

Technical Memorandum

1. Introduction

GHD was engaged by the MFS in 2023 to undertake a Detailed Site Investigation (DSI) at the Metropolitan Fire Services (MFS) Oakden Fire Station. The DSI identified concentrations of Per and Polyfluoroalkyl Substance (PFAS) in groundwater that were above the adopted ecological criteria. It was also determined that the majority of stormwater from the site flows into an underground drain connected to the local stormwater system, this stormwater system then discharges to Dry Creek. To support development of the project human health and ecological risk assessment (HHERA), an ecological values assessment was undertaken by GHD.

PFAS is known to bioaccumulate and biomagnify in the food web. In this context, the objective of the assessment was to identify the species within the investigation area that may be at risk from PFAS exposure (i.e. primary and/or secondary consumers) and ecological values that need to be protected. The key findings on these ecological values found within the investigation area is summarised in this technical memo. For clarity, the investigation area comprises the following

- MFS Oakden Fire Station (Zone 1)
- Oakden Rise Redevelopment Area (Zone's 2 and 3) and
- the Dry Creek Catchment Area (Zone 4)

1.1 Purpose of this Memorandum

The purpose of this memorandum is to identify known and potentially sensitive environmental receptors within the investigation area. Aligning with the intent of the conceptual site model (CSM) and the National Environmental Protection Measures (NEPM 1999), the focus of the study was to identify the lower and upper trophic level aquatic species and terrestrial secondary consumers that may be present in the investigation area. The scope, method and outcomes are discussed in Sections 1.2 to 5.

1.2 Scope and limitations

1.2.1 Scope

The following scope of works was undertaken to develop this assessment:

- A 1.5-day ecological survey of the drainage lines downstream of the site and Dry Creek (Zone 4) to evaluate the structure and function of the ecological communities of these environments.
- Identify known and potential ecological values within the investigation area (Zone 1 to 4), including (flora, fauna, habitat, and condition assessments) using desktop Protected Matters Search Tool (utilising 5km search radius around the investigation area) and state level NatureMaps search (utilising 1km search radius around the investigation area).
- Identify the conservation significance of the area, i.e. threatened listed species and Threatened Ecological Communities (TECs) under the EPBC Act and NPW Act.
- Inform HHERA concerning the aquatic and terrestrial ecological receptors present within the study site area.

1.2.2 Limitations

This technical memorandum has been prepared by GHD for South Australian Metropolitan Fire Service. It is not prepared as, and is not represented to be, a deliverable suitable for reliance by any person for any purpose. It is

not intended for circulation or incorporation into other documents. The matters discussed in this memorandum are limited to those specifically detailed in the memorandum and are subject to any limitations or assumptions specially set out.

GHD has prepared this report on the basis of information provided by South Australian Metropolitan Fire Service and others who provided information to GHD (including Government authorities)], which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

The opinions, conclusions and any recommendations in this report are based on information obtained from, and testing undertaken at or in connection with, specific sample points. Site conditions at other parts of the site may be different from the site conditions found at the specific sample points.

Investigations undertaken in respect of this report are constrained by the site conditions, such as the location of buildings, services, and vegetation. As a result, not all relevant site features and conditions may have been identified in this report.

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

1.2.2.1 Ecological Limitations

Field investigation effort was undertaken with a 1.5-day survey “snapshot” of the Dry Creek Zone 4 area only. The survey was done in the month of April during the Summer-Autumn period. This is not the optimal time of the year to capture representative ecological values of the ecological communities, threatened species and habitat values. Furthermore, survey effort did not include any dedicated fauna or flora surveys. Opportunistic sightings were recorded whilst undertaking habitat assessments. No field survey was undertaken within the Oakden-rise development area Zones 1, 2 and 3. However, desktop assessments for ecological values were undertaken for these zones (refer to Section 1.2.1 and 2.1.1). Data collected and presented indicates conditions at the time of the field investigations.

1.2.2.2 Aquatic Macroinvertebrate Limitations

Sampling for this assessment was undertaken as a single snapshot after a Summer Dry. This period is likely to be outside the optimal health of the Dry Creek Zone waterway as the conditions will fluctuate between wet and dry periods. Wet periods are typified by increased water flow which can flush the system and can lead to an initial spike in pollution levels followed by reduced pollution levels as water makes its way to the ocean. Concomitantly, dry periods with reduced flow and increased likelihood of temporal isolated bodies of water can lead to greater accumulation of pollutants. This in turn can drive variation in the waterway's health indicator scores. The optimal sampling period is during the Seasons of Winter-Spring when a more consistent waterway is present. This is opposed to a ‘rain flush event’ after a 2-month dry period, which are the pre-conditions under which the snapshot sampling was conducted for this assessment. As such, the sampling snapshot acknowledges these limitations and provides a short temporal and spatial view of the waterway's pollution score during the period of sampling. A spatially separated reference site was utilised for some comparisons to replicate samples at the site of interest.

Given the taxonomic resolution achieved, a rapid assessment was undertaken which defines the SIGNAL score to the order level of taxa identified. This approach is based on prior studies which apply this method to rapid assessments, which is considered sufficient to inform the SIGNAL score. Though it is important to mention that presence or absence of taxa at each sampling location does not capture the responses to pollutants and water quality at the species level.

1.3 Regulatory Context

In South Australia, Federal and State Government legislation that protects ecological communities, flora, and fauna are summarised below. This provides the regulatory context governing the ecological values assessment.

Commonwealth

Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)* as it relates to biodiversity values, includes listings of nationally protected animals, plants, and ecological communities. Biodiversity values relevant to the Strategic Assessment Area include matters of national environmental significance, which are:

- Vulnerable, Endangered and Critically Endangered listed threatened plant and animal species.
- Endangered and Critically Endangered Threatened ecological communities.
- Listed migratory species.

In addition to the matters of national environmental significance, the EPBC Act also includes lists of aquatic and terrestrial species that have protections under the Act, as well as places that have natural heritage values that relate to or support biodiversity.

National Environment Protection (Assessment of Site Contamination) Measure 1999.

The *National Environment Protection (Assessment of Site Contamination) Measure 1999 (NEPM)* provides adequate protection of human health and the environment by establishing a nationally consistent approach to the assessment of site contamination.

South Australia

National Parks and Wildlife Act 1972

The National Parks and Wildlife Act 1972 (NP&W Act) establishes and manages reserves for public benefit and formal legal recognition for threatened plant and animal species in South Australia. Threatened species are listed in the NP&W Act as Endangered (E), Vulnerable (V) or rare (R).

Landscape South Australia Act 2019

A list of plants and animals has been declared under the *Landscape South Australia Act 2019*. The list, which was included in the South Australian Government Gazette (see SA Government 2020 pp. 4002-4038), identifies classes of plants and animals, the provisions of the Act which apply to the class, and the area of the state in which the declaration applies.

The Native Vegetation Act 1991

– The *Native Vegetation Act 1991* (the Act) and the *Native Vegetation Regulations 2017* (the Regulations) relate to managing native vegetation on private and public land in South Australia.

– The Act provides protection for native vegetation and sets out a process for applying to clear vegetation. It ensures that areas of high conservation value are protected, and that clearances are subject to a thorough assessment process. The Native Vegetation Council (NVC) provides advice and decides on the removal and re-establishment of native vegetation in line with the Act.

The Regulations allow certain activities, “Prescribed circumstances in which native vegetation may be cleared”, to be exempt from the Act. The types of activities that are exempt are set out in the Regulations. The Guide to the *Native Vegetation Regulations 2017*, which was produced by the department and the Native Vegetation Council, clarifies what is and isn’t permissible in relation to clearing native vegetation under the Regulations.

Environment Protection (Water Quality) Policy 2015

The Environmental Protection Act 1993 (EP Act) provides for the protection of the environment and provides for the economic, social, and physical well-being of communities. It establishes the role of the Environment Protection Authority and defines its functions and powers. The Environment Protection (Water Quality) Policy 2015 provides specific frameworks and regulations for managing protection of South Australian waters.

2. Method

2.1 Desktop Assessment Method

2.1.1 Data Sources

GHD undertook a desktop assessment of available databases and spatial information to understand the ecological receptors relevant to the investigation areas. These areas are the MFS Oakden Fire Station (Zone 1), Oakden Rise Redevelopment Area (Zone's 2 and 3) and the Dry Creek Catchment Area (Zone 4) and the surrounds. The areas are illustrated in Figure 2.

Table 1 presents the published information sources utilised in this assessment.

Table 1 Desktop information sources

Source	Search detail	Data obtained
Atlas of Living Australia (ALA)	<ul style="list-style-type: none"> - Desktop assessment area (10 km buffer zone). - Search extracted 13 March 2024 	<ul style="list-style-type: none"> - Flora records - Fauna records
Birdlife Australia	<ul style="list-style-type: none"> - Desktop assessment area. - Search extracted 16 April 2024 	<ul style="list-style-type: none"> - Avian Fauna records (obtained adjacent, downstream, and upstream of site)
eBirdData	<ul style="list-style-type: none"> - Desktop assessment area. - Search extracted 18 March 2024 	<ul style="list-style-type: none"> - Avian Fauna records (obtained adjacent, downstream, and upstream of site)
EPBC Act Protected Matters Search Tool (PMST) (DCCEEW, 2024)	<ul style="list-style-type: none"> - Desktop assessment area (5 km buffer zone). - Search extracted 18 March 2024 	<ul style="list-style-type: none"> - EPBC Act listed threatened and migratory fauna species. - EPBC Act listed threatened flora species.
FrogWatch SA	<ul style="list-style-type: none"> - Desktop assessment area. - Search extracted 18 March 2024 	<ul style="list-style-type: none"> - Amphibian, specifically frog (Anuda) Fauna records (obtained adjacent, downstream, and upstream of site)
Government of South Australia (Department for Environment and Water) NatureMaps, from the Enviro Data SA website	<ul style="list-style-type: none"> - Desktop assessment area (5 km buffer zone). - Search extracted 18 March 2024 	<ul style="list-style-type: none"> - Flora records - Fauna records

As part of the databases searches, a 5 km buffer area was adopted around the investigation area (refer to Appendix B) based on the following reasons:

- The search area is significantly wider than the investigation area. This area includes all sampling locations to account for local ecological receptor movements.

The search area considers both resident species and those that may migrate through or use the investigation area seasonally.

Based on available data, the potential extent of PFAS contamination in soil, surface water and groundwater, is largely included within the investigation area.

The datasets extracted from the online databases including a map showing the location of threatened species are provided in Appendix B and Appendix C.

2.1.2 Literature Review

In parallel with the database searches in Section 2.1.1, previous ecological assessments relevant to the investigation area were reviewed as summarised in Table 2 below.

Table 2 Documents reviewed

Purpose of assessment	Document	Reference
Undertaken to identify and assess all trees within Oakden Rise Development Site	Tree Assessment	Project Green. Villawood. (2023).
Monitoring and assessment of aquatic ecosystem condition as part of an ongoing program	Dry Creek, Valley View - 2008 Aquatic Ecosystem Condition Report.	SA EPA. (2008a, March 27)
Monitoring and assessment of aquatic ecosystem condition as part of an ongoing program	Dry Creek, Wynn Vale - 2008 Aquatic Ecosystem Condition Report.	SA EPA. (2008b, March 27).
Outlines biodiversity assets and existing threatening processes to provide a practical resource for community and land managers	Dry Creek Management Plan	EBS Ecology. (2011).

2.2 Field Assessment Method

Field assessments were conducted over 1.5 days within the Zone 4 investigation area by a suitably qualified and experienced ecologist Figure 2. This assessment was undertaken to collect opportunistic observations and identify ecological sensitive receivers i.e. (native fauna and flora, habitat condition, threatened ecological values and aquatic environment health).

This field assessment method undertook the following activities:

1. High-level habitat condition assessment for vegetation, fauna habitat and conservation significance.
2. Where encountered during the incidental surveys only, identify flora and fauna species or communities listed under the EPBC Act and NP&W Act.
3. Assessing the habitat values of each vegetation community, considering the complexity and diversity of microhabitats and the presence of foraging, breeding, roosting, and nesting resources.
4. Collecting an inventory of incidental observations of native and non-native flora and fauna species encountered during the field assessment and their conservation status and origin.
5. Assessing the likelihood of threatened flora, fauna, and migratory species to occur within the investigation area. Likelihood was evaluated based on suitable habitat identified during the field assessment and the number and year of previous database records within the desktop study area.
6. Collecting general site data and photographs of ecological values and threatening processes.
7. Establishment of a reference site for comparison against the potentially impacted PFAS area in Dry Creek.
8. Survey techniques for the above fauna species included a search for reptiles, mammals, and amphibians in suitable microhabitats beneath logs and rocks, amongst leaf litter and vegetation. These were standardized for 20 minutes at each habitat assessment site.

Aquatic Assessment Methods

Specific aquatic ecological assessments for the Dry Creek system included:

1. Identifying key aquatic habitat features and condition assessments.
2. Identifying incidental observations of aquatic species types of present, i.e. (fish, amphibians, water birds through visual site walkover observations of creek lines, waterbodies and wetland environments.
3. Aquatic macroinvertebrate assessment per Department of Environment and Water 'water-watch' criteria (DEW 2009), which was undertaken using the following:

- a. Triangular micro-fibre (mesh dimension 0.3 x 0.9 mm) aquatic macroinvertebrate net (net dimension 30 cm x 31.5 cm x 54 cm) were used.
 - b. At each sampling location (Figure 1), 10 x two metre strokes were undertaken with the net fully submerged in water.
 - c. Aquatic macroinvertebrate nets were then dipped into a distilled water tray, with the net gently turned inside out within the water to ensure all specimens were removed from the net. The net was decontaminated with demineralised water following this step to prevent cross-contamination.
 - d. Concentrated samples were then collected from the distilled water tray and placed on a petri dish for order level identification under a microscope using a x 40 magnification lens, which was repeated until all taxa had been identified.
 - e. Identification of taxa was assisted utilising aquatic macroinvertebrate identification publications and reference guides (Hawking and Smith, 1997; Gooderham and Tsyrlin, 2002).
4. Assess temporary or permanent water bodies, creek lines and other aquatic habitat landscape features within the study site area.

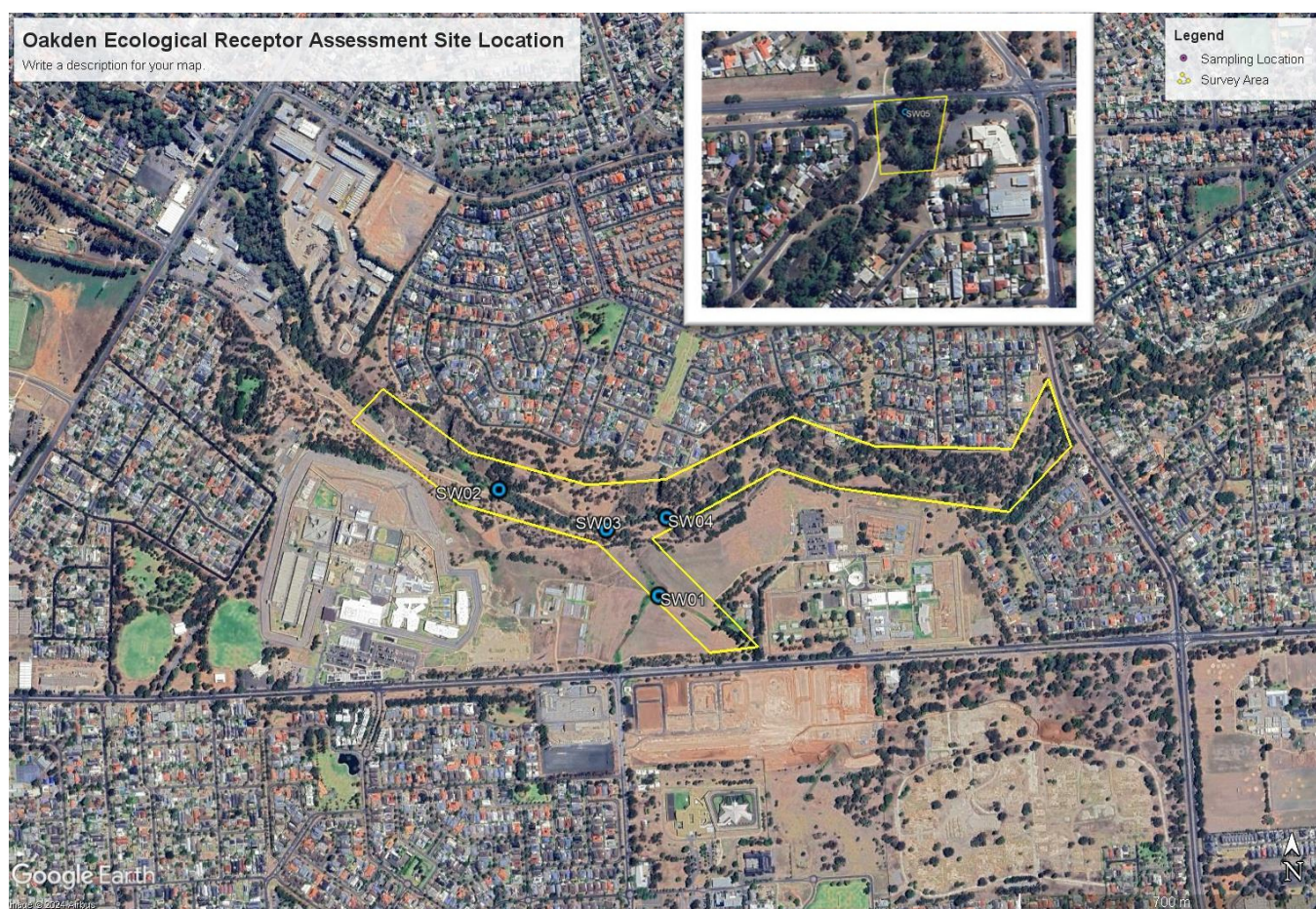


Figure 1 Map depicting sampling locations and field area with upstream sampling location shown (inset)

2.3 Likelihood of occurrence assessment

To assess likelihood of occurrence, the criteria in Table 3 were applied to each of the threatened and migratory species listed in the PMST report in Appendix B. The full likelihood of occurrence assessment is provided in Appendix A.

The likelihood of occurrence criteria are based on:

- Field survey results.
- Species records for the investigation area and desktop search area.

- A review of the species distribution and habitat requirements, based upon available documentation (e.g. species recovery plans, conservation advice).
- Consideration of habitats in the investigation area, habitat connectivity in the landscape, and species relative mobility.
- A likelihood category was applied where there was uncertainty related to survey limitations such as:
 - Survey timing (i.e. seasonality) for migratory or nomadic fauna species or cryptic flora species.
 - Reduced detectability of species.
 - Length of survey.
 - Methods employed for survey.
 - Weather conditions.
- Investigation area location i.e. remote locations that may not have been surveyed previously with limited records.
- Investigation area extent i.e. investigation area not available at the time of survey.
- Investigation area disturbance related to climate events such as bushfire, flooding, cyclone within the previous 1-5 years.
- Habitat conditions related to climate e.g. drought.

