargelligo, east of Goolgowi, Condobolin and southwest of Nymagee. Otherwise only known from near Bordertown in southeast South Australia, where it may be locally extinct. **Low – Search area is within the species known distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	No
Austrostipa nullanulla	A spear-grass	E1		No	Currently known only in NSW from Nulla Station to the north of Lake Victoria in the far southwest, with the total population estimated at 200,000+ individuals. In Victoria there are an estimated 1500 plants in the Towan Plains Flora and Fauna Reserve,	No

					300 plants in Murray-Sunset NP and 330 plants on the Raak Plain. It is more widespread in South Australia but is still considered Vulnerable in that state and is only known from one conservation reserve (Lake Gillies Conservation Reserve). **Low – Search area is within the species known distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	
Santalum murrayanum	Bitter Quandong	E1		No	The Bitter Quandong occurs between inland southern Western Australia, through South Australia, east to north-western Victoria and south-western New South Wales. Many of the NSW records occur within the vicinity of the Sturt Highway (between Dareton and Balranald), but recently more plants have been over a much wider distribution, including between Kyalite and Moulamein in the east, west of Lake Victoria in the west and in mallee to the southeast of Menindee in the north. Only one plant is known from formal conservation reserves in NSW (Mallee Cliffs NP), though another is known from the Travelling Stock Route within northern Mungo NP and a number are known from various conservation initiatives on leasehold land. **Low – Search area is within the species known distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	No
Dodonaea stenozyga	Desert Hopbush	E4A		No	Presumed extinct in NSW (with the only record from the Darling River prior to 1859) until recorded in 1998 from Nanya Station, northwest of Wentworth in far south-western NSW. A recent record of two plants from a property to the west of Lake Victoria have yet to be confirmed. Widespread in southern Australia, from southern Western Australia, through South Australia to western Victoria. **Low – Search area is within the species known distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	No
Casuarina obesa	Swamp She-oak	E1		No	The Swamp She-oak is widespread in southern Western Australia and plants from this population are widely planted (including in NSW) for agroforestry, particularly in salt-effected areas, and as a street tree. The eastern population is much more restricted with only scattered occurrence in the Wimmera and Mallee in Victoria, and one occurrence, at Lake Benanee in New South Wales. The NSW population, consisting of only male plants was first discovered in 1951, but was believed to have been cleared prior to 1979 (and hence considered extinct in NSW). In 1999, it was confirmed to still occur at the site, although as all plants are females it is believed this is a different population. The plants occur at three discrete locations along just over a kilometre of the north-western shoreline of the lake, to the southwest of the original population. **Low – Search area is within the species known distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	No
Eucalyptus leuocoxylon subsp. *pruinose*	Yellow Gum	E1		No	Restricted to several small areas between Barham and Euston. This species is not known from any protected area within NSW, though some remnants occur within State Forests along the Murray River, particularly within Campbells Island and Euston SFs.	No

					Eucalyptus leucoxylon subsp. *pruinosa* is a tree species which, in New South Wales, occurs at the bases of sandy rises and on loamy clay flats on the floodplains of the Murray River and its tributaries in the Riverina Bioregion. **Low – Search area is within the species known distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	
Senecio behrianus		E4	E	Yes	*Senecio behrianus* was endemic to south-eastern Australia, where it once occurred in South Australia, New South Wales, and Victoria. It is presumed extinct in South Australia and New South Wales and is now only known only from 5 wild and 2 reintroduced populations in Victoria. **Absent – The species is considered to be extinct in NSW.**	
Tetratheca pilosa subsp. pilosa		E4		No	*Tetratheca pilosa* subsp. *pilosa* is currently found in Victoria, Tasmania, and South Australia. It is presumed extinct in NSW. **Absent – The species is considered to be extinct in NSW.**	No
Solanum karsense	Menindee Nightshade	V	V	No	Menindee Nightshade is a species of *Solanum* endemic to NSW, restricted to the far south-western plains, extending up the Darling River to the Menindee and Wilcannia districts. Mainly restricted to the area between the Darling and Lachlan Rivers. Localities include Kars Station, Lake Tandou, Lake Cawndilla, Oxley area, between Broken Hill and Menindee, and the Darling River. It has been recorded from Kinchega National Park and Nearie Lake Nature Reserve. **Low – Search area is within the species known distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	No
Pimelea serpyllifolia subsp. serpyllifolia	Thyme Rice-Flower	E1		No	Not common in NSW, found only in the far south-western plains in the Euston district, becoming more abundant in Victoria and SA. **Low – Search area is within the species known distribution. There are, however, no associated vegetation communities present or records from within 10 km.**	No
Tandanus tandanus	Eel-tailed Catfish	E2		Yes	Eel Tailed Catfish are naturally distributed throughout the Murray-Darling Basin and in the Eastern drainages NSW north of Newcastle. Eel Tailed Catfish numbers in the Murray-Darling Basin have declined due to a range of impacts including invasive species, habitat degradation, cold water pollution and fishing pressures and are now virtually absent from the Murray, Murrumbidgee, and Lachlan catchments. **Moderate – Search area is within the species distribution and they are mapped to adjacent watercourses.**	Yes
Euastacus armatus	Murray Crayfish		V	No	Murray Crayfish can be found in the Murray River upstream of Mildura, in the Murrumbidgee River and in some dams, and are the only species in the *Euastacus* genus that live in both cold and warm water habitats. **Moderate – Search area is within the species distribution and they are mapped to adjacent watercourses.**	Yes
Maccullochella	Murray Cod		V	Yes	Murray Cod, also referred to as cod or codfish, were once abundant throughout the	Yes

peelii					Murray-Darling river system, but overfishing and environmental changes have drastically reduced its numbers. The species has been selectively stocked in other river systems in NSW, Victoria, and Western Australia, but has generally failed to establish itself in those areas. Murray Cod generally prefer slow flowing, turbid water in streams and rivers, favouring deeper water around boulders, undercut banks, overhanging vegetation and logs. Small numbers are still present in the Nepean River and Yarra River. **Moderate – Search area is within the species distribution and they are mapped to watercourses within the study area.**	
Bidaynus bidyanus	Silver Perch	V		Yes	Silver Perch were once widespread and abundant throughout most of the Murray-Darling river system. They have now declined to low numbers or disappeared from most of their former range. Only one remaining secure and self-sustaining population occurs in NSW in the central Murray River downstream of Yarrawonga weir, as well as several anabranches and tributaries. **Moderate – Search area is within the species distribution and they are mapped to watercourses within the study area.**	Yes

*NSW Status: P=Protected, P13=Protected native plant, V=Vulnerable, E1=Endangered, E2=Endangered population, E4=Extinct, E4A=Critically endangered, 2=Category 2 sensitive species, 3=Category 3 sensitive species.

