Onkaparinga Heights Development Biodiversity Gain Opportunities Case Study

Prepared for Green Adelaide

December 2025

umwelt

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Prepared by
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On behalf of
Green Adelaide

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Document Status

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Executive Summary

Green Adelaide (GA) engaged Umwelt (Australia) Pty Ltd (Umwelt) to develop a *Biodiversity Gain Opportunities Recommendation Report* for the Onkaparinga Heights development. The Onkaparinga Heights is an upcoming greenfield development site that will go out to tender in the coming months with GA identifying an opportunity to encourage a more biodiverse urban environment by incorporating Biodiversity Sensitive Urban Design (BSUD) into the broader development project. It was intended that the *Biodiversity Gain Opportunities Recommendation Report* would provide a blueprint for incorporating BSUD into the Onkaparinga Heights development.

The Onkaparinga Heights *Biodiversity Gain Opportunities Recommendation Report* (Umwelt, 2025) was finalised in July 2025. This report documents the approach taken and the method that was adopted to prepare the *Biodiversity Gain Opportunities Report* with the intent that this method could be adopted for future master planning and urban development projects.

Biodiversity Sensitive Urban Design (BSUD) is a framework for incorporating ecological knowledge into urban planning, design and development to achieve onsite biodiversity outcomes. The BSUD framework was developed by Garrard et al (2018) for application across a range of urban development types. The BSUD Framework follows five key steps:

1. Document biodiversity values
2. Identify ecological objectives + identify development objectives
3. Identify BSUD actions using the 5 BSUD principles
4. Assess BSUD
5. Decide on BSUD options to progress.

The Onkaparinga Heights *Biodiversity Gain Opportunities Recommendation Report* (Umwelt, 2025) was developed through the implementation of these steps. The methods used to complete these steps included desktop research and literature reviews, a site field survey, workshops to develop BSUD options, workshops to consider feasibility of BSUD options and refine the BSUD options which were then documented in the *Biodiversity Gain Opportunities Recommendation Report* (Umwelt, 2025). This *Onkaparinga Heights Development Biodiversity Gain Opportunities Case Study* documents the implementation of these steps for the Onkaparinga Heights development.

Abbreviations

Abbreviation	Definition
BAM	Bushland Assessment Method
BDBSA	Biological Database of South Australia
BOM	Bureau of Meteorology
BSUD	Biodiversity Sensitive Urban Design
DCCEEW	Department of Climate Change, Energy, the Environment and Water (Commonwealth)
DEW	Department for Environment and Water (SA)
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)
GA	Green Adelaide
IBRA	Interim Biogeographical Regionalisation of Australia
NPW Act	National Parks and Wildlife Act 1972 (SA)
sp.	Species
spp.	Species plural
ssp.	Subspecies
Umwelt	Umwelt (Australia) Pty Ltd
var.	Variant
WSUD	Water Sensitive Urban Design

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1.0 Background

1.1 Introduction to Onkaparinga Heights and Location

1.1.1 Introduction

Green Adelaide (GA) engaged Umwelt (Australia) Pty Ltd (Umwelt) to develop a *Biodiversity Gain Opportunities Recommendation Report* for the Onkaparinga Heights development. The Onkaparinga Heights is an upcoming greenfield development site that will go out to tender in the coming months with GA identifying an opportunity to encourage a more biodiverse urban environment by incorporating Biodiversity Sensitive Urban Design (BSUD) into the broader development project. It was intended that the *Biodiversity Gain Opportunities Report* would provide a blueprint for incorporating BSUD into the Onkaparinga Heights development.

The Onkaparinga Heights *Biodiversity Gain Opportunities Recommendation Report* (Umwelt, 2025) was finalised in July 2025. This Technical Methods report documents the approach taken and the method that was adopted to prepare the *Biodiversity Gain Opportunities Recommendation Report*.

1.1.2 Location

The Onkaparinga Heights development is located approximately 31.9 km south of the Adelaide city centre. It covers an area of 68 ha and falls within the City of Onkaparinga local government area. The location of the Onkaparinga Heights development is shown on the map in **Figure 1.1**.