Table 3 Likelihood of occurrence criteria

Likelihood category	Criteria
Known	<p>Listed fauna Habitat is present in the investigation area and the species has been recorded in the investigation area, or in connected habitat adjacent to the investigation area, in the last 10 years.</p> <p>Threatened flora Habitat is present in the investigation area and the species has been recorded in the investigation area during the last 10 years.</p> <p>TECs Presence of TEC has been confirmed through ground-truthing during surveys undertaken in the last 2 years.</p>
Likely	<p>Listed fauna Habitat is present in the investigation area and the species has been recorded in the investigation area, or in connected habitat adjacent to the investigation area, in the last 11 to 30 years. OR Habitat is present in the investigation area and the species has been recorded within its dispersal range/limit from the investigation area in the last 11 to 30 years, and there are no significant barriers to movement between the records and the investigation area.</p> <p>Threatened flora Habitat is present in the investigation area, and the species has been recorded in the investigation area in the last 11 to 30 years. OR Habitat is present in the investigation area and adequate surveys to determine presence/absence have not been undertaken, but the vegetation community composition indicates the species is probably present.</p> <p>TECs This likelihood category is not applicable to TECs. If there is the potential for a TEC to occur, the vegetation needs to be ground-truthed and presence or absence confirmed.</p>
Potential	<p>Listed fauna Habitat is present in the investigation area and the species has been recorded in the investigation area, or in connected habitat adjacent to the investigation area, more than 31 years ago. OR Habitat is in the investigation area, the investigation area is within the species modelled distribution range, and the species may use the habitat at least occasionally or opportunistically. OR Habitat is in the investigation area and it could be used in the future as climate refugia.</p> <p>Threatened flora</p>

Likelihood category	Criteria
	<p>Habitat is present in the investigation area and the species has been recorded in the investigation area more than 31 years ago.</p> <p>OR</p> <p>Habitat is present in the investigation area, the investigation area is within the species modelled distribution, and adequate surveys have not been undertaken to prove the species is absent.</p> <p>TECs</p> <p>This likelihood category is not applicable to TECs. If there is the potential for a TEC to occur, the vegetation needs to be ground-truthed and presence or absence confirmed.</p>
Unlikely	<p>Listed fauna</p> <p>Habitat is not present within the investigation area or adjacent to the investigation area and the investigation area is within the species distribution.</p> <p>OR</p> <p>Habitat is present in the investigation area and the species has been recorded within its dispersal range/limit from the investigation area over 30 years ago, and there are no significant barriers to movement between the records and the investigation area.</p> <p>Threatened flora</p> <p>Habitat is not present within or adjacent to the investigation area and robust targeted surveys have not been undertaken to prove if the species is absent.</p> <p>TECs</p> <p>This likelihood category is not applicable to TECs. If there is the potential for a TEC to occur, the vegetation needs to be ground-truthed and presence or absence confirmed.</p>
Highly unlikely	<p>Investigation area is outside of documented extent of the species' distribution.</p> <p>Conditions for species survival not present.</p>
Confirmed absent	<p>Listed fauna</p> <p>This likelihood category is not applicable to fauna as it is very difficult to prove absence of a species identified in the PMST report as having the potential to occur.</p> <p>Threatened flora</p> <p>Habitat is not within or adjacent to the investigation area and robust targeted surveys have proven the species to be absent.</p> <p>TECs</p> <p>Recent ground-truthing of vegetation has determined that that the TEC is not present.</p>

3. Ecological features of the Investigation Area

3.1 Flora

3.1.1 General

The area adjacent to the MFS Fire Station (Zone 1) and area that is being developed as part of Oakden Rise development area (Zone 2 and 3) are predominantly eucalyptus open woodland vegetation communities. Patches of acacia, shrubland and grassland understorey also occur within the investigation zones 1, 2 and 3. This area provides habitat and refuge for avian, mammalian and reptilian fauna species with identified habitat features such as nests, tree hollows and animal burrows.

The vegetation within Dry Creek Catchment, Investigation Zone 4 consisted mainly of eucalypts and acacias with grassed areas dispersed between the riparian zone and the slopes leading to Dry Creek. This vegetation type provides both diverse habitat and native vegetation with distinctive habitat features such as nests, tree hollows, burrows, aquatic vegetation, rock crevices, fallen tree debris, and an array of water bodies.

3.1.2 Flora Species

From the outlined desktop assessment of available data sources, a total of 959 species were recorded.

These species identified in the desktop search area included 11 species listed under EPBC Act and 24 species listed under the NP&W Act. A detailed list of fauna species recorded from the desktop assessment can be seen in Appendix C.

From undertaking a likelihood of occurrence assessment, the Plum leek-orchid (*Prasaphyllum pruinosum*) EPBC listed Endangered and State Listed as Endangered is likely to occur within the investigation area with habitat found present i.e. (recorded in a range of open woodland habitats, usually with Pink Gum (*Eucalyptus fasciculosa*), South Australian Blue Gum (*E. leucoxydon*), *Acacia leucoxydon*, and *Callitris gracilis*, soil types include well-drained sandy loams to heavy clays (DCCEEW 2010). A summarised list of fauna species found within the study area is detailed in Table 4 below.

Table 4 Summarised List of Flora Species Desktop Results

Species Richness	Native	Exotic	Total Listed Species	
			EPBC Act	NP&W Act
959	502	457	11	24

3.1.3 Listed Ecological Communities

The following two (2) listed threatened ecological communities were recorded as possibly occurring within the investigation area:

- Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia.
- Peppermint Box (*Eucalyptus odorata*) Grassy Woodland of South Australia.

3.1.4 Vegetation community description

Two vegetation community types have been identified within the investigation area:

- Vegetation Type 1: Eucalyptus Woodland with supporting riparian aquatic vegetation
- Vegetation Type 2: Eucalyptus Open Woodland

Vegetation communities from the investigation area are described in Table 5.

Table 5 Vegetation types

Description		Photo
Vegetation type 1: Eucalyptus Woodland with supporting Riparian Aquatic Vegetation		
<p>General description: Eucalyptus woodland with a height of up to 25m was present throughout investigation Zone 4. This woodland is considered to be remanent vegetation (Project Green 2023; EBS Ecology 2011). There is a supporting understorey of native vegetation acacias, shrubland, hummock grasses and riparian aquatic vegetation with up to 90% cover in some areas.</p>		
Dominant species	<ul style="list-style-type: none"> Mixed Eucalyptus species i.e. (<i>microcarpa</i>, <i>odorata</i>, <i>leucoxylon</i>, <i>camaldulensis</i>, <i>cladocalyx</i>) 	
Condition	<ul style="list-style-type: none"> Intact, moderate/low disturbance 	
Weeds	<ul style="list-style-type: none"> Up to 30% cover 	
Status – EPBC Act	<ul style="list-style-type: none"> Desktop results identified 24 species 	
Status – State	<ul style="list-style-type: none"> Desktop results identified 11 species 	
Key Vegetation Features	<ul style="list-style-type: none"> Habitat, including nests and tree hollows to support avian fauna species. Patches provide habitat connectivity for small EPBC listed avifauna species. Provided habitat for reptiles, mammals, fish and amphibians i.e. (diverse water bodies, burrows, aquatic vegetation). Provides koala habitat features i.e. (food resource, habitat structure, nearby water source). 	

Figure 3 Eucalyptus Woodland with supporting Riparian Vegetation within Dry Creek Catchment area investigation Zone 4

Description		Photo
Vegetation type 2: Eucalyptus Open Woodland		
<p>General description: Eucalyptus open woodland with a height of up to 25m was present throughout all four investigation Zones. There is supporting understorey with patches of acacia, shrubland and grasslands. The vegetation in this type is also known to be remanent vegetation (Project Green 2023; EBS Ecology 2011).</p>		
Dominant species	<ul style="list-style-type: none"> – Mixed Eucalyptus species i.e. (<i>microcarpa</i>, <i>odorata</i>, <i>leucoxylon</i>, <i>camaldulensis</i>, <i>cladocalyx</i>) 	
Condition	<ul style="list-style-type: none"> – Intact, moderate disturbance 	
Weeds	<ul style="list-style-type: none"> – Up to 50% cover in some patches 	
Status – EPBC Act	<ul style="list-style-type: none"> – Desktop results identified 24 species 	
Status – State	<ul style="list-style-type: none"> – Desktop results identified 11 species 	
Key Vegetation Features	<ul style="list-style-type: none"> – Habitat, including nests and tree hollows to support avian fauna species. – Patches provide habitat connectivity for small EPBC listed avifauna species. – Provides koala habitat features i.e. (food resource, habitat structure, nearby water source). 	
		<p>Figure 4 <i>Eucalyptus open woodland vegetation community within investigation Zone's 1, 2, 3 and 4.</i></p>

3.2 Fauna

3.3 Fauna species

3.3.1 Desktop Assessment Results

From the outlined desktop assessment of available data sources, a total of 1028 species was recorded. This included 806 invertebrates, 190 birds (Avian), 12 fish (Actinopteri), nine mammals (Mammalia), six amphibians (Amphibia) and four reptiles.

The desktop results found a total of 34 species listed under EPBC Act and 24 species listed under the NP&W. A detailed list of fauna species recorded from the desktop assessment can be seen in Appendix B and Appendix C. A summarised list of fauna species found within the study area can be seen in Table 6 below.

Table 6 Summarised list of fauna species desktop results

Species Type	Species Richness (Total no. of Species)	Native	Exotic	Total Listed Species	
				EPBC Act	NP&W Act
Avian	190	173	17	31	17
Amphibia	6	6	0	0	1
Actinopteri	12	8	4	0	0
Invertebrate	806	-	-	-	-
Mammalia	9	9	0	2	3
Reptilia	4	4	0	1	3
Total	1027	200	21	34	24

3.3.2 Field Fauna Survey Results

A total of 59 species were recorded through incidental field observations of the Dry Creek Catchment Area (Zone 4). From the 59 species that were observed, 49 were birds, four were reptiles, three were amphibians and three were mammals.

The Southern Whiteface (*Aphelocephala leucopsis*) EPBC listed species as Vulnerable was recorded onsite along with, and there is suitable habitat for this species throughout the investigation area. Identified suitable habitat included, open woodlands and shrublands where there is understory of grasses, shrubs, or both. These habitats areas are usually dominated by acacias or eucalypts on ranges, foothills, lowlands, and plains.

A detailed list of fauna species recorded from the field assessments can be seen in Appendix D. A summarised list of fauna species found within the study area can be seen in Table 7 below.

Table 7 Summarised list of fauna species field results

Species Type	Species Richness (Total no. of Species)	Native	Exotic	Total Listed Species	
				EPBC Act	NP&W Act
Avian	49	46	3	1	0
Amphibian	3	3	0	0	0
Actinopteri	-	-	-	-	-
Invertebrate	-	-	-	-	-
Mammalia	3	2	1	0	0
Reptilia	4	4	0	0	0
Total	59	55	4	1	0

3.3.3 Primary and Secondary Consumers

As indicated from the above fauna desktop results and field results there is a diverse array of species represented by the different fauna types i.e. (Avian, Amphibia, Actinoptera, Invertebrates, Mammalia and Reptilia). This indicates that the investigation area supports a diverse array of primary and secondary consumers that utilise this area as habitat. The variety of species present suggests diverse food resources are available in the area to support this biodiversity.

From the investigations that have been undertaken 95 primary and 133 secondary consumers have been identified. The majority vast consumers that have been identified is avian type species. A summarised list of primary and secondary consumers species have been identified (Table 8), with a detailed desktop and field fauna results in Appendix B, Appendix C and Appendix D.

Key species that have been identified as secondary consumers include:

- The Australasian Darter (*Anihinga novaehollandiae novaehollandiae*) State Listed Species Vulnerable that is likely to occur is a secondary and primary consumer feeding on insects and other aquatic animals, including tortoises, may also be eaten, as well as some vegetable matter.
- Australian Hobby (*Falco longipennis murchisonianus*), a secondary consumer feeding on small birds and large flying insects.
- The Southern Whiteface (*Aphelocephala leucopsis*) EPBC Listed Vulnerable species observed onsite, as well as a number of other avian species present such as the Eastern Shrike-tit (*Falcunculus frontatus frontatus*), Silvereye (*Zosterops lateralis*) and Welcome Swallow (*Hirundo neoxena neoxena*) are secondary consumers feeding mainly on insects and their larvae, and earthworms.
- Musk Duck (*Bizuria lobata menziesi*) EPBC Listed Vulnerable species, White-faced Heron (*Egretta novaehollandiae*) and Great Egret (*Adrea alba modesta*), secondary consumers feeding mainly on fish, small mammals, crustaceans, small reptiles and amphibians.
- Four species of reptile were also recorded within the investigation area. Those being the Maquarie River Turtle (*Emdura macquari*) State Listed Vulnerable species, Eastern Long-necked Turtle (*Chelodina longicollis*), Eastern Water Skink (*Eulamprus quoyii*) and the Eastern Bluetongue (*Tiliqua scincoides*), all of which are secondary consumers.
- Brown toadlet (*Pseudophryn bibronii*) State listed as a Rare species amphibian has been identified to likely occur within Habitat Type to as consumer, along with three other amphibian species.
- Fish are reported to inhabit the waterways in the surrounding waterways with 12 species of Actinopteri, with 8 of those being native.

Table 8 Summarised Table of Primary and Secondary Consumers Identified

Species Type	Total No. Primary Consumers	Total. Secondary Consumers
Avian	92	104
Amphibian	0	6
Actinopteri	0	12
Mammalia	3	7
Reptilia	0	4
Total	95	133

3.3.3.1 *Phascolarctos cinereus* (Koala) Population Considerations

Koalas, which are mammalian primary consumers, have been sighted within Zones 1, 2, and 3. While koalas are not classified as vulnerable, endangered, or critically endangered species under the EPBC Act, the DEWNR (2016) South Australian Koala Conservation and Management Strategy aims to conserve and manage koala habitat by developing and implementing “options to protect koala habitat on public and private land”. The available information relevant to koalas in the Investigation Area can be summarised as follows:

- Koalas feed on leaves from about 40 species of Eucalyptus trees, including the River Red Gum (*Eucalyptus camaldulensis*) and Blue Gum (*Eucalyptus leucoxylon*) (DEW, 2024). Both the red and blue gum have been identified in the Investigation Area (Project Green, 2023). Hence, potential koala habitat is present within the Investigation Area.
- Koalas have a natural home range of approximately 1 to 1.5 hectare (DEW, 2024). However, in urban areas the shape and size of their home ranges will be usually larger as koalas may be forced to move between separated vegetated areas via ecological corridors. Urban habitat fragmentation appears to be present in the Investigation Area.
- In their home range, koalas will seek shelter trees and food trees. They tend to revisit these selected trees throughout the year.
- A koala typically eats between 500 – 1000 g of eucalypts per day. Koalas do not normally need to drink water as they obtain sufficient liquids from Eucalyptus leaves.
- Given the presence of koalas within the Investigation Area and the information provided above, koalas have been identified as receptors of interest.

3.3.4 Listed threatened species

One listed species were observed, with 13 listed threatened species under the EPBC Act and NP&W Act assessed to be likely to occur Appendix A. Description on the presence and quality of the available habitats within the investigation area is provided in Appendix A.

Table 9, as well as related habitat type (Table 12). A detailed likelihood of occurrence assessment can be seen in Appendix A.

Table 9 Species habitat recorded or likely to occur within the Investigation area

Species name	Common name	EPBC Act Status	NP&W Act Status	Project area habitat type
<i>Anhinga noveahollandiae novaehollandiae</i>	Australian Darter	-	R	Habitat Type 2
<i>Aphelocephala leucopsis</i>	Southern Whiteface	V	-	Habitat Type 1 and 2
<i>Ardea intermedia plumifera</i>	Plumed Egret	-	R	Habitat Type 1
<i>Biziura lobata menziesi</i>	Musk Duck	-	R	Habitat Type 1
<i>Emydura macquarii</i>	Murray short-necked turtle	-	V	Habitat Type 1
<i>Falcunculus frontatus frontatus</i>	Eastern Shrikeitit	-	R	Habitat Type 1 and 2
<i>Grantiella picta</i>	Painted Honeyeater	V	R	Habitat Types 1 and 2
<i>Oriolus sagittatus sagittatus</i>	Olive-backed Oriole	-	R	Habitat Type 1 and 2
<i>Oxyura australis</i>	Blue-billed Duck	-	R	Habitat Type 1
<i>Pseudophyrne bibronii</i>	Brown Toadlet	-	R	Habitat Type 1
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	V	R	Habitat Type 2
<i>Trichosurus vulpecula</i>	Common Brushtail Possum	-	R	Habitat Type 2
<i>Zoothra lunulata halmaturina</i>	South Australian Bassian Thrush	E	R	Habitat Type 1 and 2

EPBC Act Status (Cr=Critically Endangered, E=Endangered, V=Vulnerable), NP&W Act Status (Cr=Critically Endangered, E=Endangered, V=Vulnerable, R=Rare)

3.3.4.1 Aquatic Macroinvertebrate Results

A total of 16 aquatic macro invertebrate species were recorded via field sample observations in Zone 4. Specific sampling of 4 sites in Zone 4 was done during a dry system period. The sampling at Zone 4 included one preselected site (SWO1) which was completely dry. As such results are only provided for 3 sampling locations

which had water present (SWO2 to SWO4), and in relation to the reference site (SWO5). A description and photographic record of each of the sampling locations can be found in Appendix E.

Full water quality parameters were undertaken at aquatic macroinvertebrate sample locations. These results can be seen in Appendix I of the HHERA (GHD, 2024).

A summarised list of macroinvertebrate species found during sampling SWO2, S2O3, SWO4 and SWO5 (reference site) are shown in **Table 10**.

Table 10 Aquatic Macroinvertebrates Field Species Results

Species	Pollution Rating	Sample Location Species Presence			
		SWO2	SWO3	SWO4	SWO5
Mayfly Nymph	9			X	
Marsh Beetle	6			X	
<i>Ceratopogonidae</i> (Biting Midge Larvae)	4		X		
Whirling Beetle Larvae	4			X	
<i>Chironomus plumosus</i> (Non-biting Midge Larvae)	3	X		X	
Freshwater Shrimp	3		X		
Nymph Larvae	3		X		
Ponera Sp.	3		X		
Round Worm	3		X	X	X
Water Boatmen	2				X
Backswimmer	1			X	X
<i>Culicidae</i> (Mosquito Larvae)	1	X	X	X	X
Freshwater Snail	1				X
Copepod	NR	X	X	X	
Seed Shrimp	NR	X	X		X
Water Flea	NR	X	X	X	X
Species Richness (Total Number of Species)	16	5	9	8	7

Pollution Rating Species Rating: (10-8 = Very Sensitive, 7 – 6 Sensitive, 5 – 4 Tolerant, 3 – 1 Very Tolerant, NR = Not Rated)

From the above species observations (Table 8), the assessment provides taxa richness, pollution index indicators, signal score and a pollution rating for the aquatic environment in accordance with the outlined method in Section 2.2. Based on the species identified in across sampling sites in *Table 10*, summarised pollution ratings and healthy water way indicator scores have been provided in Table 11 below for the Dry Creek Catchment waterway.

Table 11 Aquatic Macroinvertebrate Health of Waterway indicator scores

Sample Location	Taxa Richness	Pollution Index	Signal Score	Pollution Rating
SWO2	2	13	6.5	Healthy
SWO3	6	18	3.00	Moderate
SWO4	6	27	4.5	Mild
Sum of Dry Creek Zone 4 Investigation Area	-	-	4.6	Mild
SWO5 (Reference Site)	5	7	1.4	Severe

Pollution Rating Index: Signal Score (Greater than 5 = Healthy Waterway, 4-5 = Indicates Mild Pollution, 3-4 = Indicates Moderate Pollution, less than 3 = Could indicate Severe Pollution).