+Commonwealth Status: C=CAMBA, J=JAMBA, K=ROKAMBA, CE=Critically endangered, E=Endangered, V=Vulnerable

Likelihood of occurrence table for predicted BC Act-listed Threatened Ecological Communities.

Community	*NSW Status	+Comm. Status	Likelihood of Occurrence	Test of significance required (Yes / No)
Acacia melvillei Shrubland in the Riverina and Murray-Darling Depression bioregions	E	-	Currently recorded from south-western portion of NSW in the Riverina and Murray-Darling Depression bioregions in the local government areas of Balranald, Carrathool, Central Darling, Conargo, Wakool, and Wentworth and may occur in other local government areas within these bioregions. This community is not considered to occur outside of NSW, though small stands of *Acacia melvillei* are known to occur in northwestern Victoria (such as near Merbein). *Acacia melvillei* Shrubland is scattered over a relatively large distribution, with an estimated extent of occurrence in the order of 50000 km^2. This community has been recorded in a number of conservation reserves, with the largest area in Paroo-Darling National Park (565 hectares). Other reserves with smaller areas include Yanga State Conservation Area, Yanga National Park, Mungo National Park, Kajuligah Nature Reserve and Willandra National Park. **Absent – The community did not occur on the subject site.**	No
Allocasuarina luehmannii Woodland in the Riverina and Murray-Darling Depression Bioregions	E	-	*Allocasuarina luehmannii* Woodland has been recorded in the southern part of the Riverina bioregion from near Urana and Mulwala in the east to the Barham district, and may extend as far west as Euston in the southern part of the Murray-Darling Depression bioregion. The community occurs in small patches within this range and is currently estimated to cover less than 500-1500ha. Approximately 6 ha of *Allocasuarina luehmannii* Woodland are estimated to occur within Lake Urana and Wiesners Swamp Nature Reserves. The remainder of the community occurs on private land or on public easements. **Absent – The community did not occur on the subject site.**	No
Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions	E	-	Sandhill Pine Woodland has been recorded in the far south-western portion of the NSW South Western Slopes bioregion near Urana, extending through the Riverina bioregion, from the Urana – Narranderra district in the east, into the southern part of the Murray-Darling Depression bioregion, as far west as the South Australian border. **Absent – The community did not occur on the subject site.**	No
Tecticornia lylei, Wiry Glasswort, low open-shrubland in the Murray Darling Depression Bioregion	E	-	This community is very limited in its extent and is found in South Australia and in the far southwest of New South Wales. To date it has been recorded from 14 locations within the Murray Darling Depression Bioregion. Most locations (11) occurred to the immediate north-east and south-east of Nanya Station. **Absent – The community did not occur on the subject site.**	No

***NSW Status**: E=Endangered.

APPENDIX D – BC AND FM ACT TESTS OF SIGNIFICANCE

Biodiversity Conservation Act 2016 Test of significance

The threatened species 'test of significance' (or '5-part test') is used to determine if a development or activity is likely to significantly affect threatened species or ecological communities, or their habitats. The test of significance is set out in s.7.3 of the *Biodiversity Conservation Act 2016*, and is completed in accordance with the questions set out below:

The following is to be considered for the purposes of determining whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats:

a) in the case of a threatened species, whether the proposed development or activity 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,

b) in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:

   i. 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, or

   ii. is likely to modify the composition of the ecological community substantially and adversely such that its local occurrence is likely to be placed at risk of extinction,

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,

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),

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

BC Act Tests of Significance for Threatened Species

Species Name	Common Name	a.	b.	c.	d.	e.	Impact Significance
Stictonetta naevosa	Freckled Duck	The Freckled Duck nests in dense vegetation at, or near, the water level. As the proposal does not intend to modify such vegetation, critical breeding habitat will not be directly affected. As the species feeds entirely in aquatic environments, foraging habitat will not be impacted. Considering the above, it is very unlikely that the proposal would 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.	N/A	i. There will be no direct impact on any foraging or breeding habitat for this species. As the development fronts the Darling River, ~120 m of riparian vegetation will be indirectly impacted. Specifically, indirect impacts (such as noise and light) resulting from construction and operation may discourage the Freckled Duck from using this habitat. However, mitigation measures will reduce this impact. ii. As all impacts will be confined to an already modified section of the riverbank, and no native PCT will be impacted, no additional fragmentation will be generated by this proposal. iii. Given the small area of impact, and considering that the site is already operating as a hospital within peri-urban habitat, it is unlikely that the subject site is of importance to the long-term survival of the species in the area.	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.
Botaurus poiciloptilus	Australasian Bittern	The Australasian Bittern requires the dense fringing vegetation of wetlands for breeding. As the proposal does not intend to modify any such vegetation, critical breeding habitat will not be affected. As the species feeds entirely on aquatic animals, neither will foraging be impacted. Considering the above, it is very unlikely that the proposal would 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.	N/A	i. There will be no direct impact on any foraging or breeding habitat for this species. As the development fronts the Darling River, ~120 m of riparian vegetation will be indirectly impacted. Specifically, indirect impacts (such as noise and light) resulting from construction and operation may discourage the Australasian Bittern from using this habitat. However, mitigation measures will reduce this impact. ii. As all impacts will be confined to an already modified section of the riverbank, and no native PCT will be impacted, no additional fragmentation will be generated by this proposal. iii. Given the small area of impact, and considering	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.

				that the site is already operating as a hospital within peri-urban habitat, it is unlikely that the subject site is of importance to the long-term survival of the species in the area.			
Haliaeetus leucogaster	White-bellied Sea-Eagle	White-bellied Sea-Eagles' construct their large stick nests in tall, mature, Eucalypts that are adjacent to waterbodies. Given the subject sites location, and the availability of appropriate vegetation therein, it appears to represent suitable breeding habitat. However, no such nests were detected during the field survey. Considering the above, it is very unlikely that the proposal would 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.	N/A	i. There will be no direct impact on any foraging or breeding habitat for this species. As the development fronts the Darling River, ~120 m of river frontage will be indirectly impacted. Specifically, indirect impacts (such as noise and light) resulting from construction and operation may discourage the White-bellied Sea Eagle from using this habitat. However, this species is accustomed to urban disturbance and mitigation measures will reduce this impact. ii. As all impacts will be confined to an already modified section of the riverbank, and no native PCT will be impacted, no additional fragmentation will be generated by this proposal. iii. Given the small area of impact, absence of nests, and considering that the site is already operating as a hospital within peri-urban habitat, it is unlikely that the subject site is of importance to the long-term survival of the species in the area.	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.
Hieraaetus morphnoides	Little Eagle	The Little Eagle constructs its twig nests in the forks of large mature trees, predominantly within the riparian zone. Given the location of the subject site, it appears that it would represent suitable breeding habitat. However, no such nests were detected during the field deployment. Considering the above, it is very unlikely that the proposal would 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.	N/A	i. The 1.29 ha footprint does not contain any native PCT or nests of this species. Therefore, only minor, non-native foraging habitat will be disturbed for this proposal. ii. As all impacts will be confined to an already modified section of the riverbank, and no native PCT will be impacted, no additional fragmentation will be generated by this proposal. iii. Given the small area of impact, absence of nests, and considering that the site is already operating as a hospital within peri-urban habitat, it is unlikely that the subject site is of importance to the long-term survival of the species in the area.	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.