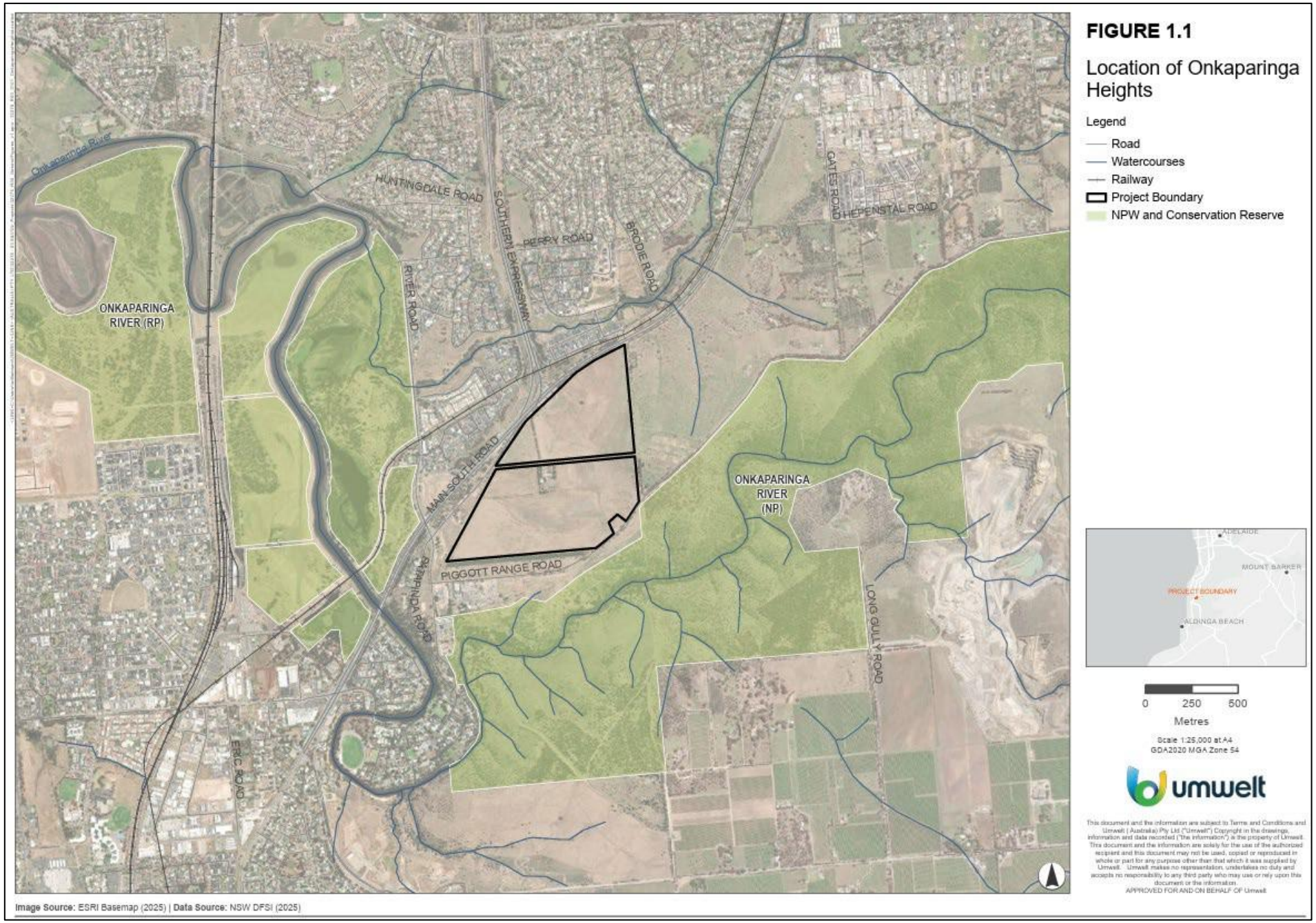

Figure 1.1 The Location of the Onkaparinga Heights Development

2.0 Landscape Context

2.1 Climate

The area experiences a mild, Mediterranean climate, typical of the wider Mount Lofty Ranges and Adelaide Plains region. This is characterised by warm, dry summers and cool, wet winters.

Average maximum temperatures range from as low as 14.9^{O}C in July to 28.8^{O}C in January. The average annual rainfall totals 446.5 mm, with the wettest month on average being June (66.2 mm). February is generally the driest month, with an average of 17.1 mm recorded (BOM, 2025).

2.2 Interim Biogeographic Regionalisation of Australia

The Interim Biogeographic Regionalisation of Australia (IBRA) classifies Australia's landscapes into 89 large geographically distinct bioregions based on common climate, geology, landform, native vegetation and species information. These 89 bioregions are further refined into subregions on a more localised scale. Since its inception, the IBRA has been used as a national and regional framework for the planning of a national reserve system that is representative of Australia's environments.

In South Australia, the IBRA subregions are further split by environmental associations that provide a local description of characteristics of vegetation, geology, landscape and soils. Onkaparinga Heights is located in the Aldinga environmental association of the Mount Lofty Ranges IBRA subregion. The unique characteristics of this landscape classification are summarised in **Table 1.1**. The boundary of the Aldinga environmental association is shown on the map in **Figure 2.1**.

Table 1.1 The IBRA Classification of Onkaparinga Heights

Flinders Lofty Block IBRA Bioregion
Temperate to arid Proterozoic ranges, alluvial fans and plains, and some outcropping volcanics, with the semi- arid to arid north supporting native cypress, Black Oak and mallee open woodlands, *Eremophila* and *Acacia* shrublands, and bluebush/saltbush chenopod shrublands on shallow, well-drained loams and moderately deep, well-drained red duplex soils. The increase in rainfall to the south corresponds with an increase in low open woodlands of *Eucalyptus obliqua* and *E. baxteri* on deep lateritic soils, and *E. fasciculosa* and *E. cosmophylla* on shallower or sandy soils.
Mount Lofty Ranges IBRA Subregion
This subregion extends from north of the Fleurieu Peninsula to the Barossa Valley and is predominantly an undulating to low hilly upland with steeper marginal ranges and hills. The Barossa Valley is the lowest area in this subregion and represents a structural basin. The remainder of the subregion consists of hilly uplands on sandstone and shale with northerly trending strike ridges and dissected lateritic tableland remnants. Low open woodland commonly dominated by *Eucalyptus obliqua* and *E. baxteri* are found in higher rainfall areas on deep, lateritic soils. Shallower or sandy soils support *E. fasciculosa, E cosmophylla* and in the northern part of the region *E. goniocalyx*. *Eucalyptus leucoxylon* dominates the woodlands on podsolised soils in the lower rainfall areas, *E. viminalis* ssp. *cygnetensis* dominate the wetter and cooler woodlands and *E. odorata* characterises drier sites. Eucalypts give way to Drooping Sheoak (*Allocasuarina verticillata*) in the most arid woodlands and in coastal situations on shallow rocky soils.
Aldinga IBRA Environmental Association