The results from the sample locations indicate that the health of the waterway within the Dry Creek Zone 4 investigation area varies from 'Healthy Waterway' to 'Moderately polluted' with an overall rating of Mild. When

compared to the reference site which is indicated as being severely polluted, SWO2 to SWO4 are in better condition. Additionally, the presence of Mayfly Nymph and Marsh Beetle was identified in sample locations SWO2 and SWO3. These are both species rated 'Very Sensitive' and 'Sensitive' and an indicator of a healthy aquatic environment.

These findings indicate a diverse and abundant food resource available to support a healthy aquatic ecosystem. It is important to note the variability between the three sample locations of the Dry Creek waterway, which is probably driven by the dry conditions and reduced waterflow during the sampling period. In addition, the sampling for this assessment was undertaken after a Summer Dry period which is outside the period of optimal health of the waterway. Fauna habitat

3.3.5 Habitat Overview

From the survey effort, two distinctive habitat types were identified with the investigation area:

- Inland permanent freshwater creek system which has intermittent flows into attached wetlands.
 - Eucalyptus open woodland which verges on residential development areas and Dry Creek Catchment system
- The survey found the following habitat values for terrestrial and aquatic fauna within the investigation area zones 1 to 4:

A summary of identified habitat types is included in Table 12 below.

Table 12 *Habitat Type Descriptions*

Description	Photo
Habitat Type 1: Inland freshwater wetland (permanent streams, creeks, watercourses)	
<u>General Description</u> The habitat type consisted of an inland freshwater wetland creek catchment area with aquatic vegetation and edging of native shrubland, grassland and tree canopy coverage. This habitat type was found to be present within the Dry Creek Catchment investigation area Zone 4. An image of this habitat can be found in Figure 5. This habitat type provided aquatic habitat for foraging, roosting, shelter, and breeding for a range of different species types i.e. (Avian, Amphibians, Reptilia and Mammalia). Key habitat features can be seen in Figure 6 and Figure 7. The freshwater wetland is also supported by remnant vegetation in the area providing of habitat niches for native fauna i.e. (diverse tree hollows).	
Related Vegetation Types	– Vegetation Type 1 and 2
Hydrology	– The topography within Zone 4 gradually slopes to both the north and south forming a gully that drains water into Dry Creek. Numerous upstream tributaries also feeding into Dry Creek, eventually feeding into the Barker Inlet Downstream. Dry Creek is a permanent freshwater creek system, however with intermittent flows, into attached wetlands. During wet periods and increased rainfall events the creek has a high flowrate, that provides diverse waterbodies to support a variety of habitat niches. This temporal variance provides varying habitat and ecophysiological requirements to support species richness.
Condition	– The quality of surface water in South Australia is protected under the Environment Protection (Water Quality) Policy 2015. To facilitate the completion of an ERA in an aquatic environment (Dry Creek), it is necessary to define the level of protection afforded a waterbody, with this being based on considerations including the condition of the waterway and community values and associated management goals. ANZG (2018) recognises three categories of current or desired waterway condition. Based on desktop and field assessments of this aquatic environment it meets the following category: <ul style="list-style-type: none"> • Slightly to moderately disturbed systems (95% species protection) – ecosystems in which aquatic biological diversity may have been adversely affected to a relatively small but measurable degree by human activity. The biological communities remain in a healthy condition and ecosystem integrity is largely retained.
Weeds	– Up to 30% weed cover
Listed Species	– The following EPBC and NP&W listed species are likely to occur within this habitat type: Southern Whiteface, Plumed Egret, Musk Duck, Murray Short-Necked Turtle, Eastern Shrikeit, Painted Honeyeater, Olive-backed Oriole, Blue-billed Duck, Brown Toadlet, South Australian Bassian Thrush.
Key Aquatic Habitat Features	– Waterways presented within habitat type indicate 'healthy habitat' to 'moderately polluted' providing
	

Figure 5 *Inland Freshwater Habitat Type 1 observed within Dry Creek Investigation Area*


Description	Photo
<p>diverse food resource availability for aquatic macroinvertebrates</p> <ul style="list-style-type: none"> - Habitat type provided a diverse range of habitat features to support different species types such as: <ul style="list-style-type: none"> • aquatic vegetation (reeds, rushes, lichen, grasses, waterlogged material), • rock features (rock pools, rocky banks, diverse crevasses), • active nests (within eucalypt and acacia species, constructed by surrounding vegetation), • fauna burrows (reptiles and small mammals), • remnant vegetation (canopy and understorey), • diverse water bodies (creeks, streams, wetlands, dams, rockpools), • canopy cover (providing shade and shelter, organic matter, food resource), - Listed species that are likely to occur within this habitat type would utilise this environment for its shelter, nesting/breeding, roosting and food resource availability consistently throughout the year. 	

Figure 6 Rock burrows and features supporting Mammalian and Reptilian species types within Dry Creek Investigation Area

Description

Photo



Figure 7 Small Avian Active Nest identified within Dry Creek Investigation Area approximately 8 metres from waterbody


Description	Photo
Habitat Type 2: Eucalyptus open woodland	
<u>General Description</u>	
Eucalyptus woodland with a height of up to 25m was present throughout the entire investigation area. There is supporting understorey with patches of acacia, shrubland and grasslands. The eucalyptus woodland also supported by remnant vegetation in the area providing of habitat niches for native fauna i.e. (diverse tree hollows). This habitat type was identified to be present within investigation Zone's 1, 2, 3 and 4. This habitat type verges on residential development and dry creek catchment system.	
Related Vegetation Types	Vegetation Type 2
Condition	Moderate disturbance i.e. (erosion, weed development, human disturbance)
Weeds	Up to 50% weed cover
Listed Species	The following EPBC and NP&W listed species likely to occur within this habitat type: Australian Darter, Southern Whiteface, Eastern Shrikeitit, Painted Honeyeater, Olive-backed Oriole, Grey-headed Flying-fox, Common Brushtail Possum, South Australian Bassian Thrush
Key Habitat Features	<ul style="list-style-type: none"> - Habitat type provided a diverse range of habitat features to support different species types i.e. (rock burrows, active nests, reptile burrows, tree hollows, remnant vegetation, nearby water resources, canopy cover, leaf litter and etc). - Listed species that are likely to occur within this habitat type would utilise this environment for its food resource availability and other requirements consistently throughout the year.
<p>Figure 8 <i>Eucalyptus Woodland Habitat Type observed within Investigation Area</i></p>	

Description

Photo



Figure 9 Fauna tree burrow habitat supporting Mammalian and Reptilian species observed actively being utilised within the investigation area

Description	Photo
	 <p data-bbox="801 1337 1326 1359"><i>Figure 10 Avian Fauna actively used nest within Investigation area</i></p>

4. Conservation Significance Summary

The investigation areas from Zone 1 - 4 the ecological assessments retain area of terrestrial and aquatic habitat that provides local resources for a range of flora and fauna for a biodiverse rich environment.

These habitats that have been identified within the investigation area are Inland Freshwater Wetlands and Eucalyptus Woodland which contain a diverse range of habitat features and food resource availability to support a number of primary or secondary consumers across species types throughout the entire year on a consistent basis. This is further supported by the remnant vegetation present within the investigation area providing additional habitat niches to support native biodiversity.

Two listed threatened ecological communities (TEC) have been recorded and are well documented to be present within the investigation area which are:

- Grey Box (*Eucalyptus microcarpa*) grassy woodlands and derived native grasslands of south-eastern Australia.
- Peppermint Box (*Eucalyptus odorata*) grassy woodland of South Australia.

Based on the findings of this assessment, the below listed species in Table 13 have been identified to likely present within the investigation area and utilise the habitat and food resources consistently throughout the year.

Table 13 Summary of key threatened species of concern in the survey footprint

Taxa	Species name	Common Name	EPBC Act	State Act	Likelihood
Plant	<i>Prasophyllum pruinatum</i>	Plum Leek-orchid	E	E	Likely
Birds	<i>Aphelocephala leucopsis</i>	Southern Whiteface	V	-	Confirmed Present
	<i>Anhinga novaehollandiae novaehollandiae</i>	Australian Darter	-	R	Likely
	<i>Biziuria lobata menziesi</i>	Musk Duck	-	V	Likely
	<i>Ardea intermedia plumifera</i>	Plumed Egret	-	R	Likely
	<i>Grantiella picta</i>	Painted Honeyeater	V	R	Likely
	<i>Zoothera lunulata halmaturina</i>	Southern Australian Bassian Thrush	E	R	Likely
	<i>Falcunculus frontatus frontatus</i>	Eastern Shrikefit	-	R	Likely
	<i>Oriolus sagittatus sagittatus</i>	Olive-backed Oriole	-	R	Likely
	<i>Oxyura australis</i>	Blue-billed Duck	-	R	Likely
	Mammals	<i>Trichosurus vupecula</i>	Common Brushtail Possum	-	V
<i>Pteropus poliocephalus</i>		Grey-headed Flying-fox	V	R	Confirmed Present
Reptiles	<i>Emydura macquarii</i>	Murray short-necked turtle	-	V	Likely
Amphibian	<i>Pseudophyrne bibronii</i>	Brown Toadlet	-	R	Likely

5. Summary

These habitats have shown to support two threatened ecological communities and one EPBC Act listed fauna species that were observed in opportunistic field investigations of investigation area zone 4. With also providing suitable habitat for a range of threatened fauna was confirmed within investigation area and likely to support an additional 14 of species listed as threatened confirmed present or likely to occur in Table 13 outlined above.

These conservation significant receptors in the investigation area are also listed Endangered and Vulnerable under the NP&W Act. The findings indicate the area does provide conservation significance through the provision of suitable habitat for a range of consumers, important and threatened species types and sensitive ecological receivers.

As outlined within the ecological and aquatic limitations in section 1.2.2, understanding utilisation of these areas for listed species is limited to the period of the snapshot approach for data collection. Interpretation from these data should be done considering the lack of seasonality, the level of data collection effort, snapshot sampling during the dry summer period for aquatic habitat and floristic dormancy.

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Appendices

Appendix A

Likelihood of Occurrence Assessment

Table 1 Likelihood of occurrence assessment – listed threatened plants, listed threatened animals, migratory species

Species name Common Name Data source	EPBC Act	Migratory	State Act	Habitat types – foraging, breeding, dispersal	Investigation area in species' known distribution	Likelihood	Likelihood reason
Ecological Communities							
Grey Box (<i>Eucalyptus macrocarpa</i>) Grassy Woodlands and Derived Grasslands of South-eastern Australia <i>Goodenia</i> Data Source (PMST, NatureMaps, ALA)	E	-	-	<ul style="list-style-type: none"> The Grey Box (<i>Eucalyptus macrocarpa</i>) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia occurs in two forms. <ul style="list-style-type: none"> Most commonly as a grassy woodland comprising a tree layer and an understorey that must have native grasses but with varying proportion of shrubs and herbs. Derived native grassland form can occur in patches where the tree canopy and mid layer have been almost entirely removed, but the native ground layer remains largely intact with high diversity. 	<p>Ranges from central New South Wales through northern Victoria and into South Australia.</p> <p>The Investigation area is within the TEC distribution range.</p>	Known	Threatened ecological community was identified as being present. This community has been well documented to be present within the investigation area i.e. (EBS Ecology 2011)
Peppermint Box (<i>Eucalyptus odorata</i>) Grassy Woodland of South Australia	CE	-	-	<ul style="list-style-type: none"> The vegetation structure of this TEC is characterised by open to dense woodland dominated by <i>Eucalyptus odorata</i>. Trees are usually in the range of 5-10 m high, but may be up to 15 m. Canopy cover is usually 5 – 40% but can reach 70%. Other tree species may be present but they contribute less to canopy cover and generally are not as abundant as <i>E. odorata</i>. The understorey consists of native grasses and other native herbs. Medium to tall shrubs are sparse. 	Restricted to South Australia, primarily within the Flinders-Lofty Block Bioregion, with patches extending into the Murray-Darling Depression, Kanmantoo, Eyre-Yorke Block, and Gawler Bioregions.	Known	Threatened ecological community was identified as being present. This community has been well documented to be present within the investigation area i.e. (EBS Ecology 2011)
Plants							
<i>Caladenia tensa</i> Greencomb Spider-orchid	E	-	-	<ul style="list-style-type: none"> Species grows on red-brown sandy loams in open woodland where dominant species are Yellow Gum (<i>Eucalyptus leucoxylon sens. Lat</i>) and Rottnest Island Pine (<i>Callitris preissii</i>) (DCCEEW 2012). Also occurs in broombush mallee (<i>Melaleuca uncinata</i>) (TSSC 2016). Species emerges in concert with cooler conditions and onset of winter rainfall (TSSC 2016). Species has a recovery plan (Recovery Plan for twelve threatened Spider-Orchid <i>Caladenia</i> R. Br. Taxa of Victoria and South Australia 2000-2004) (Todd 2000). 	<p>In South Australia, the species occurred at Cape Gantheaume Conservation Park, Billiat Conservation Park, and Mount Boothby Conservation Park (TSSC 2016).</p> <p>A large proportion of the Victorian and South Australian populations occur within the Murray-Darling Depression and Naracoorte Coastal Plain interim bioregions (Todd 2000).</p> <p>The Investigation area is:</p> <ul style="list-style-type: none"> Not within the extent of the species distribution. within the PMST distribution area, but the true extent of the species distribution is much smaller. 	Highly unlikely	Species has not been historically recorded within the investigation area. Soil types and habitat features were not identified within the investigation area i.e. (woodland on well-drained sandy soils)
<i>Euphrasia collina subsp. Osbornii</i> Osborn's Eyebright	E	-	E	<ul style="list-style-type: none"> Generally grows in open eucalyptus woodland, costal cliffs, and inland swamps (Bickerton & Moritz 2010). Species requires light, relative high soil moisture, and open ground for seed germination and establishment (Moritz & Bickerton 2010). Species has a recovery plan (recovery Plan for the Endgangered Osborn's Eyebright <i>Euphrasia collina subsp. Osbornii</i>) (Moritz & Bickerton 2010) 	<p>Historical records report a historical population (pre-1980) to have occurred upstream of the investigation area (Moritz & Bickerton 2010).</p> <p>The Investigation area is:</p> <ul style="list-style-type: none"> Within and near the extent of the species distribution 	Unlikely	Species has not been observed in the area for over 50 years. While potential habitat occurs (eucalyptus woodland), the investigation area is at the extent of the species distribution.
<i>Glycine latrobeana</i> Purple Clover	V	-	V	<ul style="list-style-type: none"> This species occurs within low lying seasonally inundated grassy woodlands within South Australia. Often these woodlands are dominated by Manna Gum and/or Yellow Gum, or Messmate Stringybark (Carter and Sutter 2010). 	<p>Distribution confined to the Mount Lofty Ranges.</p> <p>The investigation area is:</p> <ul style="list-style-type: none"> Not within the extent of the species distribution 	Highly Unlikely	Investigation area is outside of documented extent of the species' distribution as the species is confined to the Mount Lofty Ranges.

<i>Olearia pannosa</i> subsp. <i>Pannosa</i> Silver Dasiy-bush	V	-	V	<ul style="list-style-type: none"> Often scattered throughout agricultural regions, occurring in sandy, flat areas and in hilly, rocky areas in woodland or mallee (DCCEEW 2013). 	<p>This subspecies is endemic to South Australia, with specimens being collected in the Eyre Peninsula, Yorke Peninsula, Flinders Ranges, Southern and Northern Mount Lofty Ranges, Murray and Southeastern South Australia.</p> <p>The Investigation area is:</p> <ul style="list-style-type: none"> Within and near the extent of the species distribution 	Unlikely	<p>Preferred habitat is not present within or adjacent to the investigation area and robust targeted surveys have not been undertaken to prove if the species is absent.</p> <p>The investigation area is at the extent of the species distribution.</p>
<i>Prasophyllum pallidum</i> Pale Leek-orchid	V	-	R	<ul style="list-style-type: none"> Occurs singly or in small groups in well grassed open woodland, on poorly drained red-brown soil derived from basalt. Often the habitat is dominated by perennial tussock-forming grasses Requires fire or slashing to reduce accumulation of surrounding grasses to promote growth and flowering. 	<p>The Investigation area is:</p> <ul style="list-style-type: none"> Within and not at the extent of species distribution 	Unlikely	Habitat is not present within or adjacent to the investigation area and robust targeted surveys have not been undertaken to prove if the species is absent.
<i>Prasophyllum pruinosum</i> Plum Leek-orchid	E	-	E	<ul style="list-style-type: none"> Species has been recorded in a range of open woodland habitats, usually with Pink Gum (<i>Eucalyptus fasciculosa</i>), South Australian Blue Gum (<i>E. leucoxyton</i>), <i>Acacia leucoxyton</i>, and <i>Callitris gracilis</i> (DCCEEW 2010). Preferred soil types include well-drained sandy loams to heavy clays (DCCEEW 2010). 	<p>Endemic to South Australia, recorded in the Adelaide and Mount Lofty Ranges regions (YSSC 2010). Species is known from 8 geographically isolated locations, extending from the Barossa Valley in the north, south to Belair National Park.</p> <p>The Investigation area is:</p> <ul style="list-style-type: none"> Within and near the extent of the species distribution 	Likely	Species has been recorded in the area in the last 10 years, and habitat is suitable, although the investigation site is near the extent of species' distribution, hence the species is likely to occur.
<i>Pterostylis cucullata</i> Leafy Greenhood	V	-	E	<ul style="list-style-type: none"> Species occurs in open forest and woodland of Australia Blue Gum (<i>Eucalyptus leucoxyton</i>), often also with Messmate Stringybark (<i>E. obliqua</i>) and Manna Gum (<i>E. viminalis</i>) forest with grassy undercover (Duncan 2010). Species has a recovery plan (Recovery Plan for the Leafy Greenhood <i>Pterostylis cucullata</i>) (Duncan 2010). 	<p>In South Australia, the species is only known from three locations within the Mount Lofty Ranges (Duncan 2010).</p> <p>The Investigation area is:</p> <ul style="list-style-type: none"> Within and near the extent of the species distribution 	Potential	Habitat is present in the investigation area, the investigation area is within the species modelled distribution, however the species is only known to be in 3 locations in SA, and the investigation area is at the extent of the species' distribution.
<i>Senecio macrocarpus</i> Large-fruit Fireweed	V	-	V	<ul style="list-style-type: none"> Species occurs in a large variety of habitats including woodlands, although generally occur in on sparsely vegetated sites. In South Australia species occur in shallow depressions that are waterlogged in winter in loamy sands. 	<p>Currently occurs as one large population in Messent Conservation Park (SA) and some small populations on the Yorke Peninsula.</p> <p>The Investigation area is:</p> <ul style="list-style-type: none"> Within and not at the extent of species distribution 	Highly unlikely	<p>Conditions for species survival not present:</p> <ul style="list-style-type: none"> Soils within investigation area consist of shallow red-brown clay soils with thin lime or calcrete layers
<i>Swainsona pyrophila</i> Yellow Swainson-pea	V	-	R	<ul style="list-style-type: none"> Occurs in mallee vegetation communities on a variety of soil types (well drained sands, sandy loams, and heavier clay loams) (Tonkinson & Robertson 2010). Has been recorded in mallee woodland with <i>Eucalyptus</i> species including; <i>E. brachycalyx</i>, <i>E. calycogona</i>, <i>E. Dumosa</i>, <i>E. gracilis</i>, <i>E. incrasata</i>, <i>E. leptophylla</i>, <i>E. oleosa</i>, and <i>E. socialis</i>. Also sometimes with Broombush (<i>Melaleuca uncinata</i>) shrubland (Tonkinson & Robertson 2010). Species has a recovery plan (National Recovery Plan for the Yellow Swainson-pea <i>Swainsona pyrophila</i>) (Tonkinson & Robertson 2010). 	<p>Distributed within the 250-400 mm rainfall zone, from the Northern Eyre Peninsula (SA), east to north-western Victoria, and south-western and central New South Wales (Tonkinson & Robertson 2010).</p> <p>The Investigation area is:</p> <ul style="list-style-type: none"> Within and near the extent of the species distribution 	Highly unlikely	<p>Conditions for species survival not present:</p> <ul style="list-style-type: none"> No mallee vegetation or loamy soils. <p>The Investigation area is near the extent of the modelled species distribution hence is highly unlikely to occur.</p>
<i>Tecticornia flabelliformis</i> Bead Glasswort	V	-	V	<ul style="list-style-type: none"> Precises habitat preferences for the species are unknown. It is observed growing on the margins of salt slakes and coastal salt marshes over gypsum deposits and is often associated with other <i>Tecticornia</i> species (Carter 2010). Generally grows on periodically inundated clay (sometimes sandy) soils, often (but not always) in saline areas (Carter 2010). Species has a recovery plan (National Recovery Plan for the Bead Glasswort <i>Tecticornia flabelliformis</i>) (Carter 2010). 	<p>Endemic and widely distributed in southern Australia. In South Australia is occurs in the Eyre Yorke Block, Flinders Lofty Block, and Murray Darling Depression bioregions (Carter 2010).</p> <p>The Investigation area is:</p> <ul style="list-style-type: none"> Not within the extent of the species distribution. 	Highly Unlikely	Investigation area is outside of documented extent of the species' distribution.