Grus rubicunda	Brolga	Brolgas construct their 'nests' – a platform of grasses and sticks augmented with mud – on partially submerged islands or on the water's surface of the water. As the subject site is approximately 20 m from the water's edge (at its closest point), breeding habitat will not be affected by this proposal. Given the age (1981) of the single record from within the 10 km search area, it is unlikely that the site is utilised regularly by the species. Considering the above, it is very unlikely that the proposal would 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.	N/A	i. There will be no direct impact on any foraging or breeding habitat for this species. As the development fronts the Darling River, ~120 m of river frontage will be indirectly impacted. Specifically, indirect impacts (such as noise and light) resulting from construction and operation may discourage the Brolga from using this habitat. However, mitigation measures will reduce this impact. ii. As all impacts will be confined to an already modified section of the riverbank, and no native PCT will be impacted, no additional fragmentation will be generated by this proposal. iii. Given the small area of impact, absence of nests, and considering that the site is already operating as a hospital within peri-urban habitat, it is unlikely that the subject site is of importance to the long-term survival of the species in the area.	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.
Burhinus grallarius	Bush Stone-curlew	The Bush Stone-curlew is associated with the grassy ground layer of open forests and woodlands that have an abundance of fallen timber. As these habitat features were not present, the subject site would not be suitable for the species. Although it is possible that the species continues to exist in the general area, it is unlikely - given that the only record from within the 10 km search area dates to 2004. Considering the above, it is unlikely that the proposal would 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.	N/A	i. The 1.29 ha footprint does not contain any native PCT. Therefore, only minor, non-native foraging habitat will be disturbed for this proposal. ii. As all impacts will be confined to an already modified section of the riverbank, and no native PCT will be impacted, no additional fragmentation will be generated by this proposal. iii. Given the small area of impact, and considering that the site is already operating as a hospital within peri-urban habitat, it is unlikely that the subject site is of importance to the long-term survival of the species in the area.	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.
^Lophochroa leadbeateri	Major Mitchell's	The Major Mitchell's Cockatoo is dependent on large tree hollows,	N/A	i. The 1.29 ha footprint does not contain any native PCT or large tree hollows. Therefore, only minor,	No, AOBV not	Yes. See **Appendix**	No significant impact will arise

	Cockatoo	within which the bird nests. No hollow-bearing trees will be directly impacted by the proposal. Considering the above, it is very unlikely that the proposal would 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.		non-native foraging habitat will be disturbed for this proposal. ii. As all impacts will be confined to an already modified section of the riverbank, and no native PCT will be impacted, no additional fragmentation will be generated by this proposal. iii. Given the small area of impact, lack of tree hollows, and considering that the site is already operating as a hospital within peri-urban habitat, it is unlikely that the subject site is of importance to the long-term survival of the species in the area.	present within or close to the subject site.	**F**	to the local viability of this species or its habitat due to the undertaking of the proposal.
^^*Glossopsitta porphyrocephala*	Purple-crowned Lorikeet	The Purple-crowned Lorikeet is dependent on small tree hollows, within which they roost and nest. No hollow-bearing trees will be directly impacted by the proposal. Considering the above, it is very unlikely that the proposal would 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.	N/A	i. The 1.29 ha footprint does not contain any native PCT or tree hollows. Therefore, only minor, non-native foraging habitat will be disturbed for this proposal. ii. As all impacts will be confined to an already modified section of the riverbank, and no native PCT will be impacted, no additional fragmentation will be generated by this proposal. iii. Given the small area of impact, lack of tree hollows, and considering that the site is already operating as a hospital within peri-urban habitat, it is unlikely that the subject site is of importance to the long-term survival of the species in the area.	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.
Pyrrholaemus brunneus	Redthroat	Redthroats are present in a variety of habitats, from chenopod shrublands to lignum swamps. The species constructs a bulky, dome-shaped nest, fashioned out of bark, grass and feathers. The nests are located in shrubs or small trees, up to one metre from the ground. The field survey failed to detect any such nest. Although it is possible that the species continues to exist in the general area, it is unlikely - given that the only record from within the 10 km	N/A	i. The 1.29 ha footprint does not contain any native PCT. Therefore, only minor, non-native foraging habitat will be disturbed for this proposal. ii. As all impacts will be confined to an already modified section of the riverbank, and no native PCT will be impacted, no additional fragmentation will be generated by this proposal. iii. Given the small area of impact, and considering that the site is already operating as a hospital within peri-urban habitat, it is unlikely that the subject site is of importance to the long-term survival of the species in the area.	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.

		search area dates to 1984. Considering the above, it is unlikely that the proposal would 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.					
Certhionyx variegatus	Pied Honeyeater	A migratory species, the Pied Honeyeater will traverse great distances in search of Eucalypt woodlands that are in bloom. They are heavily associated with emu-bushes and mistletoes. The field survey, however, failed to detect these species. This deployment also failed to detect their large, cup-shaped nests. Given these considerations, it appears that the subject site would only represent marginal foraging habitat, potentially used during their large-scale migrations. Considering the above, it is unlikely that the proposal would 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.	N/A	i. The 1.29 ha footprint does not contain any native PCT. Therefore, only minor, non-native foraging habitat will be disturbed for this proposal. ii. As all impacts will be confined to an already modified section of the riverbank, and no native PCT will be impacted, no additional fragmentation will be generated by this proposal. iii. Given the small area of impact, and considering that the site is already operating as a hospital within peri-urban habitat, it is unlikely that the subject site is of importance to the long-term survival of the species in the area.	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.
Epthianura albifrons	White-fronted Chat	The White-fronted Chat constructs their cup-shaped nests in dense, low hanging vegetation. The field survey failed to detect any such nest. Although it is possible that the species continues to exist in the general area, it is unlikely - given that the only record from within the 10 km search area dates to 1989. Considering the above, it is unlikely that the proposal would have an	N/A	i. The 1.29 ha footprint does not contain any native PCT. Therefore, only minor, non-native foraging habitat will be disturbed for this proposal. ii. As all impacts will be confined to an already modified section of the riverbank, and no native PCT will be impacted, no additional fragmentation will be generated by this proposal. iii. Given the small area of impact, and considering that the site is already operating as a hospital within peri-urban habitat, it is unlikely that the	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.