Remnant Vegetation	Approximately 3 % (902 ha) of the association is mapped as remnant native vegetation, of which 44 % (399 ha) is formally conserved.
Landform	Alluvial fans with areas of calcrete on the surface, merging into a gently undulating plain with occasional laterite-capped tableland remnants.
Geology	Cliffs alternate with beaches and dunes along the coastline.
Soil	Hard pedal red duplex soils, grey self-mulching cracking clays, hard pedal mottled-yellow duplex soils, sandy pedal mottled yellow soils and whitish calcareous sands.
Vegetation	Tussock sedgelands, open heath of coast daisy bush and coast beard heath and low woodland of Pink Gum (*Eucalyptus fasciculosa*).
Conservation Significance	77 species of threatened fauna and 53 species of threatened flora have been recorded in the environmental association. There are 2 wetlands of national significance.

2.3 Wetlands and Watercourses

The area surrounding Onkaparinga Heights is dominated by the lower reaches of the Onkaparinga River, including the lower Onkaparinga River Gorge and the river's estuary downstream of Old Noarlunga township.

The Onkaparinga River is one of the largest streams in the Mount Lofty Ranges, with some sections providing permanently wet, flowing, freshwater conditions. This is an important habitat regionally for a wide range of aquatic species, including regionally rare and flow dependant fish and macroinvertebrates (EPA South Australia, 2025).

The freshwater reaches of the river are limited to areas upstream of the Old Noarlunga township, including the Onkaparinga Gorge. This area occurs south and east of Onkaparinga Heights, as seen on the map in **Figure 1.1**. Downstream of Old Noarlunga, the lower Onkaparinga River west of Onkaparinga Heights is dominated by brackish, estuarine conditions. The river here is characterised by slow flows dominated by tidal movement, and low-lying flood plains including areas of saline swamps.

There are no other wetlands near Onkaparinga Heights.