<i>Thelymitra matthewsii</i> Spiral Sun-orchid	V	-	E	<ul style="list-style-type: none"> The species is documented as growing in heathy open forest and woodlands with relatively open ground layer, but there are gaps in the specific habitat requirements for the orchid (Duncan 2010). Grows on a range of soils (well-drained sand, gravel and clay loams) and shows preference for areas where there has been some soil disturbance (old quarries and gravel pits, road and track verges) (Duncan 2010). Species has a recovery plan (National Recovery Plan for the Spiral Sun-orchid <i>Thelymitra matthewsii</i>) (Duncan 2010). 	<p>Widely but sporadically distributed in Victoria and South Australia, from East Gippsland (Vic) to Kangaroo Island (SA).</p> <p>The Investigation area is:</p> <ul style="list-style-type: none"> Within and near the extent of the species distribution. 	Highly Unlikely	<p>Conditions for species survival not present:</p> <ul style="list-style-type: none"> Not heathy open forest environment.
Animals -							
Birds -							
<i>Aphelocephala leucopsis</i> Southern whiteface Data Source (PMST, NatureMaps, DCCEEWa 2024)	V	-	-	<ul style="list-style-type: none"> The species inhabits in a wide range of open woodlands and shrublands where there is understory of grasses or shrubs or both. These areas are usually dominated by acacias or eucalypts on ranges, foothills, lowlands, and plains. The species are considered sedentary; however, atlas records indicate individuals may move into wetter areas outside of their normal range during drought years. The species almost exclusively on the ground, favouring habitat with low tree densities and an herbaceous understorey litter cover. The species mainly feed on insects, spiders, and seeds, largely gleaned from the bare ground or leaf litter 	The Investigation area is within and near the species distribution according to PMST.	Likely	<p>Habitat provides wide range of open woodlands and scrubland.</p> <p>Food resource availability for species diet is present</p> <p>No previous records, from available databases have observed the species within the investigation area</p> <p>Potential birdcall identified during field observations</p>
<i>Anhinga novaehollandiae novaehollandiae</i> Australasian Darter	-	-	R	<ul style="list-style-type: none"> Species occurs in a range of wetlands, lakes, tidal lagoons, swamps, rivers and estuaries. It is most often seen inland, preferring smooth, open, permanent, and temporary water bodies at least half a meter deep. The species requires sparsely vegetated waters for feeding, and trees, branches and stumps standing within the water to build nests and roost (BirdLife International 2024) 	<p>Last recorded siting within investigation area: 01 December 2021</p> <p>The investigation area is within and not at the extent of the species distribution</p>	Likely	<p>NatureMaps biological database reported an observation less than 5 years ago, within the investigation area.</p> <p>Investigation area provides moderate habitat features to support species i.e. (Permanent waterbody, available perching areas and supporting vegetation).</p> <p>Food source available to support species.</p>
<i>Ardea intermedia plumifera</i> Plumed Egret	-	-	R	<ul style="list-style-type: none"> Species occurs in a wide range of freshwater habitats, including creeks, streams and rivers, freshwater marshes, wet fields, flooded and dry pastures, and ponds and billabongs. Species tend to frequent sheltered water with emergent grasses, avoiding vegetation too thick to feed in, with water less than 80cm deep. It can occur, although less frequently in coastal habitats (Sato and Maruyama 1996). 	<p>Last recorded siting within investigation area: 01 December 2021</p> <p>The investigation area is within and not at the extent of the species distribution</p>	Likely	<p>NatureMaps biological database reported an observation less than 5 years ago, within the investigation area.</p> <p>Investigation area provides moderate habitat features to support species i.e. (Permanent waterbody, available perching areas and supporting vegetation).</p> <p>Food source available to support species.</p>
<i>Arenaria interpres</i> Ruddy Turnstone Data Source (PMST, NatureMaps, DCCEEWa 2024)	V	Ma, Mi	-	<ul style="list-style-type: none"> The ruddy turnstone mainly forages between lower supralittoral and lower littoral zones of foreshores, from strandline to wave-zone. Species often forage among banks of stranded seaweed or other tide-wrack. The ruddy turnstone are also known to forage on exposed rocky platforms, coral reefs and mudflats (BirdLife International 2024). 	Investigation area is not within the PMST extent of the species distribution, with the species distribution limited to the coastline	Highly Unlikely	<p>No recorded observations of the species being present.</p> <p>Investigation area does not contain any habitat features or food resources availability to support this species.</p>
<i>Biziura lobata menziesi</i> Musk Duck	-	-	R	<ul style="list-style-type: none"> Lakes and swamps with dense reedbeds and concealing vegetation. They mainly feed on animals, including aquatic insects, crustaceans, snails, shellfish, fish, frogs and ducklings, but some seeds of aquatic plants are also eaten on occasion. 	<p>Last recorded siting within investigation area: 22 December 2020</p> <p>The investigation area is within and not at the extent of the species distribution</p>	Likely	<p>Recorded sighting of the species within the last five years, within the investigation area.</p> <p>Investigation area provides suitable habitat features to support species, i.e. (water catchment, dense reedbeds, concealing vegetation).</p> <p>Food sources to support species is present i.e. (aquatic insects, frogs, aquatic plants).</p>
<i>Botaurus poiciloptilus</i> Australasian Bittern	E	-	E	<ul style="list-style-type: none"> The Australasian Bittern occurs mainly freshwater wetlands, rarely in estuaries and tidal wetlands. The species particularly frequents freshwater wetlands dominated by sedges, rushes, reeds or cutting grass (BirdLife International 2024). 	<p>Last recorded siting within investigation area: 10 May 1991</p> <p>Investigation area within and near the extent of the species distribution</p>	Unlikely	<p>No recorded sighting of the species in over 30 years.</p> <p>Present habitat within the investigation area is likely too disturbed to support individuals of this species.</p>

<i>Bubulcus ibis coromandus</i> Eastern Cattle Egret	-	-	R	<ul style="list-style-type: none"> The Eastern Cattle Egret most commonly occurs in seasonally inundated open grassy areas such as pastures, meadows, open savannah grassland, freshwater swamps and irrigated grasslands with ponds, wells, canals, small rivers and streams. It also occupies forested areas, entering woodlands and forests although this occurs more rarely. The species feeds on a wide variety of small prey as from insects to crustaceans, frogs, tadpoles, molluscs, fish, lizards, small birds, rodents and vegetable matter (Birdlife International 2024). 	<p>Last recorded siting within investigation area: 13 November 2021</p> <p>The investigation area is within and not at the extent of the species distribution</p>	Potential	<p>Last recorded sighting of species within investigation area less than 5 years ago.</p> <p>Although food sources are present to support the species, habitat within the investigation area unsuitable for the support of species.</p>
<i>Calidris acuminata</i> Sharp-tailed Sandpiper	V	Ma, Mi	-	<ul style="list-style-type: none"> The Sharp-tailed Sandpiper occurs in a range of fresh and hypersaline aquatic environments, often preferring the muddy edges of shallow fresh or brackish wetlands, with inundated or emergent sedges, grass, saltmarsh or other low vegetation. The species may also feed on areas of agricultural pasture following large rainfall events (DCCEEW 2024). 	<p>Last recorded siting within investigation area: 22 July 2015</p> <p>The investigation area is within and not at the extent of the species distribution</p>	Unlikely	<p>Habitat present within the investigation area is not suitable for species with large areas of the creek containing water either covered in rocks or dense grass.</p>
<i>Calidris canutus</i> Red Knot	V	Ma, Mi	-	<ul style="list-style-type: none"> Intertidal mudflats, sandflats and sandy beaches of sheltered coasts. Occasionally sandy ocean beaches or shallow pools on exposed rock platforms. Occasionally seen on terrestrial saline wetlands near the coast. (DoE 2016). 	<p>Investigation area within and near the extent of the species distribution</p>	Highly Unlikely	<p>PMST reported that species or species habitat may occur within investigation area, however vegetation and habitat within the investigation area unsuitable to support species.</p>
<i>Calidris ferruginea</i> Curlew Sandpiper	CE	Ma, Mi	E	<ul style="list-style-type: none"> Intertidal mudflats in sheltered coastal areas (DoE 2015). The Curlew Sandpiper is mostly found on intertidal mudflats of estuaries, lagoons, and mangroves, as well as beaches, rocky shores and around salt lakes. 	<p>The investigation area is within and not at the extent of the species distribution</p>	Highly Unlikely	<p>PMST reported that species or species habitat may occur within investigation area, however vegetation and habitat within the investigation area unsuitable to support species.</p>
<i>Calidris tenuirostris</i> Great Knot	V	Ma, Mi	E	<ul style="list-style-type: none"> Sheltered coastal habitats with large intertidal mudflats or sandflats (DoE 2016). 	<p>Investigation area is not within the extent of the species distribution</p>	Highly unlikely	<p>Area identified as occurring within buffer zone is entirely unsuitable as habitat for species.</p>
<i>Cereopsis novaehollandiae novaehollandiae</i> Cape Barren Goose	-	Ma	-	<ul style="list-style-type: none"> Usually found on offshore islands (granite), in areas of pasture, tussock grass or low heathy scrub (Aus Museum 2022). Found on the south-eastern coast of Australia and Kangaroo Island (Aus Museum 2022). 	<p>The investigation area within and not at the extent of the species distribution</p>	Potential	<p>Suitable foraging habitat is present at some survey locations along Dry Creek, but there is not enough suitable habitat to sustain a population. Based on the number of nearby historical records, the species has potential to occur periodically.</p>
<i>Charadrius leschenaultia</i> Greater Sand Plover	V	Ma, Mi	-	<ul style="list-style-type: none"> Coastal, inhabiting littoral and estuarine habitats. Sheltered sandy, shelly or muddy beaches, large intertidal mudflats, sandbanks, salt-marshes, estuaries, coral reefs, rocky islands rock platforms, tidal lagoons and dunes near the coast (DoE 2016). 	<p>The investigation area is within and near the extent of the species distribution</p>	Highly Unlikely	<p>Species recorded as occurring in marine/saline environments, with very little suitable habitat within the area.</p>
<i>Charadrius mongolus</i> Lesser Sand Plover	E	Ma, Mi	-	<ul style="list-style-type: none"> This species does not breed in Australia, instead migrating to the northern hemisphere. During the non-breeding season, the species main occurs within Intertidal sandflats and mudflats in estuaries or beaches, or in shallow ponds in saltworks (DCCEEW, 2016). 	<p>The investigation area is within and near the extent of the species distribution</p>	Highly Unlikely	<p>Species recorded as occurring in marine/saline environments, with very little suitable habitat within the area.</p>
<i>Coracina papuensis robusta</i> South-Eastern White-bellied Cuckooshrike	-	Ma	R	<ul style="list-style-type: none"> The white-bellied cuckooshrike thrives in many different habitats and vegetation types including, savanna, woodlands, Eucalyptus forests, riparian forest, rainforest, littoral forest, river redgum bushland, mangroves, open grasslands, coconut plantations, farmlands, and suburban gardens. 	<p>Last recorded siting within investigation area: 30 March 1998</p> <p>The investigation area within and not at the extent of the species distribution</p>	Potential	<p>Species spotted in the investigation area within the last 30 years and occurs well within the distribution area of the species.</p> <p>Species inhabits a wide variety of habitat types with suitable vegetation to support individuals of this species i.e. (mosaic of open grassland, eucalypt forest, riparian forest and suburban gardens)</p>
<i>Falco hypoleucos</i> Grey Falcon	V	-	R	<ul style="list-style-type: none"> Frequents timbered lowland plains, particularly acacia shrublands. Hunts in treeless areas and frequents tussock grassland and open woodland, especially in winter (DAWE 2020). Generally restricted to areas less than 250 mm annual rainfall (DAWE 2020). 	<p>The investigation area within and not at the extent of the species distribution</p>	Highly Unlikely	<p>The species is typically restricted to the arid zone, with its' range substantially contracting to areas with annual rainfall < 250 mm. The investigation area is outside the species' current range and there are no historical records within 10 km.</p>

<i>Falco subniger</i> Black Falcon	-	-	R	<ul style="list-style-type: none"> Black Falcons can be encountered in scrubby grasslands, farmlands, saltbush and bluebush, and wetlands. They often favour drier areas and on occasion can be seen following fires, farm machinery, and other raptors in search of flushed prey (BirdsSA). 	<p>Last recorded siting within investigation area: 04 May 2003</p> <p>The investigation area within and not at the extent of the species distribution</p>	Unlikely	<p>Habitat within the investigation area likely too dense with vegetation to support individuals of this species.</p> <p>Last recorded sighting was over 20 years ago however another raptor was sighted during the field survey indicating that food sources are likely to be available to this species.</p>
<i>Falcunculus frontatus frontatus</i> Eastern Shrike-tit	-	-	R	<ul style="list-style-type: none"> The Eastern Shrike-tit is often found in open forest, woodland, mallee, riverside and watercourses, cypress pines and banksia woodland. It can also sometimes be seen in parks and gardens, on farms with scattered trees, and on pine plantations (Joseph and Reid 1981). 	<p>Last recorded siting within investigation area: 23 March 2008</p> <p>The investigation area is within and not at the extent of the species distribution.</p>	Likely	<p>The investigation area was within the distribution area, with a recorded sighting within the last 16 years.</p> <p>Majority of the habitat within the investigation area is capable of supporting individuals of this species i.e. (open forest lining a watercourse)</p>
<i>Gallinago hardwickii</i> Latham's Snipe	V	Ma, Mi	R	<ul style="list-style-type: none"> Latham's snipe occurs in permanent and ephemeral wetlands, with low dense vegetation e.g. swamps, flooded grasslands or heathlands, around bogs and other water bodies) (DCCEEW 2024a). - 	<p>Last recorded siting within investigation area: 22 October 2020</p> <p>The investigation area is within and not at the extent of the species distribution</p>	Unlikely	Habitat within the investigation area likely too dense with vegetation to support individuals of this species.
<i>Grantiella picta</i> Painted Honeyeater	V	-	R	<ul style="list-style-type: none"> Species inhabits mistletoes in eucalypt forests/woodlands; Riparian woodlands. Woodlands with a higher number of mature trees (DoE 2015). 	The investigation area within and not at the extent of the species distribution	Likely	<p>PMST search demonstrates species habitat and presence is likely to occur.</p> <p>Habitat provides wide range of open woodlands and scrubland.</p> <p>Food resource availability for species diet is present</p> <p>No previous records, from available databases have observed the species within the investigation area</p>
<i>Hieraaetus morphnoides</i> Little Eagle	-	-	V	<ul style="list-style-type: none"> The Little Eagle occurs in open forest, woodland, scrub and tree-lined watercourses. Prefer habitat where a mosaic of wooded and open areas occur such as riparian woodlands. Species avoid largely areas of dense forest (ACT Gov 2013) 	<p>Last recorded siting within investigation area: 02 April 2002</p> <p>The investigation area is within and not at the extent of the species distribution</p>	Potential	<p>PMST search demonstrates species habitat and presence is likely to occur.</p> <p>Habitat provides wide range of open woodlands and scrubland.</p> <p>Food resource availability for species diet is present</p> <p>Recorded sighting of species within the last 30 years.</p>
<i>Hirundapus caudacutus</i> White-throated Needletail		Ma, Mi	V	<ul style="list-style-type: none"> Mostly aerial, recorded most commonly above wooded areas, such as open forest, occasionally flying below the canopy in clearings between trees Roost in tall trees amongst dense foliage on ridgelines (DAWE 2019) 	<p>Last recorded siting within investigation area: 03 March 1985</p> <p>The investigation area is at the extent of the species distribution</p>	Unlikely	<p>Species has not been recorded within the investigation area within the last 40 years</p> <p>Limited habitat features available to support species presence.</p>
<i>Hylacola pyrrhopygia parkeri</i> Chestnut-rumped Heathwren (Mount Lofty Ranges)	E	-	E	<ul style="list-style-type: none"> Occur in eucalypt forests and woodlands within dense heath and undergrowth, most commonly found in rocky areas. The Chestnut-rumped Heathwren is a shy and secretive species and is generally considered to be sedentary with its distribution and range is limited to Mount Lofty, Fleurieu Peninsula and surrounding area (DAWE 2019). 	<p>Last recorded siting within investigation area: 01 January 1880</p> <p>The investigation area within and not at the extent of the species distribution</p>	Potential	Habitat is present in the investigation area and it is within the species distribution, but the species has not been observed for over 100 years.
<i>Leipoa ocellata</i> Malleefowl	V	-	V	<ul style="list-style-type: none"> The species is found primarily in the semi-arid to arid zone, in shrublands and low woodlands dominated by mallee and associated habitats (Benshemesh, 2007). The species require a sandy substrate and an abundance of leaf litter for the construction of their incubator-nests. 	The investigation area is not within the extent of the species distribution.	Highly unlikely	Habitat within the investigation area is not suitable for the support of this species.
<i>Limosa lapponica baueri</i> Alaskan bar-tailed Godwit	-	Ma, Mi	-	<ul style="list-style-type: none"> Forages near the edge of water or in shallow water, mainly in tidal estuaries and harbours (DoE 2016). 	<p>Recorded in coastal areas of all Australian states.</p> <p>The investigation area within and not at the extent of the species distribution</p>	Highly unlikely	<p>Species has not been historically recorded within the investigation area</p> <p>Habitat that would be able to support this species is not present, however the investigation area is within the extent of the species.</p>
<i>Limosa limosa melanuroides</i>	-	Ma, Mi	R	<ul style="list-style-type: none"> In Australia the black-tailed godwit has a primarily coastal habitat environment. The species is commonly found in sheltered bays, 	Investigation area within and not at the extent of the species distribution	Highly unlikely	Species has not been historically recorded within the investigation area