		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.		subject site is of importance to the long-term survival of the species in the area.			
Daphoenositta chrysoptera	Varied Sittella	The Varied Sittella suspends its compact, cup-shaped nest, high in the crown of tall Eucalypts. The field survey failed to detect any such nests. Given the lack of native PCTs within the subject site it is unlikely that the proposal would 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.	N/A	i. The 1.29 ha footprint does not contain any native PCT. Therefore, only minor, non-native foraging habitat will be disturbed for this proposal. ii. As all impacts will be confined to an already modified section of the riverbank, and no native PCT will be impacted, no additional fragmentation will be generated by this proposal. iii. Given the small area of impact, and considering that the site is already operating as a hospital within peri-urban habitat, it is unlikely that the subject site is of importance to the long-term survival of the species in the area.	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.
Artamus cyanopterus cyanopterus	Dusky Woodswallow	The Dusky Woodswallow inhabits dry, open eucalypt forests and woodlands. The species constructs their cup-shaped nest in the dense foliage of eucalypts. The field survey, however, failed to detect any such nest - although it is possible that given their concealed placement that they were present and went undetected. There are several records from within the 10 km search area, all from dense riparian vegetation adjacent to the Murray and Darling Rivers. Given the absence of records from modified habitat, this suggests that the subject site would, at best, only represent marginal habitat utilised for transient foraging purposes. Considering the above, it is unlikely that the proposal would have an adverse effect on the life cycle of the species such that a	N/A	i. The 1.29 ha footprint does not contain any native PCT. Therefore, only minor, non-native foraging habitat will be disturbed for this proposal. ii. As all impacts will be confined to an already modified section of the riverbank, and no native PCT will be impacted, no additional fragmentation will be generated by this proposal. iii. Given the small area of impact, and considering that the site is already operating as a hospital within peri-urban habitat, it is unlikely that the subject site is of importance to the long-term survival of the species in the area.	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.

		viable local population of the species is likely to be placed at risk of extinction.					
Antechinomys laniger	Kultarr	The Kultarr shelters by day in small tree-hollows and the burrows of other mammals. As the subject site lacked these necessary habitat features, it is highly unlikely that it represents critical habitat for the species. Moreover, it should be appreciated that the Wentworth area has experienced exceptional rates of marsupial extinction (seven of the 14 (50%) threatened marsupial species are either extinct or extirpated). Although there are several records from within the 10 km search area, the most recent of these dates to 1947 and there have been no further sightings over the following seven-and-a-half decades. Considering the above, it is unlikely that the proposal would 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.	N/A	i. The 1.29 ha footprint does not contain any native PCT or tree hollows. Therefore, only minor, non-native foraging habitat will be disturbed for this proposal. ii. As all impacts will be confined to an already modified section of the riverbank, and no native PCT will be impacted, no additional fragmentation will be generated by this proposal. iii. Given the small area of impact, lack of tree hollows, and considering that the site is already operating as a hospital within peri-urban habitat, it is unlikely that the subject site is of importance to the long-term survival of the species in the area.	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.
Phascolarctos cinereus	Koala	The koala is a highly selective browser. Highly dependent on the presence of their food tree species, the koala's distribution is strongly associated with that of their food. As the subject site corresponds to the Far West and South West koala management area, there was one primary food tree species (*Eucalyptus camaldulensis*) present. Within the 10	N/A	i. The 1.29 ha footprint does not contain any native PCT or koala feed trees. Therefore, no koala habitat will be disturbed for this proposal. ii. As all impacts will be confined to an already modified section of the riverbank, and no native PCT will be impacted, no additional fragmentation will be generated by this proposal. iii. Given the small area of impact, lack of koala feed trees, and considering that the site is already	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.

		km search area there is one koala record, with the most recent (2006) being 5 km to the north. This record is anomalous, given that the site is 160 km outside of the species known distribution. Given the small size of the impact footprint, it is unlikely that a critical component of habitat will be removed by the proposal. Further, the proposal will not disrupt the connectivity of the Murray-Darling riparian vegetation community. Considering the above, it is unlikely that the proposal would 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.		operating as a hospital within peri-urban habitat, it is unlikely that the subject site is of importance to the long-term survival of the species in the area..			

Fisheries Management Act 1994 Assessment of Significance

The threatened species test of significance (or "7-part test") is used to determine if a development or activity is likely to significantly affect threatened species or ecological communities, or their habitats. The test of significance is set out in Division 12 of the *Fisheries Management Act 1994*, and is completed in accordance with the questions set out below:

The following is to be considered for the purposes of determining whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats:

a. in the case of a threatened species, whether the proposed development or activity 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,

b. in the case of an endangered population, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species, that a viable local population of the species placed at risk of extinction,

c. in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity—

(i) 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, or

(ii) is likely to modify the composition of the ecological community substantially and adversely such that its local occurrence is likely to be placed at risk of extinction,

d. in relation to the habitat of a threatened species, population 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 threatened species, population or ecological community in the locality,

e. whether the proposed development or activity is likely to have an adverse effect on any critical habitat (either directly or indirectly),

f. whether the proposed development or activity is consistent with a Priorities Action Statement,

g. whether the proposed development constitutes or is part of a key threatening process.

FM Act Test of Significance for Threatened Aquatic Ecological Communities

Community	a.	b.	c.	d.	e.	f.	g.	Impact significance
Lowland Darling River aquatic ecological community	N/A	N/A	i. Given the small size of the subject site, and considering that no riparian vegetation will be removed, the proposal will not adversely impact the Lowland Darling River aquatic ecological community (providing all mitigation measures in **Table 7-1** are adhered to). As such, the local occurrence of this community would not be threatened with extinction as a result of this proposal. ii. This proposal will not have any direct impacts on this community, as such it will not modify its composition.	i. The proposal will not remove any habitat for this species. The proposal may modify the habitat through indirect impacts due to erosion and runoff, however, these impacts will be mitigated by the measures proposed in **Table 7-1**. ii. The proposal will not fragment or isolate any aquatic habitat. iii. Although the surrounding watercourses are of key importance to this community, the proposed works will not remove, fragment or isolate any habitat for this community. The proposal may modify the habitat via indirect impacts, however, these impacts will be mitigated by the measures proposed in **Table 7-1**.	Although critical habitat has not been identified, the surrounding area would be of immense value to this aquatic community. The proposal may result in minor modifications to the habitat via indirect impacts, however, these impacts will be mitigated by the measures proposed in **Table 7-1**..	The impacts to the riverbank of the Darling River are contrary to the habitat protection provision in the Priorities Action Statement. However, the primary threats to this community are interruptions to fish passage and reductions in flow – neither issue will be exacerbated by this proposal. Considering the small scale of the impact within the context of the community as a whole, this is unlikely to constitute a significant adverse impact.	One KTP may be exacerbated by this proposal: • Degradation of native riparian vegetation along New South Wales watercourses. Although the proposal will not directly impact native riparian vegetation, the scope of works may contribute to destabilisation of the riverbank and exacerbate runoff. However, these impacts will be mitigated by the measures proposed in **Table 7-1**.	No significant impact