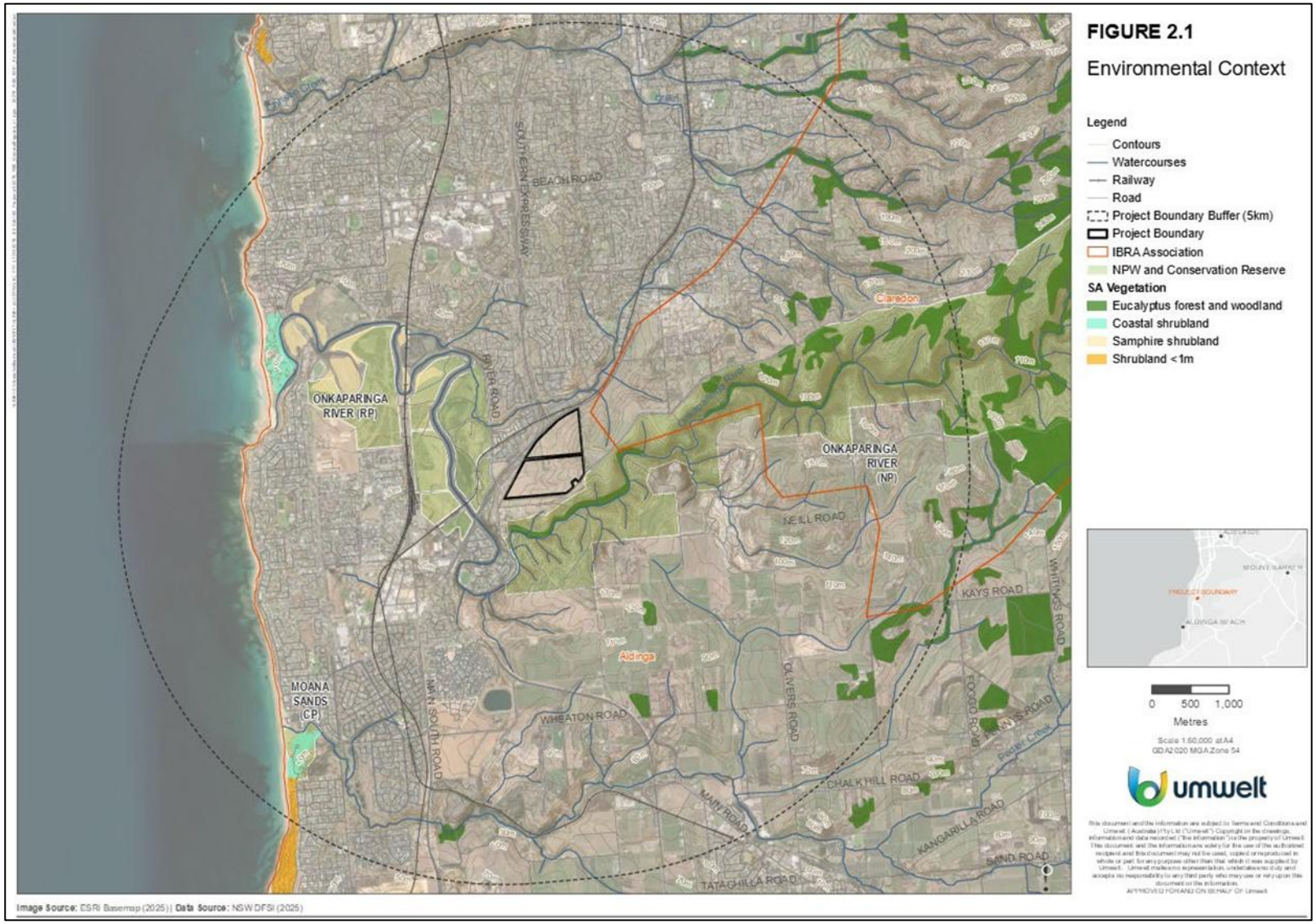

Figure 2.1 Environmental Context of Onkaparinga Heights

2.4 Historical and Current Land Use

The nearby township of Noarlunga (now Old Noarlunga) was surveyed in 1840, with European settlement beginning soon after. The area surrounding the town was quickly taken up to produce cereal crops, with the extent of crops soon requiring the establishment of mills and jetties (at Port Willunga and Port Noarlunga) to enable the transport of goods. Orchards were also established further inland (City of Onkaparinga, 2025).

By the 1860s, broad scale clearance of native vegetation and intensive farming practices resulted in the deterioration of soil condition and poor crop yields. This led to a movement towards mixed farming activities, including livestock grazing and the planting of vineyards.

By the early-to-mid 20th century, Onkaparinga Heights and the surrounding landscape had been cleared of most native vegetation, except in hard to access areas and along watercourses, such as Onkaparinga Gorge. This is clear from aerial photographs taken at the time, such as that shown in **Photo 2.1**. In the photograph, the approximate location of Onkaparinga Heights is indicated by a red polygon.

Photo 2.1 Aerial Photograph of Onkaparinga Heights and Surrounding Area Taken in 1936 (Geoscience Australia, 2025).

2.5 Native Vegetation

Most of the land area within 5 km of Onkaparinga Heights has been historically cleared of native vegetation. However, some areas of remnant *Eucalyptus* forest and woodland and coastal shrublands are present (see **Figure 2.1**) (DEW, 2025).

Vegetation mapping available from DEW indicates that these woodlands and shrublands are likely to occur as seven vegetation associations, as listed in **Table 2.1**.

Table 2.1 Remnant Native Vegetation Mapped Within 5 km of Onkaparinga Heights (DEW, 2025)

Vegetation Community	Vegetation Assocaition
Eucalyptus forest and woodland	Grey Box (*Eucalyptus microcarpa*) mid woodland
	River Red Gum (*Eucalyptus camaldulensis* ssp. *camaldulensis*) mid woodland
	SA Blue Gum (*Eucalyptus leucoxylon* ssp. *leucoxylon*) mid woodland
Coastal shrubland	Twiggy Daisy-bush (*Olearia ramulosa*) mid open shrubland
	Coast Daisy-bush (*Olearia axillaris*) tall open shrubland
Shrubland <1m	Pale Turpentine Bush (*Beyeria lechenaultii*) low open shrubland
Samphire shrubland	Grey Glasswort (*Tecticornia halocnemoides* ssp. *halocnemoides*) low shrubland

2.6 Protected Areas

Two protected areas occur in close proximity to Onkaparinga Heights. The Onkaparinga National Park protects the Onkaparinga River and remnant native vegetation around Onkaparinga Gorge. This national park borders the southern boundary of Onkaparinga Heights (see **Figure 2.1**) and consists of remnant native vegetation, open areas of exotic and native grasslands and re-vegetated farmland.

Visitor facilities include walking and bike trails, picnic and camping infrastructure, and rock-climbing facilities.

Onkaparinga Recreation Park protects the estuarine reaches of the Onkaparinga River, from west of the Main South Road bridge Commercial Road at Port Noarlunga (see **Figure 2.1**). The park includes several natural and artificial wetlands on the river's flood plains, with vegetation consisting of exotic grassland and revegetated riparian woodlands. Remnant native vegetation is limited to small areas of low-lying, saline tidal swamps. Visitor facilities include walking and cycle trails, canoe launching facilities and boardwalks.

2.7 Flora and Fauna

Database searches indicate that 671 native flora species have been recorded within 5 km of Onkaparinga Heights. However, only 267 of these, listed in **Appendix A,** have been recorded in the last 20 years (DEW, 2025). These species include mostly common plants found in disturbed vegetation remnants, although 10 species, listed in **Table 2.2**, are listed as threatened under the South Australian *National Parks and Wildlife Act 1972* (NPW Act).

A similar search of historical records shows that 231 fauna species have been recorded in the same area, 162 species since 2005. These 162 species are listed in **Appendix B.** They include fauna species that are common in areas cleared of native vegetation, such as the Australian Magpie (*Gymnorhina tibicen*) and Western Grey Kangaroo (*Macropus fuliginosus*). Many fauna species recorded are species that require wetland or marine habitat and are associated with the Onkaparinga River and its estuary.

Since 2005, 16 species listed as threatened or migratory under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) have been recorded, as well as 15 species listed under the NPW Act. These are listed in **Table 2.3**.