Black-tailed godwit				estuaries and lagoons with large intertidal mudflats or sandflats, or spits and banks of mud, sand or shell-grit; occasionally recorded on rocky coasts or coral islets.			Species recorded as occurring in marine/saline environments, with very little suitable habitat within the area.
<i>Neophema chrysogaster</i> Orange-bellied Parrot	CE	Ma	E	<ul style="list-style-type: none"> Species breeds in Tasmania migrating to mainland Australia during the non-breeding period. In South Australia, the species occurs on beachfronts and in coastal dune scrub, however they can sometimes be observed feeding on pastures, within 200 m of a water body (DCCEEW 2016b). 	Investigation area at the extent of the species distribution	Highly unlikely	Species has not been historically recorded within the investigation area Limited habitat features are present within the investigation area to support this species
<i>Neophema chrysostoma</i> Blue-winged Parrot	V	Ma	V	<ul style="list-style-type: none"> This species occurs in a wide range of habitats from coastal and sub-coastal areas to inland and semi-arid environments. This species breeds on the coast of south-eastern South Australia occupying eucalypt forests and woodlands before migrating more than 100 km inland during winter, where they feed in semi-arid shrubland and sparse grassland (DCCEEW 2023c). 	Last recorded siting within investigation area: 28 June 1917 Investigation area within and not at the extent of the species distribution	Highly Unlikely	Investigation area does not contain appropriate habitat features or climatic conditions to support species No known records have been documented within the investigation area
<i>Numenius madagascariensis</i> Eastern Curlew	CE	Ma, Mi	E	<ul style="list-style-type: none"> Sheltered coastal areas and estuaries. Typically, mudflats and saltmarsh (DCCEEW 2015). 	Investigation area within the PMST distribution of where species or species habitat is may occur	Highly unlikely	Conditions for species survival not present
<i>Oriolus sagittatus sagittatus</i> Olive-backed Oriole	-	-	R	<ul style="list-style-type: none"> Species occurs in forests, woodlands and rainforests, as well as urban areas with good vegetation i.e. parks and golf courses (Birds in Backyards 2024). 	Last recorded siting within investigation area: 26 April 2021 Investigation area within and near the extent of the species distribution	Likely	Habitat is present in the investigation area with woodland areas and well-vegetated urban environment. The investigation area is within the species modelled distribution.
<i>Oxyura australis</i> Blue-billed Duck	-	-	R	<ul style="list-style-type: none"> Species is almost entirely aquatic, congregating on large open deep freshwater dams and Lakes. When seldom found on land, species generally either spends time within vegetation in concealed bays or in large exposed communal rafts. 	Last recorded siting within investigation area: 22 December 2020 Investigation area within and not at the extent of the species distribution	Likely	Species has been recorded within the investigation area Investigation area provides habitat water body type environments i.e. (lakes, dams and wetlands)
<i>Petroica boodang boodang</i> Scarlet Robin	-	-	R	<ul style="list-style-type: none"> Species resides in dry eucalypt forests and woodlands, often with an open grassy understory scattered with shrubs Utilises both mature and regrowth vegetation as habitat, usually also preferring area abundant in logs and fallen timber. 	Last recorded siting within investigation area: 28 October 1989 Investigation area within and not at the extent of the species distribution	Potential	Species has not been recorded within the investigation area in the past 30 years Habitat features are present to allow this species to potentially occur within the investigation area
<i>Podiceps cristatus australis</i> Australian Great Crested Grebe	-	-	R	<ul style="list-style-type: none"> Species forage in a variety of shallow lakes, and require lakes fringed with vegetation (rushes, sedges, reeds, willows) to nest (BirdLife International 2024). 	Last recorded siting within investigation area: 30 January 1992 Investigation area within and not at the extent of the species distribution	Unlikely	Species has not been recorded in the past 30 years within the investigation area Limited habitat features are available within the investigation area to support this species
<i>Rostratula australis</i> Australian Painted snipe	E	-	E	<ul style="list-style-type: none"> Shallow freshwater (occasionally brackish) wetlands, both ephemeral and permanent, usually with a mosaic of low patchy vegetation (DSEWPac 2013). Diet consists of seeds and small invertebrates that it feeds on at night within soft mud (BirdLife 2024). 	Last recorded siting within investigation area: 21 December 1992 Investigation area is within and not at the extent of the species distribution.	Potential	Species is present in the investigation area and was recorded in the area more than 31 years ago.
<i>Stagonopleura guttata</i> Diamond Firetail	V	-	V	<ul style="list-style-type: none"> Species occurs in habitats with relatively low tree density, specifically eucalypt, acacia, or casuarina woodlands, but have also been known to inhabit farmland and grassland with scattered trees (Higgins et al. 2007) 	Investigation area is within and not at the extent of the species distribution.	Potential	Habitat is present in the investigation area.
<i>Sternula nereis nereis</i> Australian Fairy Tern	V	-	E	<ul style="list-style-type: none"> Nests on sheltered sandy beaches, spits and banks above the high tide line and below vegetation (DSEWPac 2011). 	Investigation area is within and at the extent of the species distribution.	Highly unlikely	Limited habitat features are available within the investigation area to support this species
<i>Tringa nebularia</i> Common Greenshank	E	Ma, Mi	-	<ul style="list-style-type: none"> 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 embayments, harbours, river estuaries, deltas and lagoons and are recorded less often in round tidal pools, rock-flats and rock platforms. 	Last recorded siting within investigation area: 01 July 1985 Investigation area is within and not at the extent of the species distribution	Highly Unlikely	Limited habitat features are available within the investigation area to support this species
<i>Xenus cinereus</i> Terek Sandpiper	Vu	Ma, Mi	R	<ul style="list-style-type: none"> The Terek Sandpiper mostly forages in the open, on soft wet intertidal mudflats or in sheltered estuaries, embayments, harbours or lagoons. The species has also been recorded on islets, mudbanks, sandbanks and spits, and near mangroves and occasionally in samphire (<i>Halosarcia</i> spp.). 	In Australia, the species has a primarily coastal distribution, and is more common in northern and eastern Australia. The Investigation site is:	Highly unlikely	The investigation area is outside of the document extent of the species' distribution.

					Not within the extent of the species distribution.		
<i>Zoothra lunulata halmaturina</i> South Australian Bassian Thrush	E	-	V	– The subspecies mostly inhabits damp eucalypt forest or woodland (Garnett et al., 2011). Densely forested areas and gullies are favoured, usually with a thick canopy overhead, a thick understorey of small trees and tall shrubs, and leaf-litter below (DEH, 2008)	Last recorded siting within investigation area: 07 March 2016	Likely	Record within the area less than 10 years ago, and appropriate habitat available to support the species.
Mammals –							
<i>Isodon obesulus obesulus</i> Southern Brown Bandicoot	E	-	V	– The Southern Brown Bandicoot lives in dense scrubby habitat or areas with low dense groundcover. – Regional and National Recovery Plans have been developed to maintain, protect and improve Southern Brown Bandicoot populations in Australia	Last recorded siting within investigation area: 27 April 2019 The i site is not within the extent of the species distribution.	Highly unlikely	One recorded sighting of the species occurred downstream of the site, which included photographs, reported by ALA. However, the investigation area falls outside of the species modelled distribution.
<i>Pteropus poliocephalus</i> Grey-headed Flying-fox	V	-	R	– Utilises vegetation communities including rainforests, open forests, closed and open woodlands, Melaleuca swamps and Banksia woodlands (Threatened Species Scientific Committee 2001).	Last recorded siting within investigation area: 22 March 2020 The investigation site is within and not at the extent of the species distribution.	Likely	Previous records from the area from less than 5 years ago. Woodland provides appropriate habitat for the species.
<i>Trichosurus vulpecula</i> Common Brushtail Possum	-	-	R	– Common Brushtail Possum habitat varies greatly with South Australian inhabitants occupying eucalypts forests, woodlands, ground refuges (burrows and hollow logs), and occasionally rock crevasses.	Last recorded siting within investigation area: 10 April 2021 The investigation site is within and not at the extent of the species distribution.	Likely	Previous records from the area from less than 5 years ago. Woodland provides appropriate habitat for the species.
Reptile –							
<i>Aprasia pseudopulchella</i> Flinders Ranges Worm-lizard	V	-	-	– Occurs in open woodland, native tussock grassland, riparian habitats and rocky isolates (Cogger et al., 1993) – It prefers stony soils or clay soils with a stony surface and has been found sheltering in soil beneath stones and rotting stumps (Wilson & Knowles, 1988; Cogger et al., 1993).	Known to be distributed from the Flinders Ranges, extending south to the western slopes and northern and central Mount Lofty Ranges, and has also been found in the northern suburbs of Adelaide and Mount Remarkable National Park. The investigation area is within in and not at the extent of the species distribution.	Potential	Some aspects of preferred habitat are present in the investigation area, and it is within the species modelled distribution range.
<i>Tiliqua adelaidensis</i> Pygmy blue-tongued Lizard	E	-	E	– Remnant native grassland or grassy woodland with a sparse overstorey of trees (Duffy et al 2012).	The investigation site is not within the extent of the species distribution.	Highly unlikely	The investigation area does not support preferred habitat of the species (remnant native grasslands) and it falls outside of the species modelled distribution.
<i>Emydura macquarii</i> Murray short-necked turtle	-	-	V	– Found in open water including lagoons and main channels of rivers and tend to prefer permanent areas of slow-moving water (DEW)	The investigation site is within and near the extent of the species distribution.	Likely	Photographs of habitat to support species on walkway Aquatic habitat available within the investigation area provides inundated wetlands and stream system to support this species
Amphibia							
<i>Pseudophryne bibronii</i> Brown Toadlet	-	-	R	– The Brown Toadlet utilises a wide variety of habitats, including dry forests, woodland, shrubland, grassland, coastal swamps, heathland, and sub-alpine areas (Robinson 2002).	Last recorded siting within investigation area: 30 November 2021 In SA the species occurs in the south-east, Kangaroo Island, Mount Lofty Ranges & Adelaide Plains, and Flinders Ranges. The investigation site is within and not at the extent of the species distribution.	Likely	Previous record from less than 5 years ago and the Project area provides suitable habitat for the species.

Note: EPBC Act listings are (CE= Critically Endangered, E= Endangered V=Vulnerable), Migratory species listings are (Mi=Migratory, Ma=Marine) and NP&W Act listings are (CE= Critically Endangered, E=Endangered, V=Vulnerable, R=Rare),

Appendix B

Protected Matters Search Results



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: 13-May-2024

[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:	1
Wetlands of International Importance (Ramsar)	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	2
Listed Threatened Species:	44
Listed Migratory Species:	36

Other Matters Protected by the EPBC Act

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

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at <https://www.dcceew.gov.au/parks-heritage/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:	132
Commonwealth Heritage Places:	1
Listed Marine Species:	47
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:	1
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

National Heritage Places [\[Resource Information \]](#)

Name	State	Legal Status	Buffer Status
Historic			
The Adelaide Park Lands and City Layout	SA	Listed place	In buffer area only

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
Grey Box (<i>Eucalyptus microcarpa</i>) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	Endangered	Community may occur within area	In buffer area only
Peppermint Box (<i>Eucalyptus odorata</i>) Grassy Woodland of South Australia	Critically Endangered	Community may 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			
Aphelocephala leucopsis Southern Whiteface [529]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Calidris tenuirostris Great Knot [862]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Species or species habitat known to occur within area	In buffer area only
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area	In feature area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Hylacola pyrrhopygia parkeri listed as Calamanthus pyrrhopygius parkeri Chestnut-rumped Heathwren (Mt Lofty Ranges) [67071]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Limosa lapponica baueri Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Endangered	Species or species habitat may occur within area	In buffer area only
Limosa limosa Black-tailed Godwit [845]	Endangered	Species or species habitat known to occur within area	In buffer area only
Melanodryas cucullata cucullata South-eastern Hooded Robin, Hooded Robin (south-eastern) [67093]	Endangered	Species or species habitat likely to occur within area	In feature area
Neophema chrysogaster Orange-bellied Parrot [747]	Critically Endangered	Species or species habitat may occur within area	In buffer area only
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat known to occur within area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Polytelis anthoepus monarchoides Regent Parrot (eastern) [59612]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area	In feature area
Stagonopleura bella samueli Western Beautiful Firetail, Beautiful Firetail (Mt Lofty Range and Kangaroo Island) [80202]	Endangered	Species or species habitat may occur within area	In buffer area only
Stagonopleura guttata Diamond Firetail [59398]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Species or species habitat known to occur within area	In feature area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area	In feature area
Xenus cinereus Terek Sandpiper [59300]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Zosteroterus lunulata halmaturina South Australian Bassian Thrush, Western Bassian Thrush [67121]	Endangered	Species or species habitat likely to occur within area	In feature area
MAMMAL			
Isoodon obesulus obesulus Southern Brown Bandicoot (eastern), Southern Brown Bandicoot (south-eastern) [68050]	Endangered	Species or species habitat may occur within area	In buffer area only
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
PLANT			
Caladenia tensa Greencomb Spider-orchid, Rigid Spider-orchid [24390]	Endangered	Species or species habitat likely to occur within area	In feature area
Euphrasia collina subsp. osbornii Osborn's Eyebright [3684]	Endangered	Species or species habitat may occur within area	In buffer area only
Glycine latrobeana Clover Glycine, Purple Clover [13910]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Olearia pannosa subsp. pannosa Silver Daisy-bush, Silver-leaved Daisy, Velvet Daisy-bush [12348]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Prasophyllum pallidum Pale Leek-orchid [20351]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Prasophyllum pruinosum Plum Leek-orchid [11821]	Endangered	Species or species habitat known to occur within area	In buffer area only
Pterostylis cucullata Leafy Greenhood [15459]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Senecio macrocarpus Large-fruit Fireweed, Large-fruit Groundsel [16333]	Vulnerable	Species or species habitat may occur within area	In feature area
Swainsona pyrophila Yellow Swainson-pea [56344]	Vulnerable	Species or species habitat may occur within area	In feature area
Tecticornia flabelliformis Bead Glasswort, Bead Samphire [82664]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Thelymitra matthewsii Spiral Sun-orchid [4168]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only

REPTILE

Aprasia pseudopulchella Flinders Ranges Worm-lizard [1666]	Vulnerable	Species or species habitat likely to occur within area	In feature area
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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

Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
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 likely to occur within area	In feature area
Migratory Wetlands Species			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area	In feature area
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris alba Sanderling [875]		Species or species habitat known to occur within area	In buffer area only
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat likely to 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
Calidris subminuta Long-toed Stint [861]		Species or species habitat known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris tenuirostris Great Knot [862]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Charadrius bicinctus Double-banded Plover [895]		Species or species habitat known to occur within area	In buffer area only
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Species or species habitat known to occur within area	In buffer area only
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat known to occur within area	In buffer area only
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area	In feature area
Limicola falcinellus Broad-billed Sandpiper [842]		Species or species habitat known to occur within area	In buffer area only
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area	In buffer area only
Limosa limosa Black-tailed Godwit [845]	Endangered	Species or species habitat known to occur within area	In buffer area only
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Numenius minutus Little Curlew, Little Whimbrel [848]		Species or species habitat known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Numenius phaeopus Whimbrel [849]		Species or species habitat known to occur within area	In buffer area only
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area	In buffer area only
Phalaropus lobatus Red-necked Phalarope [838]		Species or species habitat known to occur within area	In buffer area only
Philomachus pugnax Ruff (Reeve) [850]		Species or species habitat known to occur within area	In buffer area only
Pluvialis fulva Pacific Golden Plover [25545]		Species or species habitat known to occur within area	In buffer area only
Pluvialis squatarola Grey Plover [865]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Tringa brevipes Grey-tailed Tattler [851]		Species or species habitat known to occur within area	In buffer area only
Tringa glareola Wood Sandpiper [829]		Species or species habitat known to occur within area	In buffer area only
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area	In feature area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Species or species habitat known to occur within area	In buffer area only
Xenus cinereus Terek Sandpiper [59300]	Vulnerable	Species or species habitat known to occur within area	In buffer area only

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 - Australian Broadcasting Corporation		
Commonwealth Land - Australian Broadcasting Commission [40359]	SA	In buffer area only
Commonwealth Land - Australian Broadcasting Commission [40358]	SA	In buffer area only
Commonwealth Land - Australian Broadcasting Commission [40352]	SA	In buffer area only
Commonwealth Land - Australian Broadcasting Commission [40353]	SA	In buffer area only
Commonwealth Land - Australian Broadcasting Commission [40350]	SA	In buffer area only
Commonwealth Land - Australian Broadcasting Commission [40351]	SA	In buffer area only
Commonwealth Land - Australian Broadcasting Commission [40356]	SA	In buffer area only
Commonwealth Land - Australian Broadcasting Commission [40357]	SA	In buffer area only
Commonwealth Land - Australian Broadcasting Commission [40354]	SA	In buffer area only
Commonwealth Land - Australian Broadcasting Commission [40355]	SA	In buffer area only
Commonwealth Land - Australian Broadcasting Commission [40366]	SA	In buffer area only
Commonwealth Land - Australian Broadcasting Commission [40361]	SA	In buffer area only
Commonwealth Land - Australian Broadcasting Commission [40360]	SA	In buffer area only
Commonwealth Land - Australian Broadcasting Commission [40363]	SA	In buffer area only
Commonwealth Land - Australian Broadcasting Commission [40362]	SA	In buffer area only
Commonwealth Land - Australian Broadcasting Commission [40365]	SA	In buffer area only
Commonwealth Land - Australian Broadcasting Commission [40364]	SA	In buffer area only
Defence		
Commonwealth Land - Defence Service Homes Corporation [40492]	SA	In buffer area only
Commonwealth Land - Defence Service Homes Corporation [40501]	SA	In buffer area only
Commonwealth Land - Defence Service Homes Corporation [40528]	SA	In buffer area only
Commonwealth Land - Defence Service Homes Corporation [40519]	SA	In buffer area only
Commonwealth Land - Defence Service Homes Corporation [40518]	SA	In buffer area only

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - Defence Service Homes Corporation [40454]	SA	In buffer area only
Defence - Army Training Depot [40093]	SA	In buffer area only
Defence - Army Training Depot [40097]	SA	In buffer area only
Defence - Army Training Depot [40096]	SA	In buffer area only
Defence - Army Training Depot [40098]	SA	In buffer area only
Defence - Army Training Depot [40099]	SA	In buffer area only
Defence - Army Training Depot [40094]	SA	In buffer area only
Defence - Army Training Depot [40095]	SA	In buffer area only
Defence - HAMPSTEAD BARRACKS [40090]	SA	In buffer area only
Defence - Defence Housing Authority		
Commonwealth Land - Defence Housing Authority [40433]	SA	In buffer area only
Commonwealth Land - Defence Housing Authority [41462]	SA	In buffer area only
Commonwealth Land - Defence Housing Authority [41463]	SA	In buffer area only
Commonwealth Land - Defence Housing Authority [40401]	SA	In buffer area only
Commonwealth Land - Defence Housing Authority [40400]	SA	In buffer area only
Commonwealth Land - Defence Housing Authority [40563]	SA	In buffer area only
Commonwealth Land - Defence Housing Authority [40632]	SA	In buffer area only
Commonwealth Land - Defence Housing Authority [40437]	SA	In buffer area only
Commonwealth Land - Defence Housing Authority [40630]	SA	In buffer area only
Commonwealth Land - Defence Housing Authority [40439]	SA	In buffer area only
Commonwealth Land - Defence Housing Authority [40432]	SA	In buffer area only
Commonwealth Land - Defence Housing Authority [40435]	SA	In buffer area only
Commonwealth Land - Defence Housing Authority [40438]	SA	In buffer area only
Commonwealth Land - Defence Housing Authority [40427]	SA	In buffer area only
Commonwealth Land - Defence Housing Authority [40418]	SA	In buffer area only
Commonwealth Land - Defence Housing Authority [40631]	SA	In buffer area only
Commonwealth Land - Defence Housing Authority [40434]	SA	In buffer area only