FM Act Test of Significance for Threatened Species

Scientific Name	Common Name	a.	b.	c.	d.	e.	f.	g.	Impact significance
Euastacus armatus	Murray Crayfish	The Murray River Crayfish inhabits permanent rivers and large streams where water flows moderately fast. The species burrows in amongst boulders and cobble and uses aquatic debris (such as snags) as cover. They predominantly feed upon organic debris, biofilm, and leaf litter. Mature females mate in May and carry up to 1,500 eggs under their tail through winter, only releasing the juveniles in late spring. This threatened species is mapped to the Murray River. However, it must be noted that there are no records from within the 10 km search area. The nearest record is approximately 200 km away, to the southeast. Given the distance between the subject site and the nearest record, it is highly unlikely that the proposal will 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.	N/A	N/A	i. The proposal will not remove any habitat for this species. The proposal may modify the habitat through indirect impacts due to erosion and runoff, however, these impacts will be mitigated by the measures proposed in **Table 7-1**. ii. The proposal will not fragment or isolate any aquatic habitat. iii. Although the Murray River is of paramount importance to this species, the proposed works will not remove, fragment or isolate any habitat for this species. The proposal may modify the habitat via indirect impacts, however, these impacts will be mitigated by the measures proposed in **Table 7-1**.	Although critical habitat has not been identified, it is highly likely that the Murray River constitutes critical habitat for this species. The proposal may result in minor modifications to the habitat via indirect impacts, however, these impacts will be mitigated by the measures proposed in **Table 7-1**.	Any impacts to riparian vegetation and any introduction of pollutants into the Darling River are contrary to the habitat protection provision in the Priorities Action Statement. The proposal may modify the habitat through indirect impacts due to erosion and runoff, however, these impacts will be mitigated by the measures proposed in **Table 7-1**.	One KTP may be exacerbated by this proposal: • Degradation of native riparian vegetation along New South Wales watercourses. Although the proposal will not directly impact native riparian vegetation, the scope of works may contribute to destabilisation of the riverbank and exacerbate runoff. However, these impacts will be mitigated by the measures proposed in **Table 7-1**.	No significant impact

Scientific Name	Common Name	a.	b.	c.	d.	e.	f.	g.	Impact significance
Bidyanus bidyanus	Silver Perch	Silver Perch have been recorded in a wide range of habitats throughout the Murray-Darling basin (from streams, rivers, lakes, and impoundments). They are opportunistic omnivores, feeding upon insect larvae, molluscs, annelid worms, algae, and vegetative matter. Silver perch undertake long spawning migratory runs upstream in spring in response to increased water levels and temperatures. The Silver Perch has been mapped to both the Murray and Darling Rivers, as well as Tuckers Creek. There have been multiple records within the 10 km search area, the most recent of which is from 2011. The proposal would not interfere with the spawning migration of this species and would not be likely to adversely impact the life cycle of the species such that a viable local population is likely to be placed at risk of extinction.	N/A	N/A	i. The proposal will not remove any habitat for this species. The proposal may modify the habitat through indirect impacts due to erosion and runoff, however, these impacts will be mitigated by the measures proposed in **Table 7-1**. ii. The proposal will not fragment or isolate any aquatic habitat. iii. Although the Murray-Darling Rivers, and Tuckers Creek, are of significant value to this threatened species the proposed works will not remove, fragment or isolate any habitat for this species. The proposal may modify the habitat via indirect impacts, however, these impacts will be mitigated by the measures proposed in **Table 7-1**.	Although critical habitat has not been identified, it is highly likely that the Murray-Darling Rivers constitute critical habitat for this species. The proposal may result in minor modifications to the habitat via indirect impacts, however, these impacts will be mitigated by the measures proposed in **Table 7-1**.	Coldwater pollution and barriers to fish passage are two of the primary issues identified in the Priorities Action Statement for this species – this proposal would not exacerbate either issue.	One KTP may be exacerbated by this proposal: • Degradation of native riparian vegetation along New South Wales watercourses. Although the proposal will not directly impact native riparian vegetation, the scope of works may contribute to destabilisation of the riverbank and exacerbate runoff. However, these impacts will be mitigated by the measures proposed in **Table 7-1**.	No significant impact

FM Act Test of Significance for Threatened Populations

Scientific Name	Common Name	a.	b.	c.	d.	e.	f.	g.	Impact significance
Tandanus tandanus	Eel-tailed Catfish in the Murray-Darling Basin	N/A	The threatened Murray-Darling Basin population of the Eel-tailed Catfish inhabits rivers, creeks, lakes, billabongs, and lagoons, typically with clear, sluggish, or still water. This threatened population is mapped to both the Murray and Darling Rivers. There have been multiple records within the 10 km search area, the most recent of which is from 2011. One of the key threats to the life cycle of this species is the siltation of their spawning sites. Although minor runoff and sedimentation may occur as a result of the proposal, these impacts will be mitigated by the measures proposed in **Table 7-1**. Additionally, the contribution of this project overall to the siltation of the Darling would be negligible in comparison to surrounding major land uses such as agriculture. The proposal would not be likely to adversely impact the life cycle of the species such that a viable local population is likely to be placed at risk of extinction.	N/A	i. The proposal will not remove any habitat for this species. The proposal may modify the habitat through indirect impacts due to erosion and runoff, however, these impacts will be mitigated by the measures proposed in **Table 7-1**. ii. The proposal will not fragment or isolate any aquatic habitat. iii. Although the Murray-Darling Rivers are of significant value to this threatened species the proposed works will not remove, fragment or isolate any habitat for this species. The proposal may modify the habitat via indirect impacts, however, these impacts will be mitigated by the measures proposed in **Table 7-1**.	Although critical habitat has not been identified, it is highly likely that the Murray-Darling Rivers constitute critical habitat for this species. The proposal may result in minor modifications to the habitat via indirect impacts, however, these impacts will be mitigated by the measures proposed in **Table 7-1**.	Any impacts to riparian vegetation and any introduction of pollutants into the Darling River are contrary to the habitat protection provision in the Priorities Action Statement. The proposal may modify the habitat through indirect impacts due to erosion and runoff, however, these impacts will be mitigated by the measures proposed in **Table 7-1**.	One KTP may be exacerbated by this proposal: • Degradation of native riparian vegetation along New South Wales watercourses. Although the proposal will not directly impact native riparian vegetation, the scope of works may contribute to destabilisation of the riverbank and exacerbate runoff. However, these impacts will be mitigated by the measures proposed in **Table 7-1**.	No significant impact