Table 2.2 Threatened Flora Species Recorded Within 5 km of Onkaparinga Heights. The Table only Shows Records Collected in the Past 20 Years (DEW, 2025)

Scientific Name	Common Name	EPBC Act Status	NPW Act Status	Date of Most Recent Record
Acacia dodonaeifolia	Hop-bush Wattle	-	R	5/05/2009
Austrostipa multispiculis	Many-flowered Spear-grass	-	R	15/12/2023
Dianella longifolia var. *grandis*	Pale Flax-lily	-	R	15/12/2023
Eucalyptus fasciculosa	Pink Gum	-	R	5/05/2009
Eucalyptus leucoxylon ssp. *megalocarpa*		-	R	22/01/2010
Maireana decalvans	Black Cotton-bush	-	E	11/11/2018
Olearia passerinoides ssp. *glutescens*	Sticky Daisy-bush	-	R	27/06/2023
Orobanche cernua var. *australiana*	Australian Broomrape	-	R	25/09/2016
Ptilotus angustifolius	Narrow-leaf Yellow-tails	-	E	10/11/2022
Senecio pinnatifolius var. pinnatifolius		-	R	25/09/2016

EPBC Act Status: VU, Vulnerable. EN, Endangered. CR, Critically Endangered. Mi, Migratory.
NPW Act Status: R, Rare. V, Vulnerable. E, Endangered.

Table 2.3 Threatened Fauna Species Recorded Within 5 km of Onkaparinga Heights. The Table only Shows Records Collected in the Past 20 Years (DEW, 2025)

Scientific Name	Common Name	EPBC Act Status	NPW Act Status	Date of Most Recent Record
Actitis hypoleucos	Common Sandpiper	Mi	R	19/03/2018
Anhinga novaehollandiae novaehollandiae	Australasian Darter	-	R	16/10/2014
Biziura lobata menziesi	Musk Duck	-	R	14/01/2016
Caretta caretta	Loggerhead Sea Turtle	EN	E	23/04/2012
Cereopsis novaehollandiae novaehollandiae	Cape Barren Goose	-	R	21/11/2023
Coturnix ypsilophora australis	Brown Quail	-	V	8/11/2021
Dermochelys coriacea	Leatherback Turtle	EN	V	1/01/2010
Egretta garzetta nigripes	Little Egret	-	R	19/03/2018
Egretta sacra sacra	Pacific Reef Heron	-	R	17/05/2007
Falco peregrinus macropus	Peregrine Falcon	-	R	22/10/2015
Gallinago hardwickii	Latham's Snipe	VU	R	14/01/2016
Haematopus fuliginosus fuliginosus	Sooty Oystercatcher	-	R	19/03/2018

Scientific Name	Common Name	EPBC Act Status	NPW Act Status	Date of Most Recent Record
Hieraaetus morphnoides	Little Eagle	-	V	17/12/2009
Melithreptus gularis gularis	Black-chinned Honeyeater	-	V	6/04/2022
Neophema chrysostoma	Blue-winged Parrot	VU	V	31/07/2013
Neophema elegans elegans	Elegant Parrot	-	R	19/03/2018
Oxyura australis	Blue-billed Duck	-	R	5/11/2022
Pandion haliaetus cristatus	Eastern Osprey	-	E	27/11/2011
Plegadis falcinellus	Glossy Ibis	Mi	R	29/11/2005
Pteropus poliocephalus	Grey-headed Flying-fox	VU	R	3/02/2025
Rostratula australis	Australian Painted-snipe	EN	E	27/11/2011
Spatula rhynchotis	Australasian Shoveler	-	R	24/09/2016
Stictonetta naevosa	Freckled Duck	-	V	11/01/2021
Thinornis cucullatus cucullatus	Hooded Plover	VU	V	29/11/2022
Zanda funerea whiteae	Yellow-tailed Black Cockatoo	-	V	3/05/2022
Calidris ruficollis	Red-necked Stint	Mi	-	14/01/2016
Hydroprogne caspia	Caspian Tern	Mi	-	16/10/2014
Thalasseus bergii cristatus	Greater Crested Tern	Mi	-	11/01/2020
Tringa stagnatilis	Marsh Sandpiper	Mi	-	16/10/2014
Tringa nebularia	Common Greenshank	EN	-	19/03/2018
Actitis hypoleucos	Common Sandpiper	Mi	R	19/03/2018

EPBC Act Status: VU, Vulnerable. EN, Endangered. CR, Critically Endangered. Mi, Migratory.
NPW Act Status: R, Rare. V, Vulnerable. E, Endangered.

3.0 Site Characteristics

3.1 Built Heritage

Two clusters of historical buildings occur on Onkaparinga Heights.

3.2 Current Land Use

Onkaparinga Heights has been used most recently for agricultural production. This has included cereal crop production, livestock grazing and fruit and nut orchards. Evidence of this use evident throughout the site including trees from the original orchards (see photos from site in **Appendix D**).

3.3 Watercourses and Wetlands

Two, un-named drainage features are present at Onkaparinga Heights. Both consist of moderately steep-sided gullies at the heads of drainage lines that flow from the elevated east of the site to the lower western boundary of Onkaparinga Heights in the vicinity of Main South Road, towards Hackham Creek (see **Photo 3.2**). As they reach the lower elevations, they leave the gullies and spread as alluvial fans.

Under natural conditions, it is unlikely they consisted of defined channels and stream beds. As is common with the heads of minor watercourses in the Mount Lofty Ranges, it is likely they were defined by distinct vegetation differences and the presence of wet soils following rainfall.

With the removal of native vegetation and intensive agricultural land use, both are now characterised by small areas of gully erosion along their courses (see **Photo 3.3**).