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - Defence Housing Authority [40419]	SA	In buffer area only
Commonwealth Land - Defence Housing Authority [40497]	SA	In buffer area only
Commonwealth Land - Defence Housing Authority [40392]	SA	In buffer area only
Commonwealth Land - Defence Housing Authority [40391]	SA	In buffer area only
Commonwealth Land - Defence Housing Authority [40396]	SA	In buffer area only
Commonwealth Land - Defence Housing Authority [40399]	SA	In buffer area only
Commonwealth Land - Defence Housing Authority [40412]	SA	In buffer area only
Commonwealth Land - Defence Housing Authority [40415]	SA	In buffer area only
Commonwealth Land - Defence Housing Authority [40414]	SA	In buffer area only
Commonwealth Land - Defence Housing Authority [40417]	SA	In buffer area only
Commonwealth Land - Defence Housing Authority [40416]	SA	In buffer area only
Commonwealth Land - Defence Housing Authority [40424]	SA	In buffer area only
Commonwealth Land - Defence Housing Authority [41558]	SA	In buffer area only
Commonwealth Land - Defence Housing Authority [40425]	SA	In buffer area only
Commonwealth Land - Defence Housing Authority [40393]	SA	In buffer area only
Commonwealth Land - Defence Housing Authority [40331]	SA	In buffer area only
Commonwealth Land - Defence Housing Authority [41498]	SA	In feature area
Commonwealth Land - Defence Housing Authority [41499]	SA	In feature area
Commonwealth Land - Defence Housing Authority [40428]	SA	In buffer area only
Commonwealth Land - Defence Housing Authority [40429]	SA	In buffer area only
Commonwealth Land - Defence Housing Authority [40426]	SA	In buffer area only
Commonwealth Land - Defence Housing Authority [40466]	SA	In buffer area only
Commonwealth Land - Defence Housing Authority [40629]	SA	In buffer area only
Commonwealth Land - Defence Housing Authority [40467]	SA	In buffer area only
Commonwealth Land - Defence Housing Authority [40460]	SA	In buffer area only
Commonwealth Land - Defence Housing Authority [41590]	SA	In buffer area only
Commonwealth Land - Defence Housing Authority [40605]	SA	In buffer area only

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - Defence Housing Authority [40421]	SA	In buffer area only
Commonwealth Land - Defence Housing Authority [40458]	SA	In buffer area only
Commonwealth Land - Defence Housing Authority [40459]	SA	In buffer area only
Commonwealth Land - Defence Housing Authority [40457]	SA	In buffer area only
Commonwealth Land - Defence Housing Authority [41501]	SA	In buffer area only
Commonwealth Land - Defence Housing Authority [41500]	SA	In feature area
Commonwealth Land - Defence Housing Authority [40443]	SA	In buffer area only
Commonwealth Land - Defence Housing Authority [40442]	SA	In buffer area only
Commonwealth Land - Defence Housing Authority [40441]	SA	In buffer area only
Commonwealth Land - Defence Housing Authority [40440]	SA	In buffer area only
Commonwealth Land - Defence Housing Authority [40444]	SA	In buffer area only
Commonwealth Land - Defence Housing Authority [40445]	SA	In buffer area only
Commonwealth Land - Defence Housing Authority [40380]	SA	In buffer area only
Commonwealth Land - Defence Housing Authority [40436]	SA	In buffer area only
Commonwealth Land - Defence Housing Authority [40431]	SA	In buffer area only
Commonwealth Land - Defence Housing Authority [40423]	SA	In buffer area only
Commonwealth Land - Defence Housing Authority [40422]	SA	In buffer area only
Commonwealth Land - Defence Housing Authority [41497]	SA	In feature area
Commonwealth Land - Defence Housing Authority [40420]	SA	In buffer area only
Commonwealth Land - Defence Housing Authority [40430]	SA	In buffer area only
Education, Science and Training - Minister of Education Employment & Training		
Commonwealth Land - Minister of Education Employment & Training [41471]	SA	In buffer area only
Transport and Regional Services - Australian National Railways Commission		
Commonwealth Land - Australian National Railways Commission [40408]	SA	In buffer area only
Commonwealth Land - Australian National Railways Commission [41546]	SA	In buffer area only
Commonwealth Land - Australian National Railways Commission [40410]	SA	In buffer area only

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - Australian National Railways Commission [40371]	SA	In buffer area only
Commonwealth Land - Australian National Railways Commission [40478]	SA	In buffer area only
Commonwealth Land - Australian National Railways Commission [41440]	SA	In buffer area only
Commonwealth Land - Australian National Railways Commission [40369]	SA	In buffer area only
Commonwealth Land - Australian National Railways Commission [40472]	SA	In buffer area only
Commonwealth Land - Australian National Railways Commission [41603]	SA	In buffer area only
Commonwealth Land - Australian National Railways Commission [40476]	SA	In buffer area only
Commonwealth Land - Australian National Railways Commission [41607]	SA	In buffer area only
Commonwealth Land - Australian National Railways Commission [41608]	SA	In buffer area only
Commonwealth Land - Australian National Railways Commission [40474]	SA	In buffer area only
Commonwealth Land - Australian National Railways Commission [41476]	SA	In buffer area only
Commonwealth Land - Australian National Railways Commission [41477]	SA	In buffer area only
Commonwealth Land - Australian National Railways Commission [40475]	SA	In buffer area only
Commonwealth Land - Australian National Railways Commission [41591]	SA	In buffer area only
Commonwealth Land - Australian National Railways Commission [41547]	SA	In buffer area only
Commonwealth Land - Australian National Railways Commission [40448]	SA	In buffer area only
Commonwealth Land - Australian National Railways Commission [40447]	SA	In buffer area only
Commonwealth Land - Australian National Railways Commission [40446]	SA	In buffer area only
Commonwealth Land - Australian National Railways Commission [41489]	SA	In buffer area only

Unknown

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - [40485]	SA	In buffer area only
Commonwealth Land - [40486]	SA	In buffer area only
Commonwealth Land - [40370]	SA	In buffer area only
Commonwealth Land - [40505]	SA	In buffer area only
Commonwealth Land - [40479]	SA	In buffer area only
Commonwealth Land - [40473]	SA	In buffer area only
Commonwealth Land - [40477]	SA	In buffer area only
Commonwealth Land - [40480]	SA	In buffer area only
Commonwealth Land - [40482]	SA	In buffer area only
Commonwealth Land - [40483]	SA	In buffer area only
Commonwealth Land - [40484]	SA	In buffer area only
Commonwealth Land - [40481]	SA	In buffer area only
Commonwealth Land - [40349]	SA	In buffer area only
Commonwealth Land - [40328]	SA	In buffer area only

Commonwealth Heritage Places [[Resource Information](#)]

Name	State	Status	Buffer Status
Historic			
Parafield Airport Air Traffic Control Tower	SA	Listed place	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 likely to occur within area	In feature area
Apus pacificus			
Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Arenaria interpres			
Ruddy Turnstone [872]	Vulnerable	Species or species habitat known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
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]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris alba Sanderling [875]		Species or species habitat known to occur within area	In buffer area only
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area overfly marine area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat likely to 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
Calidris subminuta Long-toed Stint [861]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Calidris tenuirostris Great Knot [862]	Vulnerable	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 known to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Charadrius bicinctus Double-banded Plover [895]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Species or species habitat known to occur within area	In buffer area only
Charadrius ruficapillus Red-capped Plover [881]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to 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
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In buffer area only
Limicola falcinellus Broad-billed Sandpiper [842]		Species or species habitat known to occur within area overfly marine area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area	In buffer area only
Limosa limosa Black-tailed Godwit [845]	Endangered	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 cinerea Grey Wagtail [642]		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 likely to occur within area overfly marine area	In feature area
Neophema chrysogaster Orange-bellied Parrot [747]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In buffer area only
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	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 known to occur within area	In feature area
Numenius minutus Little Curlew, Little Whimbrel [848]		Species or species habitat known to occur within area overfly marine area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Numenius phaeopus Whimbrel [849]		Species or species habitat known to occur within area	In buffer area only
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area	In buffer area only
Phalaropus lobatus Red-necked Phalarope [838]		Species or species habitat known to occur within area	In buffer area only
Philomachus pugnax Ruff (Reeve) [850]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Pluvialis fulva Pacific Golden Plover [25545]		Species or species habitat known to occur within area	In buffer area only
Pluvialis squatarola Grey Plover [865]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In buffer area only
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
Sterna striata White-fronted Tern [799]		Migration route may occur within area	In feature area
Tringa brevipes as Heteroscelus brevipes Grey-tailed Tattler [851]		Species or species habitat known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Tringa glareola Wood Sandpiper [829]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Xenus cinereus Terek Sandpiper [59300]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In buffer area only

Extra Information

State and Territory Reserves				[Resource Information]
Protected Area Name	Reserve Type	State	Buffer Status	
Unnamed (No.HA308)	Heritage Agreement	SA	In buffer area only	
Nationally Important Wetlands				[Resource Information]
Wetland Name	State	Buffer Status		
Barker Inlet & St Kilda	SA	In buffer area only		
EPBC Act Referrals				[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
New Women?s and Children?s Hospital	2023/09606		Completed	In buffer area only
Controlled action				
Nava-1 Cable System	2001/510	Controlled Action	Completed	In buffer area only
Not controlled action				
Construction of attached dwellings on land adjoining North Adelaide Post Office	2009/5022	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

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
INDIGO Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed	In feature area
Upgrade & Revitalisation of Existing Rail Line	2010/5342	Not Controlled Action	Completed	In buffer area only
Not controlled action (particular manner)				
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
SEA Gas Project transmission pipeline	2001/513	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only

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.

Please feel free to provide feedback via the [Contact us](#) page.

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Department of Climate Change, Energy, the Environment and Water

GPO Box 3090

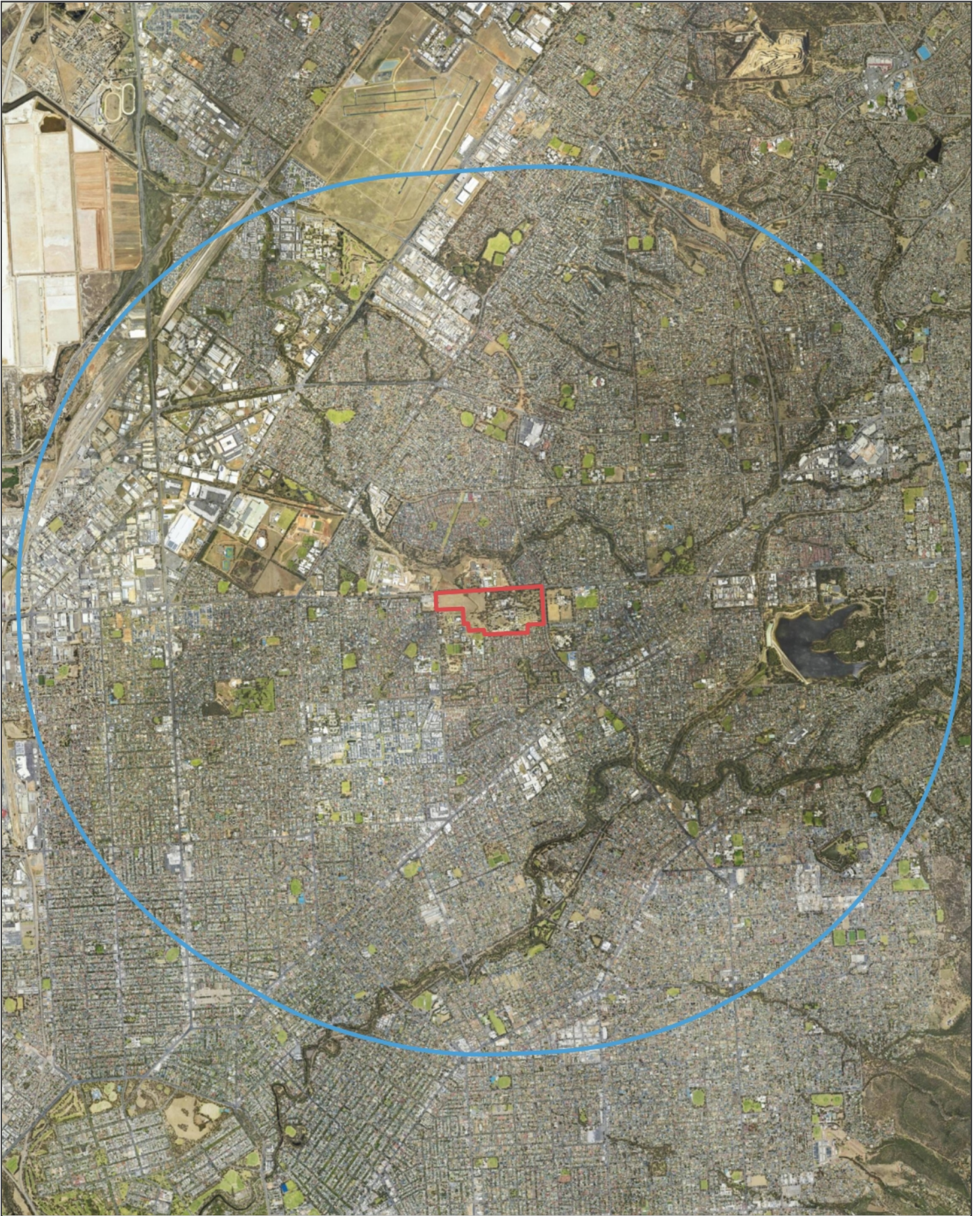
Canberra ACT 2601 Australia

+61 2 6274 1111

Appendix C

Desktop Assessment Results

NatureMaps Search Area



Map data is compiled from a variety of sources and hence its accuracy is variable.

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0 2,961 Kms

Compiled: 13-May-2024
Generated at: www.naturemaps.sa.gov.au
Datum: Geocentric Datum of Australia, 2020
Projection: Web Mercator (Auxiliary Sphere)



Government of South Australia
Department for Environment
and Water

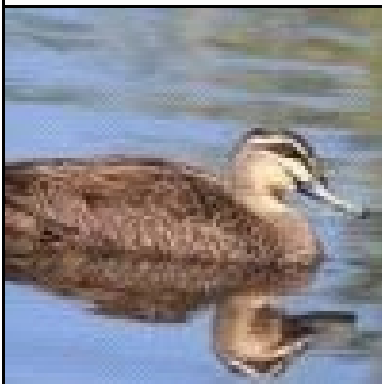



SPECIES	COMMON NAME	NATIVE	NATIONAL RATING	STATE RATING
ACTINOPTERI				
<i>Carassius auratus</i>	Goldfish	N	-	-
<i>Cyprinus carpio</i>	European Carp	N	-	-
<i>Galaxias brevipinnis</i>	Climbing Galaxias	Y	-	-
<i>Galaxias maculatus</i>	Common Galaxias	Y	-	-
<i>Galaxias olidus (revised)</i>	Mountain Galaxias	Y	-	-
<i>Gambusia holbrooki</i>	Eastern Gambusia	N	-	-
<i>Hypseleotris spp. (complex)</i>	n/a	Y	-	-
<i>Melanotaenia fluviatilis</i>	Murray Rainbowfish	Y	-	-
<i>Perca fluviatilis</i>	Redfin Perch	N	-	-
<i>Philypnodon grandiceps</i>	Big-headed Gudgeon	Y	-	-
<i>Philypnodon macrostomus</i>	Dwarf Flathead Gudgeon	Y	-	-
<i>Tandanus tandanus</i>	Freshwater Catfish	Y	-	-
AMPHIBIA				
<i>Crinia signifera</i>	Common Froglet	Y	-	-
<i>Limnodynastes dumerilii</i>	Banjo Frog	Y	-	-
<i>Limnodynastes tasmaniensis</i>	Spotted Marsh Frog	Y	-	-
<i>Litoria calliscelis</i>	South Australian Tree Frog (MLR MN)	Y	-	-
<i>Litoria peronii</i>	Peron's Tree Frog	Y	-	-
<i>Pseudophryne bibronii</i>	Brown Toadlet	Y	-	R
AVES				
<i>Acanthagenys rufogularis</i>	Spiny-cheeked Honeyeater	Y	-	-
<i>Acanthiza chrysorrhoa</i>	Yellow-rumped Thornbill	Y	-	-
<i>Acanthiza pusilla samuelli</i>	Brown Thornbill (MLR)	Y	-	-
<i>Acanthorhynchus tenuirostris halmaturinus</i>	Eastern Spinebill (KI, MLR, southern FR)	Y	-	-
<i>Accipiter cirrocephalus cirrocephalus</i>	Collared Sparrowhawk	Y	-	-
<i>Accipiter fasciatus fasciatus</i>	Brown Goshawk	Y	-	-
<i>Acridotheres tristis tristis</i>	Common Myna	N	-	-
<i>Acrocephalus australis australis</i>	Australian Reed Warbler	Y	-	-
<i>Alauda arvensis arvensis</i>	Eurasian Skylark	N	-	-
<i>Alisterus scapularis</i>	Australian King-Parrot	Y	-	-
<i>Anas castanea</i>	Chestnut Teal	Y	-	-
<i>Anas gracilis gracilis</i>	Grey Teal	Y	-	-
<i>Anas platyrhynchos platyrhynchos</i>	Mallard	N	-	-
<i>Anas superciliosa</i>	Pacific Black Duck	Y	-	-
<i>Anas superciliosa superciliosa</i>	Pacific Black Duck	Y	-	-
<i>Anas superciliosa x platyrhynchos</i>	Pacific Black Duck x Mallard hybrid	Y	-	-
<i>Anhinga novaehollandiae novaehollandiae</i>	Australasian Darter	Y	-	R
<i>Anser anser</i>	Greylag Goose	N	-	-
<i>Anthochaera carunculata</i>	Red Wattlebird	Y	-	-
<i>Anthochaera carunculata woodwardi</i>	Red Wattlebird (MLR, AP, YP, EP, far west, Yellabinna)	Y	-	-
<i>Anthochaera chrysoptera chrysoptera</i>	Little Wattlebird (mainland SA)	Y	-	-
<i>Anthus australis</i>	Australian Pipit	Y	-	-
<i>Aphrodroma brevirostris</i>	Kerguelen Petrel	Y	-	-
<i>Apus pacificus pacificus</i>	Pacific Swift	Y	-	-
<i>Aquila audax audax</i>	Wedge-tailed Eagle	Y	-	-
<i>Ardea alba modesta</i>	Great Egret	Y	-	-
<i>Ardea intermedia plumifera</i>	Plumed Egret	Y	-	R
<i>Ardea pacifica</i>	White-necked Heron	Y	-	-
<i>Ardenna tenuirostris</i>	Short-tailed Shearwater	Y	-	-
<i>Artamus cyanopterus</i>	Dusky Woodswallow	Y	-	-
<i>Aythya australis</i>	Hardhead	Y	-	-
<i>Biziura lobata menziesi</i>	Musk Duck	Y	-	R
<i>Botaurus poiciloptilus</i>	Australasian Bittern	Y	EN	E
<i>Bubulcus ibis coromandus</i>	Eastern Cattle Egret	Y	-	R
<i>Cacatua galerita</i>	Sulphur-crested Cockatoo	Y	-	-
<i>Cacatua sanguinea gymnopsis</i>	Little Corella	Y	-	-
<i>Cacatua tenuirostris</i>	Long-billed Corella	Y	-	-
<i>Cacomantis flabelliformis flabelliformis</i>	Fan-tailed Cuckoo	Y	-	-
<i>Cacomantis pallidus</i>	Pallid Cuckoo	Y	-	-
<i>Cairina moschata</i>	Muscovy Duck	N	-	-
<i>Caligavis chrysops samuelli</i>	Yellow-faced Honeyeater (MLR, southern FR)	Y	-	-
<i>Carduelis carduelis britannica</i>	European Goldfinch	N	-	-
<i>Cereopsis novaehollandiae novaehollandiae</i>	Cape Barren Goose	Y	-	R
<i>Chalcites basalis</i>	Horsfield's Bronze Cuckoo	Y	-	-
<i>Chenonetta jubata</i>	Maned Duck	Y	-	-
<i>Chlidonias hybrida javanicus</i>	Whiskered Tern	Y	-	-
<i>Chloris chloris</i>	European (Common) Greenfinch	N	-	-
<i>Chroicocephalus novaehollandiae novaehollandiae</i>	Silver Gull	Y	-	-
<i>Cincloramphus cruralis</i>	Brown Songlark	Y	-	-
<i>Cincloramphus mathewsi</i>	Rufous Songlark	Y	-	-
<i>Colluricincla harmonica</i>	Grey Shrike-thrush	Y	-	-
<i>Columba livia</i>	Feral Pigeon	N	-	-
<i>Coracina novaehollandiae</i>	Black-faced Cuckooshrike	Y	-	-
<i>Coracina papuensis robusta</i>	White-bellied Cuckooshrike	Y	-	R
<i>Corvus mellori</i>	Little Raven	Y	-	-
<i>Coturnix pectoralis</i>	Stubble Quail	Y	-	-
<i>Cygnus atratus</i>	Black Swan	Y	-	-
<i>Dacelo novaeguineae novaeguineae</i>	Laughing Kookaburra	Y	-	-
<i>Dicaeum hirundinaceum hirundinaceum</i>	Mistletoebird	Y	-	-
<i>Egretta novaehollandiae</i>	White-faced Heron	Y	-	-
<i>Elanus axillaris</i>	Black-shouldered Kite	Y	-	-
<i>Elseyornis melanaps</i>	Black-fronted Dotterel	Y	-	-
<i>Eolophus roseicapilla</i>	Galah	Y	-	-
<i>Eolophus roseicapilla albiceps</i>	Galah (most of SA)	Y	-	-
<i>Epthianura albifrons</i>	White-fronted Chat	Y	-	-
<i>Erythronyx cinctus</i>	Red-kneed Dotterel	Y	-	-
<i>Falco berigora berigora</i>	Brown Falcon	Y	-	-
<i>Falco cenchroides cenchroides</i>	Nankeen Kestrel	Y	-	-