APPENDIX E – MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE

The EPBC Act protects nationally and internationally important flora, fauna, ecological communities, and heritage places, which are defined in the EPBC Act as matters of national environmental significance. The EPBC Act policy Matters of National Environmental Significance: Significant Impact Guidelines 1.1 (DoE, 2013) forms the basis of determining if impact to protected matters is significant.

The EPBC Act protected matters search has identified three wetlands of international importance, three TECs, 27 threatened species and 11 migratory species that could possibly occur in the study area.

The following tables give an overview of the assessments of those threatened entities that could occur within the subject site and shows that the proposed activity:

1. Is not likely to have a significant impact on a matter of national environmental significance. The matters of national environmental significance are:
   i. World heritage properties.
   ii. National heritage places.
   iii. Wetlands of international importance.
   iv. Threatened species and ecological communities.
   v. Migratory species.
   vi. Commonwealth marine areas.
   vii. The Great Barrier Reef Marine Park. And;
   viii. Nuclear actions (including uranium mines).
   ix. A water resource, in relation to coal seam gas development and large coal mining development.
2. Is not likely to have a significant impact on the environment in general (for actions by Commonwealth agencies or actions on Commonwealth land) or the environment on Commonwealth land (for actions outside Commonwealth land).

Notes: Important Population as determined by the Environment Protection and Biodiversity Conservation Act 1999, is one that for a vulnerable species:

a) is likely to be key source populations either for breeding or dispersal

b) is likely to be necessary for maintaining genetic diversity

c) is at or near the limit of the species range.

A ‘significant impact’ is an impact which is important, notable, or of consequence, having regard to its context or intensity (DoE, 2013).

Wetlands of International Importance

Name	Proximity	Assessment of significance required (Yes / No)
Banrock station wetland complex	100 - 150 km upstream	**No, the proposal does not occur close to the wetland.**
Riverland	50 - 100 km upstream	**No, the proposal does not occur close to the wetland.**
The Coorong, and Lakes Alexandrina and Albert Wetland	200 - 300 km upstream	**No, the proposal does not occur close to the wetland.**

Listed Threatened Ecological Communities

Name	Status	Assessment of significance required (Yes / No)
Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregion	Endangered	**No, the community does not occur at the subject site**
Coolibah – Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregion	Endangered	**No, the community does not occur at the subject site**
Mallee Bird Community of the Murray Darling Depression Bioregion	Endangered	**No, the community does not occur at the subject site**

EPBC Act-Listed Critically Endangered and Endangered Species

Australasian Bittern (*Botaurus poiciloptilus*)	
Significant Impact Guideline	**Assessment**
Lead to a long-term decrease in the size of a population	There is a record of this species from within 200 m of the subject site (from 2010). There will be no direct impact on any foraging or breeding habitat for this species. As the development fronts the Darling River, ~120 m of riparian vegetation will be indirectly impacted. Specifically, indirect impacts (such as noise and light) resulting from construction and operation may discourage the Australasian Bittern from using this habitat. However, mitigation measures will reduce this impact. Given the small area of impact to potential connective habitat, it is very unlikely that the proposal will result in a long-term reduction in the size of the species population.
Reduce the area of occupancy of the species	The Australasian Bittern may avoid the ~120 m of river frontage that this project spans – however, the site is already an operational hospital.
Fragment an existing population into two or more populations	This proposal will not result in any additional fragmentation for this species.
Adversely affect habitat critical to the survival of a species	Neither critical breeding nor foraging habitat will be impacted by the proposal.
Disrupt the breeding cycle of a population	Australasian Bitterns require the still-water of wetlands for the construction of their nests, which are floating platform-like structures. As this feature was absent from the subject site, the project would not disrupt the breeding cycle of this population.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposal will not destroy, remove, or isolate any habitat. The proposal may indirectly modify ~120 m of habitat for this species due to impacts from noise, vibration, and light, however this impact is very unlikely to cause the species to decline at a regional scale.
Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat	There is the potential for works to introduce invasive species to the proposal site or exacerbate existing infestations of significant invasive species. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Introduce disease that may cause the species to decline	Machinery used on site can potentially act as a transport for biosecurity risks. Environmental safeguards for the management of biosecurity risks would be implemented (see **Section 7**).
Interfere with the recovery of the species.	Drainage of wetlands; reduction in water quality; predation by introduced species; inappropriate fire and grazing regimes; and changes in seasonality of rainfall from anthropogenic climate change are the main threats to this species. The proposal alone is unlikely to directly interfere with the recovery of the species within the region.
Conclusion	**Non-significant impact**

Koala (*Phascolarctos cinereus*)	
Significant Impact Guideline	**Assessment**
Lead to a long-term decrease in the size of a population	The 1.29 ha footprint does not contain any native PCT or koala feed trees. Therefore, no koala habitat will be disturbed for this proposal. The koala is highly dependent on their feed tree species, of which, one was present (*Eucalyptus camaldulensis*) just outside of the subject site. There is one record within 10 km of the subject site. This record is significantly outside of the known/predicted range of the koala (by 160 km) – the same distance to the nearest koala priority management area. While it is unlikely for these records to be inaccurate, given the koalas' reputation, it is unknown how significant these records are (some of the most western in NSW). It is possible that koalas have been able to access the area by utilising the corridor of River Red Gums that flank the Murray-Darling rivers. If the koalas are using the subject site as part of the greater vegetation, then they will be able to continue doing so following development (as no fragmentation is expected). As such, the proposal will not lead to a long-term decrease in the size of its population.
Reduce the area of occupancy of the species	As indicated above, the subject site is 160 km west of the edge of the koalas' known geographic distribution. As such, the species' current area of occupancy will not likely be significantly reduced.
Fragment an existing population into two or more populations	This proposal will not result in any additional fragmentation for this species.
Adversely affect habitat critical to the survival of a species	The habitat within the subject site is very unlikely to be critical habitat for the species, although they may be using the subject site as a corridor for movement. Such movement will be able to continue following development.
Disrupt the breeding cycle of a population	Since no permanent population is believed to occur within the area, this proposal will not disrupt the breeding cycle for any population of this species.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposal will not remove or modify any known habitat for the species. The proposal will not significantly exacerbate existing fragmentation for this species. Any reduction and fragmentation of available habitat is unlikely to cause the species to decline at a regional scale.
Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat	There is the potential for works to introduce invasive species to the proposal site or exacerbate existing infestations of significant invasive species. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Introduce disease that may cause the species to decline	Machinery used on site can potentially act as a transport for biosecurity risks. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Interfere with the recovery of the species.	Habitat loss, modification, and fragmentation; vehicular strikes; predation by dogs; koala disease; heat stress; anthropogenic climate change; and inadequate support for fauna rehabilitation are the main threats to this species. The proposal is unlikely to directly interfere with the recovery of the species within the region.
Conclusion	**Non-significant impact**