Photo 3.2 Drainage Line at the Southern End of Onkaparinga Heights, Looking From West to East (upstream) to the Head of the Drainage Gully

Photo 3.3 Minor Gully Erosion at the Head of the Southern Drainage Line

3.4 Vegetation

Vegetation on Onkaparinga Heights consists entirely of non-native vegetation communities, including planted orchards of Olive (*Olea europaea*) (see **Photo 3.4**) and windbreaks and feature plantings of trees such as Aleppo Pine (*Pinus halepensis*), Pepper Tree (*Schinus molle*) (see **Photo 3.5**) and Athel Pine (*Tamarix aphylla*).

These trees have generally been planted on fence lines, access roads and other infrastructure, as shown in **Photo 3.6**, with most of the area vegetated with exotic grassland that is occasionally used for cereal crops (see **Photo 3.7**). This grassland is currently dominated by Bearded Oat (*Avena barbata*) but is likely to be more diverse following winter and spring rains.

Within the Onkaparinga Heights site, native vegetation is limited to sparse tussocks of native grass, such as *Austrostipa* sp. and *Rytidosperma* sp. and isolated regeneration of Ruby Saltbush (*Enchylaena tomentosa*). These native species are sparse and generally restricted to areas that have not been cropped or grazed in the past.

The vegetation of the site has been grouped into nine vegetation associations. These are described in **Table 3.1** and shown on the map in **Figure 3.1**. No intact remnant native vegetation remains on the site. The vegetation associations mapped consist either of introduced plant species or planted native trees, although isolated native grass tussocks and low shrubs occur in places. Only a single remnant tree occurs on the site, a Drooping Sheoak (*Allocasuarina verticillata*) (see **Figure 3.1**).

Photo 3.4 Planted Olive (*Olea europaea*) Grove at Onkaparinga Heights

Photo 3.5 Foliage and Flowers of the Pepper Tree (*Schinus molle*)

Photo 3.6 Main Access Road into Onkaparinga Heights, Lined with Aleppo Pine (*Pinus halepensis*) and Olive trees.

Photo 3.7 Unpaved Road Easement Bisecting Onkaparinga Heights from West to East, Showing Exotic Grassland Vegetation Typical of the Site.

Table 3.1 Vegetation Association Descriptions

Vegetation Association	Description	Dominant Plant Species (A '*' indicates an introduced species)	Photograph Reference
Exotic grassland with emergent Olive (*Olea europaea*)	Pasture and cereal crops dominated by introduced grass species. Some emergent introduced trees occur, predominantly Olive, but also Pepper Tree (*Schinus molle*) and Aleppo Pine (*Pinus halepensis*). This vegetation association occupies most of the site, including hill slopes and drainage areas.	Bearded Oat* (*Avena barbata**) Brome (*Bromus* sp.*) Olive* (*Olea europaea**) Scotch Thistle* (*Onopordum acanthium**)	**Photo 3.8**
African Boxthorn (*Lycium ferocissimum*) shrubland over Beaded Oat (*Avena barbata*) and exotic forbs	Mid-to-tall shrubland of African Boxthorn, over exotic grasses and forbs, including Bearded Oats and Onion weed (*Asphodelus fistulosus*). Occurs on hill tops and areas of higher elevation that have not been recently cropped.	African Boxthorn* (*Lycium ferocissimum**) Bearded Oat (*Avena barbata**) Onion Weed (*Asphodelus fistulosus**) Coastal Galenia* (*Aizoon pubescens**)	**Photo 3.9**
Olive (*Olea europaea*) / Aleppo Pine (*Pinus halepensis*) over exotic grasses	Planted and naturally regenerating Olive and Aleppo Pine trees. Trees occur with an open to mid-dense canopy cover, with the introduced African Boxthorn present as a shrub layer. The understorey is open to sparse and dominated by introduced grasses. Some isolated low shrubs of the native Ruby Saltbush (*Enchylaena tomentosa*) are present.	Olive* (*Olea europaea**) Aleppo Pine* (*Pinus halepensis**) African Boxthorn* (*Lycium ferocissimum**) Bearded Oat (*Avena barbata**) Coastal Galenia* (*Aizoon pubescens**) Horehound* (*Marrubium vulgare**) Ruby Saltbush (*Enchylaena tomentosa*) Rice Millet* (*Piptatherum miliaceum**) Kikuyu* (*Cenchrus clandestinus**)	**Photo 3.10**
Olive (*Olea europaea*) grove	Dense, planted groves of Olive trees. Very sparse introduced grasses present as an understorey.	Olive* (*Olea europaea**) Bearded Oat (*Avena barbata**)	**Photo 3.4**
Orchard	Fruit and nut orchards over an understorey of introduced grasses.	Not surveyed.	**Photo 3.11**
Aleppo Pine (*Pinus halepensis*) over exotic grasses and Ruby Saltbush (*Enchylaena tomentosa*)	Planted Aleppo Pine in windbreaks and feature plantings. Large trees, with a spare understorey dominated by Rice Millet (*Piptatherum miliaceum**) and Bearded Oats. Some isolated native grass tussocks are present, including Spear-grass (*Austrostipa* sp.) and Wallaby Grass (*Rytidosperma* sp.).	Aleppo Pine* (*Pinus halepensis**) African Boxthorn* (*Lycium ferocissimum**) Horehound* (*Marrubium vulgare**) Ruby Saltbush (*Enchylaena tomentosa*) Bearded Oat (*Avena barbata**)	**Photo 3.12**