SPECIES	COMMON NAME	NATIVE	NATIONAL RATING	STATE RATING
AVES				
<i>Falco longipennis murchisonianus</i>	Australian Hobby	Y	-	-
<i>Falco subniger</i>	Black Falcon	Y	-	R
<i>Falcunculus frontatus frontatus</i>	Eastern Shrike-tit	Y	-	R
<i>Fulica atra australis</i>	Eurasian Coot	Y	-	-
<i>Gallinula tenebrosa tenebrosa</i>	Dusky Moorhen	Y	-	-
<i>Gallirallus philippensis mellori</i>	Buff-banded Rail	Y	-	-
<i>Gavicalis virescens</i>	Singing Honeyeater	Y	-	-
<i>Geopelia placida placida</i>	Peaceful Dove	Y	-	-
<i>Glossopsitta concinna</i>	Musk Lorikeet	Y	-	-
<i>Grallina cyanoleuca cyanoleuca</i>	Magpielark	Y	-	-
<i>Gymnorhina tibicen</i>	Australian Magpie	Y	-	-
<i>Gymnorhina tibicen tyrannica</i>	White-backed Magpie (SE)	Y	-	-
<i>Haliastur sphenurus</i>	Whistling Kite	Y	-	-
<i>Hieraetus morphnoides</i>	Little Eagle	Y	-	V
<i>Himantopus leucocephalus</i>	Pied Stilt	Y	-	-
<i>Hirundapus caudocutus caudocutus</i>	White-throated Needletail	Y	-	V
<i>Hirundo neoxena neoxena</i>	Welcome Swallow	Y	-	-
<i>Hydroprogne caspia</i>	Caspian Tern	Y	-	-
<i>Hylacola pyrrhopygia parkeri</i>	Chestnut-rumped Heathwren (Mount Lofty Ranges)	Y	EN	E
<i>Lalage tricolor</i>	White-winged Triller	Y	-	-
<i>Lonchura punctulata</i>	Scaly-breasted Munia	N	-	-
<i>Malurus cyaneus leggei</i>	Superb Fairywren (Mainland SA)	Y	-	-
<i>Manorina melanocephala</i>	Noisy Miner	Y	-	-
<i>Melithreptus brevirostris</i>	Brown-headed Honeyeater	Y	-	-
<i>Melithreptus gularis</i>	Black-chinned Honeyeater	Y	-	-
<i>Melithreptus lunatus</i>	White-naped Honeyeater	Y	-	-
<i>Melopsittacus undulatus</i>	Budgerigar	Y	-	-
<i>Microcarbo melanoleucos melanoleucos</i>	Little Pied Cormorant	Y	-	-
<i>Neochmia temporalis temporalis</i>	Red-browed Finch	Y	-	-
<i>Ninox boobook</i>	Australian Boobook	Y	-	-
<i>Nycticorax caledonicus australasiae</i>	Nankeen Night Heron	Y	-	-
<i>Nymphicus hollandicus</i>	Cockatiel	Y	-	-
<i>Ocyphaps lophotes lophotes</i>	Crested Pigeon	Y	-	-
<i>Oriolus sagittatus sagittatus</i>	Olive-backed Oriole	Y	-	R
<i>Oxyura australis</i>	Blue-billed Duck	Y	-	R
<i>Pachycephala fuliginosa fuliginosa</i>	Western Whistler	Y	-	-
<i>Pachycephala rufiventris rufiventris</i>	Rufous Whistler	Y	-	-
<i>Pardalotus punctatus</i>	Spotted Pardalote	Y	-	-
<i>Pardalotus striatus striatus</i>	Striated Pardalote	Y	-	-
<i>Parvipsitta porphyrocephala</i>	Purple-crowned Lorikeet	Y	-	-
<i>Passer domesticus domesticus</i>	House Sparrow	N	-	-
<i>Pelecanus conspicillatus</i>	Australian Pelican	Y	-	-
<i>Petrochelidon ariel</i>	Fairy Martin	Y	-	-
<i>Petrochelidon nigricans</i>	Tree Martin	Y	-	-
<i>Petroica boodang boodang</i>	Scarlet Robin	Y	-	R
<i>Petroica goodenovii</i>	Red-capped Robin	Y	-	-
<i>Phalacrocorax carbo</i>	Great Cormorant	Y	-	-
<i>Phalacrocorax sulcirostris</i>	Little Black Cormorant	Y	-	-
<i>Phalacrocorax varius hypoleucos</i>	Australian Pied Cormorant	Y	-	-
<i>Phaps chalcoptera</i>	Common Bronzewing	Y	-	-
<i>Phylidonyris novaehollandiae novaehollandiae</i>	New Holland Honeyeater (mainland SA)	Y	-	-
<i>Phylidonyris pyrrhopterus halmaturinus</i>	Crescent Honeyeater (KI and MLR)	Y	-	-
<i>Platalea regia</i>	Royal Spoonbill	Y	-	-
<i>Platycercus elegans</i>	Crimson Rosella	Y	-	-
<i>Platycercus elegans fleurieuiensis & elegans subadelaidae</i>	Adelaide Rosella (MN, AP, MLR)	Y	-	-
<i>Platycercus eximius eximius</i>	Eastern Rosella	Y	-	-
<i>Podargus strigoides</i>	Tawny Frogmouth	Y	-	-
<i>Podiceps cristatus australis</i>	Great Crested Grebe	Y	-	R
<i>Poliacephalus poliacephalus</i>	Hoary-headed Grebe	Y	-	-
<i>Poodytes gramineus goulburni</i>	Little Grassbird	Y	-	-
<i>Porphyrio melanotus melanotus</i>	Australasian Swamphen	Y	-	-
<i>Porzana fluminea</i>	Australian Crane (Australian Spotted Crane)	Y	-	-
<i>Psephotus haematonotus haematonotus</i>	Red-rumped Parrot (eastern SA except NE)	Y	-	-
<i>Psittacula eupatria</i>	Alexandrine Parakeet	N	-	-
<i>Ptilotula penicillata</i>	White-plumed Honeyeater	Y	-	-
<i>Ptilotula penicillata penicillata</i>	White-plumed Honeyeater (northern YP, MN, AP, MLR, LNE, MM, SE)	Y	-	-
<i>Rhipidura albiscapa</i>	Grey Fantail	Y	-	-
<i>Rhipidura leucophrys leucophrys</i>	Willie Wagtail	Y	-	-
<i>Rostratula australis</i>	Australian Painted-snipe	Y	EN	E
<i>Sericornis frontalis (NC)</i>	White-browed Scrubwren	Y	-	-
<i>Smicromis brevirostris</i>	Weebill	Y	-	-
<i>Spilopelia chinensis</i>	Spotted Dove	N	-	-
<i>Strepera versicolor melanoptera</i>	Black-winged Currawong (MLR, MM, SE)	Y	-	-
<i>Streptopelia risoria</i>	Barbary Dove	N	-	-
<i>Sturnus vulgaris vulgaris</i>	Common Starling	N	-	-
<i>Tachybaptus novaehollandiae novaehollandiae</i>	Australasian Grebe	Y	-	-
<i>Tadorna ferruginea</i>	Ruddy Shelduck	N	-	-
<i>Taeniopygia guttata castanotis</i>	Zebra Finch	Y	-	-
<i>Threskiornis molucca molucca</i>	Australian White Ibis	Y	-	-
<i>Threskiornis spinicollis</i>	Straw-necked Ibis	Y	-	-
<i>Todiramphus sanctus sanctus</i>	Sacred Kingfisher	Y	-	-
<i>Tribonyx ventralis</i>	Black-tailed Nativehen	Y	-	-
<i>Trichoglossus moluccanus moluccanus</i>	Rainbow Lorikeet	Y	-	-
<i>Tringa nebularia</i>	Common Greenshank	Y	EN	-
<i>Turdus merula merula</i>	Common Blackbird	N	-	-
<i>Turdus philomelos</i>	Song Thrush	N	-	-
<i>Vanellus miles</i>	Masked Lapwing	Y	-	-
<i>Vanellus miles novaehollandiae</i>	Spur-winged Plover	Y	-	-
<i>Vanellus tricolor</i>	Banded Lapwing	Y	-	-







SPECIES	COMMON NAME	NATIVE	NATIONAL RATING	STATE RATING
AVES				
<i>Zapornia pusilla palustris</i>	Baillon's Crake	Y	-	-
<i>Zosterops lateralis</i>	Silvereye	Y	-	-
MAMMALIA				
<i>Austronomus australis</i>	White-striped Free-tailed Bat	Y	-	-
<i>Chalinolobus gouldii</i>	Gould's Wattled Bat	Y	-	-
<i>Macropus fuliginosus</i>	Western Grey Kangaroo	Y	-	-
<i>Mormopterus planiceps</i>	Southern Free-tailed Bat	Y	-	-
<i>Nyctophilus geoffroyi</i>	Lesser Long-eared Bat	Y	-	-
<i>Phascolarctos cinereus</i>	Koala	Y	-	-
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	Y	VU	R
<i>Trichosurus vulpecula</i>	Common Brushtail Possum	Y	-	R
<i>Vespardelus darlingtoni</i>	Large Forest Bat	Y	-	-
REPTILIA				
<i>Chelodina longicollis</i>	Eastern Long-necked Turtle	Y	-	-
<i>Eulamprus quoyii</i>	Eastern Water Skink	Y	-	-
<i>Tiliqua scincoides</i>	Eastern Bluetongue	Y	-	-

Survey Summary	
981878	
LOCATION	
Survey Point	Dry Creek Linear Park
Latitude	-34.8452700 (34° 50' 43" S)
Longitude	138.6333300 (138° 38' 0" E)
Accuracy	Within survey area
Shared Sites	Not within any shared sites







DETAILS	
Survey Date	26/10/2003
Survey Time	9:40
Survey Duration	2 hours 49 minutes
Survey Type	5km area search
Water Level (if applicable)	
Number of observers	1
All species recorded	Yes
Number of sightings recorded	22

SIGHTINGS						
	Species	Count	Breeding activity	Notes	Photos	
	Pacific Black Duck	P	None			
	Rock Dove	P	None			
	Spotted Dove	P	None			
	Crested Pigeon	P	None			

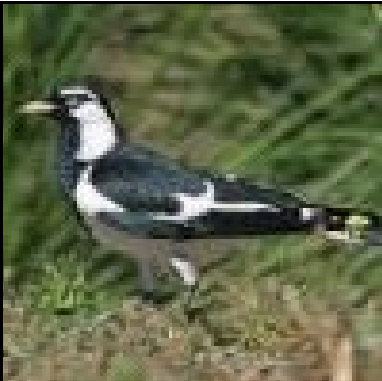





Appendix C
BirdLife Australia Data

		White-faced Heron	P	None			
		Little Pied Cormorant	P	None			
		Galah	P	None			
		Musk Lorikeet	P	None			
		Purple-crowned Lorikeet	P	None			
		Rainbow Lorikeet	P	None			

Appendix C
BirdLife Australia Data

		New Holland Honeyeater	P	None			
		Red Wattlebird	P	None			
		White-plumed Honeyeater	P	None			
		Black-faced Cuckoo-shrike	P	None			
		Australian Magpie	P	None			
		Little Raven	P	None			



Appendix C
BirdLife Australia Data

		Magpie-lark	P	None			
		House Sparrow	P	None			
		Common Greenfinch	P	None			
		Welcome Swallow	P	None			
		Common Starling	P	None			
		Common Blackbird	P	None			







Survey Summary	
666490	
LOCATION	
Survey Point	Dry Creek Linear park
Latitude	-34.8475000 (34° 50' 51" S)
Longitude	138.6436100 (138° 38' 37" E)
Accuracy	Within survey area
Shared Sites	Not within any shared sites

DETAILS	
Survey Date	20/02/2001
Survey Time	11:10
Survey Duration	1 hour
Survey Type	500m area search
Water Level (if applicable)	
Number of observers	1
All species recorded	Yes
Number of sightings recorded	17





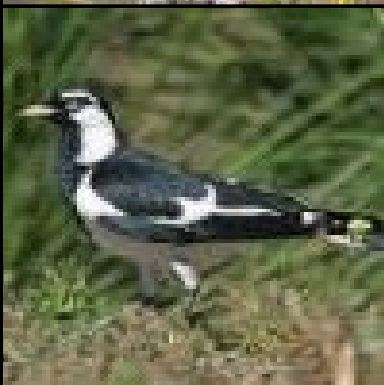

NOTES
(Subject: sub-species) Crimson Rosella sub-species adelaidae Australian Magpie white-backed sub-species

SIGHTINGS						
	Species	Count	Breeding activity	Notes	Photos	
	Rock Dove	P	None			
	Spotted Dove	P	None			




Appendix C
BirdLife Australia Data

		Crested Pigeon	P	None			
		White-faced Heron	P	None			
		Galah	P	None			
		Crimson Rosella	P	None			
		Rainbow Lorikeet	P	None			
		New Holland Honeyeater	P	None			

Appendix C
BirdLife Australia Data

		White-plumed Honeyeater	P	None			
		Black-faced Cuckoo-shrike	P	None			
		Australian Magpie	P	None			
		Willie Wagtail	P	None			
		Magpie-lark	P	None			
		Red-capped Robin	P	None			

Appendix C
BirdLife Australia Data

		House Sparrow	P	None			
		Common Greenfinch	P	None			
		Common Blackbird	P	None			

Survey Summary

8061983

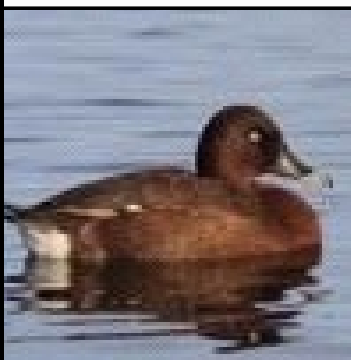
LOCATION

Survey Point	Pooraka Triangle Park
Latitude	-34.8363829 (34° 50' 11" S)
Longitude	138.6185651 (138° 37' 7" E)
Accuracy	Within survey area
Shared Sites	Not within any shared sites


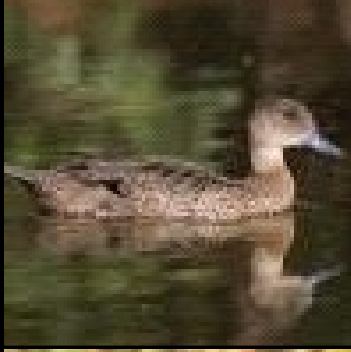
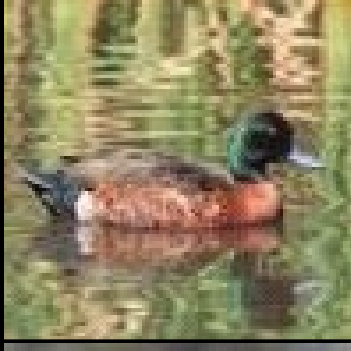
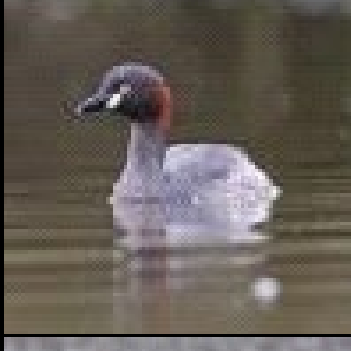

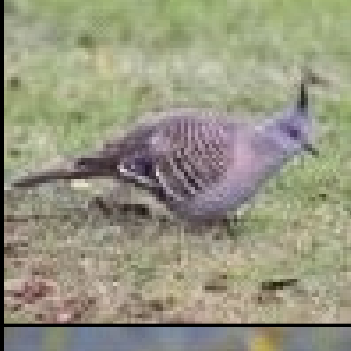
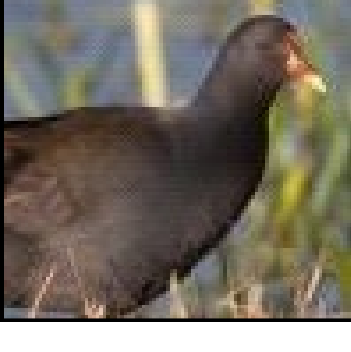
DETAILS