EPBC Act-listed Vulnerable Species

Murray Crayfish (*Euastacus armatus*)	
Significant Impact Guideline	**Assessment**
Lead to a long-term decrease in the size of an important population of a species	This proposal will not impact any known habitat for the species. There are no records within the 10 km search area. The nearest record is approximately 200 km to the southeast. As such, it is very unlikely that the proposal will result in a long-term reduction in the size of the species population.
Reduce the area of occupancy of an important population	The potential area of occupancy for the species will not be reduced by this proposal.
Fragment an existing important population into two or more populations	This proposal will not result in any additional fragmentation for this species.
Adversely affect habitat critical to the survival of a species	No critical habitat will be impacted by this proposal.
Disrupt the breeding cycle of an important population	The Murray River Crayfish breed in permanent rivers and large streams (where water flows moderately fast). No breeding habitat will be impacted.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposed works will not remove, fragment or isolate any habitat for this species. The proposal may modify the habitat via indirect impacts, however, these impacts will be mitigated by the measures proposed in **Table 7-1.** The proposal is unlikely to modify habitat to the extent that the species is likely to decline at a regional scale.
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	There is the potential for works to introduce invasive species to the proposal site or exacerbate existing infestations of significant invasive species. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Introduce disease that may cause the species to decline	Machinery used on site can potentially act as a transport for biosecurity risks. Environmental safeguards for the management of biosecurity risks would be implemented (see **Section 7**).
Interfere with the recovery of the species.	Overfishing is the primary threat to this species. The proposal is unlikely to directly interfere with the recovery of the species within the region.
Conclusion	**Non-significant impact**

Murray Cod (*Maccullochella peeli*)	
Significant Impact Guideline	**Assessment**
Lead to a long-term decrease in the size of an important population of a species	This proposal will not directly impact any known habitat for the species. There have been multiple records within the 10 km search area, the most recent of which is from 2011. However, the proposal does not intend to remove/modify aquatic or riverbank vegetation, nor influence aquatic habitat features. If the proponent is able to sufficiently mitigate the potential for sediment runoff, by adhering to the recommendations in **Section 7**, then this proposal will not lead to a long-term decrease in the size of any important population of this species.
Reduce the area of occupancy of an important population	The potential area of occupancy for the species will not be reduced by this proposal.
Fragment an existing important population into two or more populations	This proposal will not result in any additional fragmentation for this species.
Adversely affect habitat critical to the survival of a species	No critical habitat will be impacted by this proposal.
Disrupt the breeding cycle of an important population	The breeding cycle of this species will not be impacted by the proposal.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposed works will not remove, fragment or isolate any habitat for this species. The proposal may modify the habitat via indirect impacts, however, these impacts will be mitigated by the measures proposed in **Table 7-1.** The proposal is unlikely to modify habitat to the extent that the species is likely to decline at a regional scale.
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	There is the potential for works to introduce invasive species to the proposal site or exacerbate existing infestations of significant invasive species. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Introduce disease that may cause the species to decline	Machinery used on site can potentially act as a transport for biosecurity risks. Environmental safeguards for the management of biosecurity risks would be implemented (see **Section 7**).
Interfere with the recovery of the species.	Overfishing; blackwater events; physical barriers to fish movement; habitat degradation; and introduced species (particularly European Carp) are the primary threat to this species. The proposal is unlikely to directly interfere with the recovery of the species within the region.
Conclusion	**Non-significant impact**

EPBC Act-Listed Migratory Species

Long-toed Stint (*Calidris subminuta*)	
Significant Impact Guideline	**Assessment**
Substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species	As the species is very widely distributed, and as the subject site contains only small areas of potential foraging habitat for this species it is unlikely to constitute important habitat for this species.
Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species	It is unlikely that the proposal site constitutes important habitat for this species. While there is potential for works to introduce invasive species to the proposal site or exacerbate existing infestations of significant invasive species, environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species.	It is unlikely that an ecologically significant proportion of the population occurs within or is dependent on the proposal site. The proposal is unlikely to seriously disrupt the lifecycle for this species.
Conclusion	**Non-significant impact**

Gull-billed Tern (*Gelochelidon nilotica*)	
Significant Impact Guideline	**Assessment**
Substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species	As the species is very widely distributed, and as the subject site contains only small areas of potential foraging habitat for this species it is unlikely to constitute important habitat for this species.
Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species	It is unlikely that the proposal site constitutes important habitat for this species. While there is potential for works to introduce invasive species to the proposal site or exacerbate existing infestations of significant invasive species, environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species.	It is unlikely that an ecologically significant proportion of the population occurs within or is dependent on the proposal site. The proposal is unlikely to seriously disrupt the lifecycle for this species.
Conclusion	**Non-significant impact**

Caspian Tern (*Hydroprogne caspia*)	
Significant Impact Guideline	**Assessment**
Substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species	As the species is very widely distributed, and as the subject site contains only small areas of potential foraging habitat for this species it is unlikely to constitute important habitat for this species.
Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species	It is unlikely that the proposal site constitutes important habitat for this species. While there is potential for works to introduce invasive species to the proposal site or exacerbate existing infestations of significant invasive species, environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species.	It is unlikely that an ecologically significant proportion of the population occurs within or is dependent on the proposal site. The proposal is unlikely to seriously disrupt the lifecycle for this species.
Conclusion	**Non-significant impact**

APPENDIX F – KEY THREATENING PROCESSES

Key Threatening Processes (KTP) predicted as acting on the study area that may be exacerbated by the proposal.