Vegetation Association	Description	Dominant Plant Species (A '*' indicates an introduced species)	Photograph Reference
		Rice Millet* (*Piptatherum miliaceum**) Spear-grass (*Austrostipa* sp.) Wallaby Grass (*Rytidosperma* sp.)	
Planted River Red Gum (*Eucalyptus camaldulensis* ssp. *camaldulensis*) / SA Blue Gum (*Eucalyptus leucoxylon* ssp. *leucoxylon*) tall woodland over Spear- grass (*Austrostipa* sp.) and exotic grasses	Large, openly spaced, planted trees of River Red Gum (*Eucalyptus camaldulensis* ssp. *camaldulensis*) and SA Blue Gum (*Eucalyptus leucoxylon* ssp. *leucoxylon*) over a grassy understorey. Grasses are dominated by introduced species including Bearded Oat, Kikuyu (*Cenchrus clandestinus*) and Phalaris (*Phalaris aquatica*). Does not occur on the site but is in the road reserve of Main South Road in areas receiving storm water runoff.	River Red Gum (*Eucalyptus camaldulensis* ssp. *camaldulensis*) SA Blue Gum (*Eucalyptus leucoxylon* ssp. *leucoxylon*) Bearded Oat* (*Avena barbata**) Phalaris* (*Phalaris aquatica**) Kikuyu* (*Cenchrus clandestinus**) Spear-grass (*Austrostipa* sp.) Wallaby Grass (*Rytidosperma* sp.)	**Photo 3.13**
Planted Mallee Box (*Eucalyptus porosa*) / SA Blue Gum (*Eucalyptus leucoxylon* ssp. *leucoxylon*) open woodland over Ruby Saltbush (*Enchylaena tomentosa*) / Spear- grass (*Austrostipa* sp.) and exotic grasses and forbs	Road reserves planted with Mallee Box and SA Blue Gum. At high elevations on Piggot Range Road, Drooping Sheoak (*Allocasuarina verticillata*) is also present. Planted Dryland Teatree (*Melaleuca lanceolata*) is also present, with natural regeneration of native low shrubs and grasses, such as Ruby Saltbush, Sea-berry Saltbush (*Rhagodia candolleana*) and Spear-grass. Limited to road reserves outside the boundary of Onkaparinga Heights.	Mallee Box (*Eucalyptus porosa*) SA Blue Gum (*Eucalyptus leucoxylon* ssp. *leucoxylon*) Dryland Teatree (*Melaleuca lanceolata*) Sea-berry Saltbush (*Rhagodia candolleana*) Ruby Saltbush (*Enchylaena tomentosa*) Bearded Oat* (*Avena barbata**) Rice Millet* (*Piptatherum miliaceum**) Kikuyu* (*Cenchrus clandestinus**)	**Photo 3.14**
Athel Pine (*Tamarix aphylla*) over exotic grasses	Planted windbreaks of Athel Pine with an understorey of exotic grasses.	Athel Pine* (*Tamarix aphylla**) Bearded Oat* (*Avena barbata**)	No photograph