Survey Date	19/05/2021
Survey Time	16:00
Survey Duration	25 minutes
Survey Type	500m area search
Water Level (if applicable)	
Number of observers	1
All species recorded	Yes
Number of sightings recorded	30

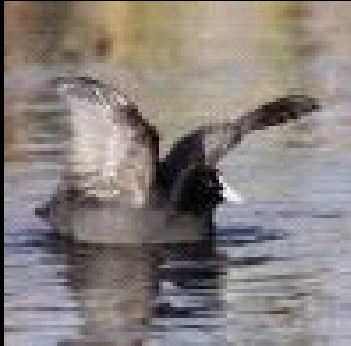






SIGHTINGS

	Species	Count	Breeding activity	Notes	Photos
	Hardhead	1	None		







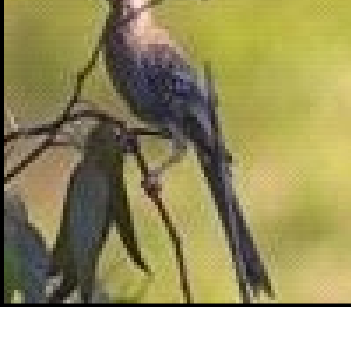
Appendix C
BirdLife Australia Data

		Pacific Black Duck	25	None			
		Grey Teal	3	None			
		Chestnut Teal	15	None			
		Australasian Grebe	5	None			
		Spotted Dove	3	None			
		Crested Pigeon	18	None			
		Dusky Moorhen	2	None			



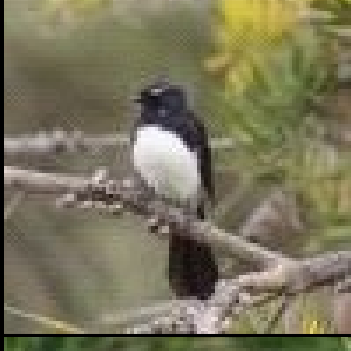
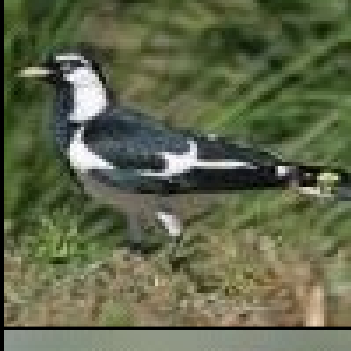

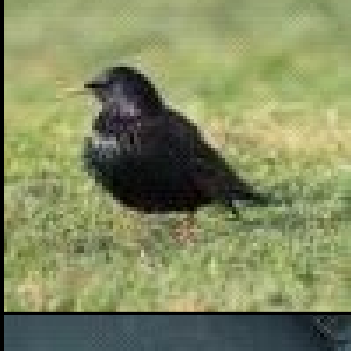
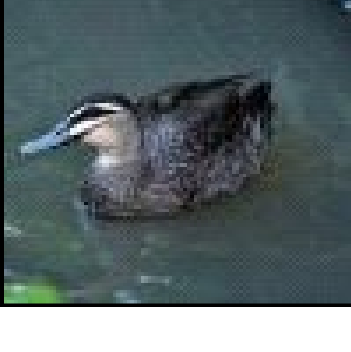
Appendix C
BirdLife Australia Data

		Eurasian Coot	5	None			
		Masked Lapwing	2	None			
		White-faced Heron	1	None			
		Australian White Ibis	8	None			
		Peregrine Falcon	1	None			
		Galah	20	None			
		Long-billed Corella	28	None			


Appendix C
BirdLife Australia Data

		Little Corella	7	None			
		Sulphur-crested Cockatoo	6	None			
		Crimson Rosella	5	None			
		Musk Lorikeet	6	None			
		Rainbow Lorikeet	10	None			
		New Holland Honeyeater	6	None			
		Red Wattlebird	1	None			

Appendix C
BirdLife Australia Data

		Noisy Miner	5	None			
		Australian Magpie	8	None			
		Willie Wagtail	6	None			
		Magpie-lark	1	None			
		Welcome Swallow	8	None			
		Common Starling	3	None			
		Black Duck-Mallard hybrid	1	None			

Appendix C
BirdLife Australia Data

		Domestic Duck	3	None			
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Appendix C
FrogWatch SA Survey Results

Unity Park, Pooraka, Central Districts, Mt Lofty Ranges & Adelaide Plains	
25/8/2022 11:00AM	
Frogs calling: Yes	
User published (1)	Verified (1)
<i>Crinia signifera</i> : Many (10-50)	<i>Crinia signifera</i> : Many (10-50)
Further details	
Habitat	
Type: Condition:	Wetland Clear
Weather	
Rain: Rain within last two days: Moon visible: Moon-phase: Wind speed: Cloud cover:	Showers Yes No New No Wind >75%

Appendix C
FrogWatch SA Survey Results

Quintal lave, modbury, Central Districts, Mt Lofty Ranges & Adelaide Plains	
2/9/2021 7:51PM	
Frogs calling: Yes	
User published (1)	Verified (3)
<i>Limnodynastes dumerilii</i> : One	<i>Limnodynastes dumerilii</i> : One
	<i>Crinia signifera</i> : Many (10-50)
	<i>Limnodynastes tasmaniensis</i> - West : Few (2-9)
Further details	
Habitat	
Type:	Dam
Condition:	Clear
Weather	
Rain:	No rain
Rain within last two days:	No
Moon visible:	No
Moon-phase:	Waning crescent
Wind speed:	Strong Breeze
Cloud cover:	>75%
Temperature:	Warm

Appendix C
FrogWatch SA Survey Results

Gifford Res, St Agnes, Central Districts, Mt Lofty Ranges & Adelaide Plains	
29/9/2022 7:09PM	
Frogs calling: Yes	
User published (5)	Verified (5)
<i>Crinia signifera</i> : Lots (more than 50)	<i>Crinia signifera</i> : Lots (more than 50)
<i>Limnodynastes dumerilii</i> : Many (10-50)	<i>Limnodynastes dumerilii</i> : Many (10-50)
<i>Limnodynastes tasmaniensis</i> - West : Many (10-50)	<i>Limnodynastes tasmaniensis</i> - West : Many (10-50)
<i>Litoria ewingi</i> (pre 2024 reclassification) : Few (2-9)	Not verified
<i>Litoria peronii</i> : One	<i>Litoria peronii</i> : One
	<i>Litoria calliscelis</i> : Few (2-9)
Further details	
Habitat	
Type: Condition:	Wetland Stained
Weather	
Rain: Rain within last two days: Moon visible: Moon-phase: Wind speed: Cloud cover: Temperature:	No rain Yes Yes Waxing crescent No Wind 1-25% Mild

Appendix D

Field Survey Results

								Class																			
								Species / Common Name	Australian Magpie (<i>Gymnorhina tibicen</i>)	Noisy Miner (<i>Manorina melanocephala</i>)	Galah (<i>Eolophus roseicapilla</i>)	Rainbow Lorikeet (<i>Trichoglossus moluccanus</i>)	Magpie-lark (<i>Grallina cyanoleuca</i>)	Crested Pigeon (<i>Ocyphaps lophotes</i>)	Welcome Swallow (<i>Hirundo neoxena</i>)	Fairy Martin (<i>Petrochelidon ariei</i>)	Australian Ringneck Parrot (<i>Barnardius zonarius</i>)	Honeyeater sp.	Brown Honeyeater (<i>Lichmera indistincta</i>)	White-faced Heron (<i>Egretta novaehollandiae</i>)	Willie Wagtail (<i>Rhipidura leucophrys</i>)	White-fronted Chat (<i>Epthianura albirons</i>)	New Holland Honeyeater (<i>Phylidonyris novaehollandiae</i>)	Kookaburra (<i>Dacelo novaeguinae</i>)	Eastern Corella (<i>Cacatua tenuirostris</i>)	Pacific Black Duck (<i>Anas superciliosa</i>)	Sulfur-crested Cockatoo (<i>Cacatua galerita</i>)
EPBC ACT (E = Endangered, Mi = Migratory, Ma=Marine)																											
Field ID	Date	Time	Temp	Wind (km/hr)	Wind Direction	Rain (mm)	Observers																				
Count	SW02	9/04/2024	11:05	18.7	20.5	SW	3	AO, JA	6	18	10	6	6	4	10	6	4	4	6								
		11/04/2024	10:00	18.1	13	S	0	AO, JA	3	6	6	8	6		8	4	2		6			2			2	4	20
	SW03	10/04/2024	12:20	17.7	14.8	WSW	0	AO, JA					4	4	6			10		6	4	4					
		11/04/2024	11:15	18.4	13	SSW		AO, JA	4	6		6	4		4	4	2					4	4				
	SW04	10/04/2024	12:50		12.2	WSW		AO, JA	2	10			6	6	4				4		4	2	8	1			
		11/04/2024	11:45	18.9	13	SSW	3	AO, JA	1			2	2		8				6		2		4				4
SW05	10/04/2024			12.2	WSW		AO, JA																			2	
Oakden Development	10/04/2024	13:30	19	14	WSW	0	AO, JA		6			2	3			2		4		2		8					

								Mammalia		Amphibia			Reptilia										
								Singing Honeyeater (<i>Gavicalis virescens</i>)	Common Blackbird (<i>Turdus merula</i>)	Intermediate Egret (<i>Ardea intermedia</i>)	White-plumed Honeyeater (<i>Ptilotula pericillata</i>)	Cuckoo sp.	Wren sp.	European Hare (<i>Lepus europaeus</i>)	Koala (<i>Phascolarctos cinereus</i>)	Eastern Banjo Frog (<i>Limnodynastes dumerilii</i>)	Common Froglet (<i>Crinia signifera</i>)	Turtle sp.	Blue-tongued Skink (<i>Tiliqua scincoides</i>)	Eastern Water Skink (<i>Eulamprus quoyii</i>)	Skink sp.	Common Garden Skink (<i>Lampropholis guichenoti</i>)	Eastern Grey Kangaroo (<i>Macropus giganteus</i>)
EPBC ACT (E = Endangered, Mi = Migratory, Ma=Marine)																							
Field ID	Date	Time	Temp	Wind (km/hr)	Wind Direction	Rain (mm)	Observers																
Count	SW02	9/04/2024	11:05	18.7	20.5	SW	3	AO, JA							10		2				4		
		11/04/2024	10:00	18.1	13	S	0	AO, JA							8			1		1	2		
	SW03	10/04/2024	12:20	17.7	14.8	WSW	0	AO, JA										1			1	2	
		11/04/2024	11:15	18.4	13	SSW		AO, JA			6										1		
	SW04	10/04/2024	12:50		12.2	WSW		AO, JA						4									
		11/04/2024	11:45	18.9	13	SSW	3	AO, JA	7	1	1	8					1						
SW05	10/04/2024			12.2	WSW		AO, JA																
Oakden Development	10/04/2024	13:30	19	14	WSW	0	AO, JA						1	1									

Macroinvertebrate

									Macroinvertebrate																	
	Field ID	Date	Time	Temp	Wind (km/hr)	Wind Direction	Rain (mm)	Observers	Species / Common Name	Mosquito Larvae	Biting Midge Larvae	Nymph Larvae	Backswimmer	Water Flea	Seed Shrimp	Copepod	Freshwater Shrimp	Round Worm	Ponera sp.	Marsh Beetle Larvae	Mayfly Nymph	Non-biting Midge Larvae	Whirligig Beetle Larvae	Water Boatmen	Freshwater Snail	
Presence	SW02	10/04/2024	11:00	16.9	13	S	0	AO, JA		X	4	3	1	NR	NR	NR	3	3	3	6	9	3	4	2	1	
	SW03	10/04/2024	12:30	18.2	13	SSW	0	AO, JA		X	X	X					X	X	X			X				
	SW04	10/04/2024	12:45	19.2	16.6	WSW	0	AO, JA		X			X							X	X	X	X			
	SW05	9/04/2024	11:00	19.2	20.5	SW	3	AO, JA		X																
		10/04/2024	10:00	16.4	13	SW	0	AO, JA		X			X						X						X	X

	Field ID	Species / Common Name
Presence	SW02	
	SW03	
	SW04	
	SW05	
	Oakden Development	
		Common Garden Skink (<i>Lampropholis guichenoti</i>)
		Eastern Grey Kangaroo (<i>Macropus giganteus</i>)
		Southern Whiteface (<i>Aphelocephala leucopsis</i>)


	Field ID	Species / Common Name
Presence	SW02	
	SW03	
	SW04	
	SW05	
	Oakden Development	
		Superb Fairywren (<i>Malurus cyaneus</i>)
		Musk Lorikeet (<i>Glossopsitta concinna</i>)
		Little Grassbird (<i>Poodytes gramineus</i>)
		House Sparrow (<i>Passer domesticus</i>)
		Tawny Owl (<i>Strix aluco</i>)
		Chestnut Teal Duck (<i>Anas castanea</i>)
		Silvereye (<i>Zosterops lateralis</i>)
		Tree Martin (<i>Petrochelidon nigricans</i>)
		Grey Shrike-thrush (<i>Colluricincla harmonica</i>)
		Australian Pipit (<i>Anthus australis</i>)
		Variegated Fairywren (<i>Malurus lamberti</i>)
		Common Starling (<i>Sturnus vulgaris</i>)
		Crimson Rosellas (<i>Platycercus elegans</i>)
		Singing Honeyeater (<i>Gavicalis virescens</i>)
		Common Blackbird (<i>Turdus merula</i>)
		Intermediate Egret (<i>Ardea intermedia</i>)
		White-plumed Honeyeater (<i>Ptilotula penicillata</i>)
		Cuckoo sp.
		Wren sp.
		European Hare (<i>Lepus europaeus</i>)
		Koala (<i>Phascolarctos cinereus</i>)
		Eastern Banjo Frog (<i>Limnodynastes dumerilii</i>)
		Common Froglet (<i>Crinia signifera</i>)
		Turtle sp.
		Blue-tongued Skink (<i>Tiliqua scincoides</i>)
		Skink sp.

	Field ID	Species / Common Name
Presence	SW02	
	SW03	
	SW04	
	SW05	
	Oakden Development	
		Australian Magpie (<i>Gymnorhina tibicen</i>)
		Noisy Miner (<i>Manorina melanoccephala</i>)
		Galah (<i>Eolophus roseicapilla</i>)
		Rainbow Lorikeet (<i>Trichoglossus moluccanus</i>)
		Magpie-lark (<i>Grallina cyanoleuca</i>)
		Crested Pigeon (<i>Ocyphaps lophotes</i>)
		Welcome Swallow (<i>Hirundo neoxena</i>)
		Fairy Martin (<i>Petrochelidon ariel</i>)
		Australian Ringneck Parrot (<i>Barnardius zonarius</i>)
		Honeyeater sp.
		Brown Honeyeater (<i>Lichmera indistincta</i>)
		White-faced Heron (<i>Egretta novaehollandiae</i>)
		Willie Wagtail (<i>Rhipidura leucophrys</i>)
		White-fronted Chat (<i>Ephianura albifrons</i>)
		New Holland Honeyeater (<i>Phylidonyris novaehollandiae</i>)
		Kookaburra (<i>Dacelo novaeguineae</i>)
		Eastern Corella (<i>Cacatua tenuirostris</i>)
		Pacific Black Duck (<i>Anas superciliosa</i>)
		Sulfur-crested Cockatoo (<i>Cacatua galerita</i>)
		Australian Wood Duck (<i>Chenonetta jubata</i>)
		Pallid Cuckoo (<i>Cacomantis pallidus</i>)
		Crow (<i>Corvus coronoides</i>)
		Brown Goshawk (<i>Accipiter fasciatus</i>)
		Red Wattlebird (<i>Anthochaera carunculata</i>)
		Little Wattlebird (<i>Anthochaera chrysoptera</i>)
		Southern Whiteface (<i>Aphelocephala leucopsis</i>)

Appendix E

Photolog

Table 1 *InsertCaption*

Photograph	Details
 A photograph showing a riverbank with a rocky outcrop. The water is calm, reflecting the surrounding trees and sky. The rocks are light-colored and show signs of erosion. The background shows a steep bank with sparse vegetation and trees. The foreground is a rocky and leafy bank.	<p>Photo 1</p> <p>Date: 9 May 2024</p> <p>Description:</p> <p>Sampling point SW04 facing east. Erosion visible in the background water line on rocks to the right evident of water levels during increased rain events.</p>

Photograph



Details

Photo 2

Date: 9 May 2024

Description:

Photograph of upstream of sampling location **SW04** facing southwest.



Photo 3

Date: 9 May 2024

Description:

Macroinvertebrate sample being collected at location **SW04**. Photo taken facing northeast.

Photograph



Details

Photo 4

Date: 9 May 2024

Description:

Macroinvertebrates being identified at location **SW04**. Sample collected in previous photo can be seen in the centre of the table. Photo taken facing northwest.

Photograph



Details

Photo 5

Date: 9 May 2024

Description:

Mayfly nymph collected from
sampling location **SW04**, as
seen through the microscope
(40x magnification)

Photograph



Details

Photo 6

Date:

Description: 9 May 2024

Sampling location **SW03** as viewed from the road facing northwest. Water had moderate flow, with the water flowing from right to left of the photo.



Photo 7

Date: 9

Description:

Sampling location **SW03** as viewed from the footbridge facing east. Water had moderate flow.

Photograph



Details

Photo 8

Date: 31 May 2024

Description:

Sampling location **SW02** facing west. High flow with water flowing from the foreground to the background of the photo



Photo 9

Date: 31 May 2024

Description:

Sampling location **SW02** facing northwest.

Photograph



Details

Photo 10

Date: 31 May 2024

Description:

Sampling location **SW02** facing east.

Photograph



Details

Photo 11

Date: 9 May 2024

Description:

Downstream of sampling location **SW02**. Photo taken facing north.

Photograph



Details

Photo 12

Date: 9 May 2024

Description:

Sampling location **SW05** (reference site), Montague Rd visible centre background. Storm water drain feeding directly from the road into the creek visible to the left of photo.



Photo 13

Date: 31 May 2024

Description:

Downstream of sampling location **SW02**. Photo taken facing northeast.

Photograph



Details

Photo 14

Date: 31 May 2024

Description:

Downstream of sampling location **SW02**. Photo taken facing northwest.



Photo 15

Date:

Description:

Tree with multiple hollows, which could provide habitat for fauna taken within the vicinity of **SW04**. Photo taken facing southeast.

Photograph



Details

Photo 16

Date:

Description:

Crevasse between to rocks, possibly providing burrowing habitat for fauna. Photo taken facing north within the vicinity of SW04.

Photograph



Details

Photo 17

Date: 10 May 2024

Description:

Tree with hollow, which could provide habitat for fauna. Photo taken within the vicinity of **SW04**.



Photo 18

Date: 10 May 2024

Description:

Burrow that could provide habitat for fauna. Photo taken facing north within the vicinity of **SW04**.

Photograph



Details

Photo 19

Date: 10 May 2024

Description:

Tree with multiple hollows,
which could provide habitat for
fauna taken within the vicinity
of **SW04**.

Photograph



Details

Photo 20

Date: 11 May 2024

Description:

Burrow that could potentially provide habitat for fauna. Photo taken facing NE, approx. 130 m west of sampling location **SW02**.



Photo 21

Date: 31 May 2024

Description:

Kangaroos photographed at location **SW01** facing west.