Class	Name	NSW status	Comm. status	Likelihood of Occurrence	Exacerbated by Proposal?
Threat	Aggressive exclusion of birds from woodland and forest habitat by abundant Noisy Miners *Manorina melanocephala.*	KTP	KTP	**Likely**	**Potentially** Modification of vegetation structure can encourage Noisy Miners and they were detected during the field survey.
Threat	Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands	KTP		**Unlikely**	**Potentially** Some minor indirect impacts to waterways may result from works associated with the proposal, however they are unlikely to alter the natural flow regimes of these major watercourses.
Threat	Anthropogenic Climate Change	KTP	KTP	**Very Likely**	**Yes** Some unavoidable emissions will occur from construction machinery.
Threat	Bushrock removal	KTP		**Unlikely**	**Potentially** Surface rock was not detected during the field survey. However, if during development it is detected, this rock should be relocated nearby, rather than removed, to avoid exacerbating this KTP.
Threat	Clearing of native vegetation	KTP	KTP	**Very Likely**	**Yes** Up to 0.053 ha of native vegetation will be cleared by the current proposal, however, it does not conform to a PCT.
Threat	Competition and grazing by the feral European Rabbit, *Oryctolagus cuniculus*	KTP	KTP	**Likely**	**Potentially** The spread of grassy weeds that may result from these works could encourage rabbit activity.
Threat	Competition and habitat degradation by Feral Goats, *Capra hircus* Linnaeus 1758	KTP	KTP	**Unlikely**	**No** The proposal does not include any activities that would exacerbate this threat.
Threat	Competition from feral honey bees, *Apis mellifera*	KTP		**Unlikely**	**No** The loss of tree hollows exacerbates this threat. As no hollow-bearing trees were present, this KTP will not be exacerbated.
Threat	Forest eucalypt dieback associated with over-abundant psyllids and Bell Miners	KTP		**Unlikely**	**No** The proposal does not include any activities that would

Class	Name	NSW status	Comm. status	Likelihood of Occurrence	Exacerbated by Proposal?
					exacerbate this threat
Threat	Herbivory and environmental degradation caused by feral deer	KTP		**Unlikely**	**No** The proposed development will not increase occupancy by this species.
Threat	High frequency fire resulting in the disruption of life cycle processes in plants and animals and loss of vegetation structure and composition	KTP		**Unlikely**	**No** Fire frequency will not increase due to activities undertaken as part of the proposal.
Threat	Importation of Red Fire Ants *Solenopsis invicta*	KTP	KTP	**Unlikely**	**Potentially** Machinery used on site can potentially act as a transport for biosecurity risks.
Threat	Infection by *Psittacine Circoviral* (beak and feather) Disease affecting endangered psittacine species and populations	KTP	KTP	**Unlikely**	**No** The loss of tree hollows can exacerbate this threat. As no hollow-bearing trees were present, this KTP will not be exacerbated.
Threat	Infection of frogs by amphibian chytrid causing the disease chytridiomycosis	KTP	KTP	**Unlikely**	**Potentially** Machinery used on site can potentially act as a transport for biosecurity risks.
Threat	Infection of native plants by *Phytophthora cinnamomi*	KTP	KTP	**Unlikely**	**Potentially** Machinery used on site can potentially act as a transport for biosecurity risks.
Threat	Introduction and establishment of Exotic Rust Fungi of the order Pucciniales pathogenic on plants of the family Myrtaceae	KTP		**Unlikely**	**Potentially** Machinery used on site can potentially act as a transport for biosecurity risks.
Threat	Introduction of the Large Earth Bumblebee *Bombus terrestris*	KTP		**Unlikely**	**No** This species only occurs in Tasmania.
Threat	Invasion and establishment of exotic vines and scramblers	KTP		**Unlikely**	**Potentially** Machinery used on site can potentially act as a transport for biosecurity risks.
Threat	Invasion and establishment of Scotch Broom (*Cytisus scoparius*)	KTP		**Unlikely**	**Potentially** Machinery used on site can potentially act as a transport for biosecurity risks.
Threat	Invasion and establishment of the Cane Toad (*Bufo marinus*)	KTP	KTP	**Unlikely**	**Potentially** Machinery used on site can potentially act as a transport for biosecurity risks.

Class	Name	NSW status	Comm. status	Likelihood of Occurrence	Exacerbated by Proposal?
Threat	Invasion, establishment and spread of Lantana (*Lantana camara*)	KTP		**Unlikely**	**Potentially** Machinery used on site can potentially act as a transport for biosecurity risks.
Threat	Invasion of native plant communities by African Olive *Olea europaea* subsp. *cuspidata*	KTP		**Likely**	**Potentially** Machinery used on site can potentially act as a transport for biosecurity risks.
Threat	Invasion of native plant communities by *Chrysanthemoides monilifera*	KTP		**Unlikely**	**Potentially** Machinery used on site can potentially act as a transport for biosecurity risks.
Threat	Invasion of native plant communities by exotic perennial grasses	KTP		**Very likely**	**Yes** Exotic perennial grasses are already established at the site, increased disturbance could increase their spread.
Threat	Invasion of the Yellow Crazy Ant, *Anoplolepis gracilipes* (Fr. Smith) into NSW	KTP		**Unlikely**	**Potentially** Machinery used on site can potentially act as a transport for biosecurity risks.
Threat	Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants	KTP	KTP	**Unlikely**	**Potentially** Machinery used on site can potentially act as a transport for biosecurity risks.
Threat	Loss of Hollow-bearing Trees	KTP		**Unlikely**	**No** As no hollow-bearing trees were present within the subject site, this KTP will not be exacerbated.
Threat	Loss or degradation (or both) of sites used for hill-topping by butterflies	KTP		**Unlikely**	**No** No sites known or suspected to be present.
Threat	Predation and hybridisation by Feral Dogs, *Canis lupus familiaris*	KTP		**Unlikely**	**No** The proposed works will not increase the likelihood of this threat.
Threat	Predation by *Gambusia holbrooki* Girard, 1859 (Plague Minnow or Mosquito Fish)	KTP		**Unlikely**	**No** The proposed works will not increase the likelihood of this threat.
Threat	Predation by the European Red Fox (*Vulpes vulpes)*	KTP	KTP	**Unlikely**	**No** Ease of access for feral foxes will not be increased by the proposal
Threat	Predation by the Feral Cat *Felis catus*	KTP	KTP	**Unlikely**	**No** Ease of access for feral cats will not be increased by the proposal

Class	Name	NSW status	Comm. status	Likelihood of Occurrence	Exacerbated by Proposal?
Threat	Predation, habitat degradation, competition and disease transmission by Feral Pigs	KTP	KTP	**Unlikely**	**No** Ease of access for feral pigs will not be increased by the proposal
Threat	Removal of dead wood and dead trees	KTP		**Likely**	**Potentially** Fallen timber was detected during the field survey – it should be relocated nearby, rather than removed, to avoid exacerbating this KTP.