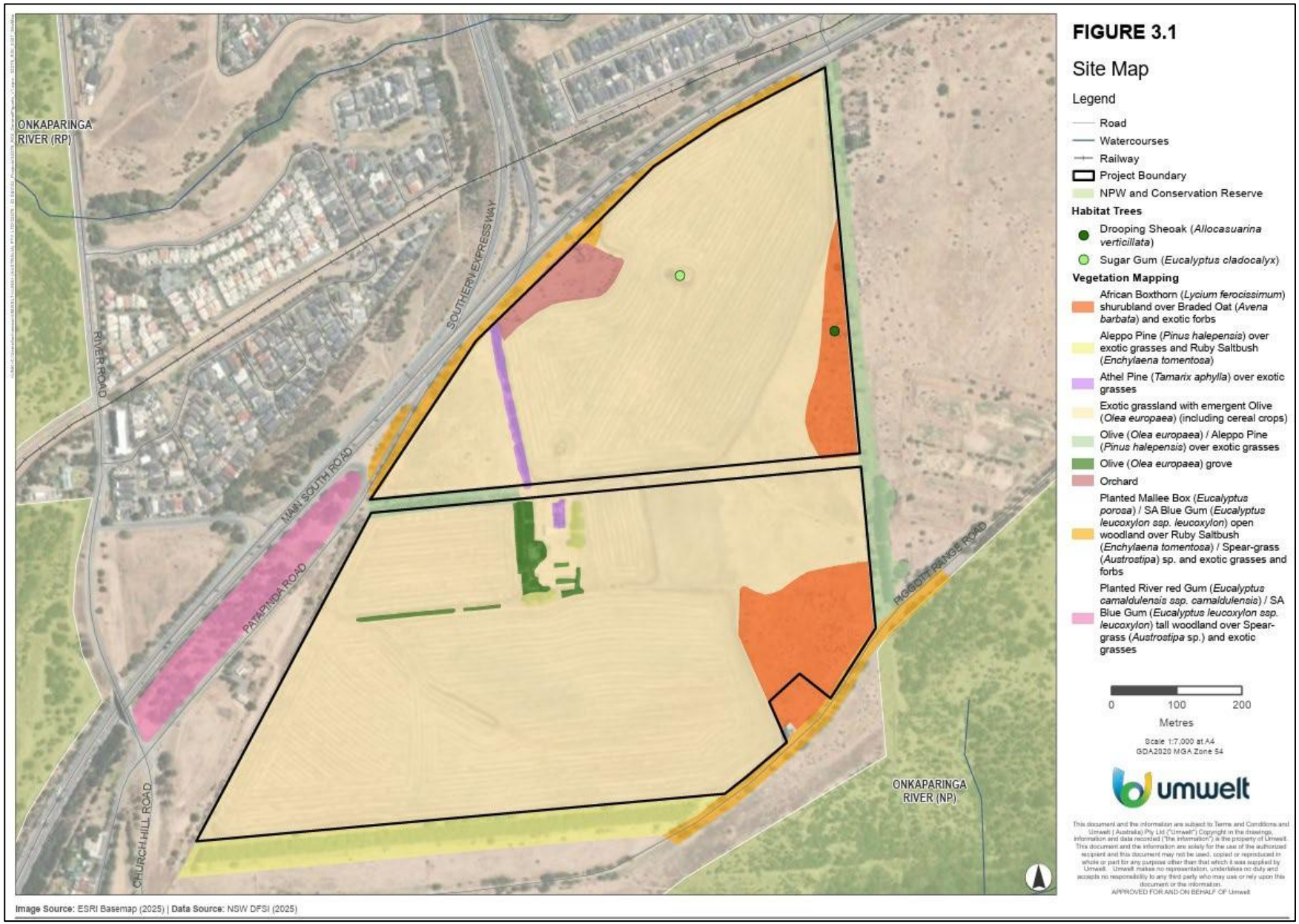

Figure 3.1 Vegetation Mapped at Onkaparinga Heights

Photo 3.8 Exotic Grassland with Emergent Olive (*Olea europaea*)

Photo 3.9 African Boxthorn (*Lycium ferocissimum*) Shrubland over Beaded Oat (*Avena barbata*) and Exotic Forbs

Photo 3.10 Olive (*Olea europaea*) / Aleppo Pine (*Pinus halepensis*) Over Exotic Grasses

Photo 3.11 Orchard

Photo 3.22 Aleppo Pine (*Pinus halepensis*) Over Exotic Grasses and Ruby Saltbush (*Enchylaena tomentosa*)

Photo 3.33 Planted River Red Gum (*Eucalyptus* camaldulensis ssp. *camaldulensis*) / SA Blue Gum (*Eucalyptus leucoxylon* ssp. *leucoxylon*) tall woodland over Spear-grass (*Austrostipa* sp.) and exotic grasses

Photo 3.144 Planted Mallee Box (*Eucalyptus porosa*) / SA Blue Gum (*Eucalyptus leucoxylon* ssp. *leucoxylon*) open woodland over Ruby Saltbush (*Enchylaena tomentosa*) / Spear-grass (*Austrostipa* sp.) and exotic grasses and forbs

3.5 Flora and Fauna

The field survey of the site, undertaken in April 2025, recorded 33 flora and 17 fauna species. The survey was undertaken during dry, late summer conditions following a prolonged dry climatic period. It is likely that additional species occur at Onkaparinga Heights that were not detected during the survey.

Most flora species recorded were introduced with only 12 native species were recorded. They represent plant species common in the cleared agricultural landscapes of the wider Adelaide Plains and foothills region. In areas less disturbed by cropping and primary production, regeneration of native shrub and grass species was observed, typically occurring as isolated small shrubs and grass tussocks in the understorey. Species included the low shrub Ruby Saltbush (*Enchylaena tomentosa*) (see **Photo 3.15**), Spear-grasses (*Austrostipa* sp.) and Wallaby Grasses (*Rytidosperma* sp.).

Fauna observed was limited to common native species that survive in disturbed, agricultural and semi-rural areas and introduced species. It is likely that additional species would occur during different seasons and under different climatic conditions. It is unlikely that fauna species that require vegetation of complex structural diversity would occur at Onkaparinga Heights.

A single threatened species was recorded. The Yellow-tailed Black Cockatoo (*Zanda funerea whiteae*) was observed feeding in Aleppo Pines on the property. The species is listed as Vulnerable under the NPW Act.

These pines are likely to provide important foraging habitat for this species, which is known to feed on the seeds of introduced *Pinus* species. Large numbers of chewed cones were present at the base of trees, indicating the continued use of the site by this species (see **Photo 3.16**).

Flora and fauna species recorded by the field survey are listed in **Table 3.2**.

Photo 3.5 Isolated occurrences of regenerating native low shrubs, such as *Enchylaena tomentosa*, occurred at the base of planted trees

Photo 3.6 Aleppo Pine cone chewed by feeding Yellow-tailed Black Cockatoos

Table 3.2 Flora and Fauna Species Recorded by the Field Survey at Onkaparinga Heights

	Scientific Name	Common Name	EPBC Act Status	NPW Act Status	Native/Introduced
FLORA	*Acacia pycnantha*	Golden Wattle	-	-	Native
	Aizoon pubescens	Coastal Galenia	-	-	Introduced
	Allocasuarina verticillata	Drooping Sheoak	-	-	Native
	Asphodelus fistulosus	Onion Weed	-	-	Introduced
	Austrostipa sp.	Spear-grass	-	-	Native
	Avena barbata	Bearded Oat	-	-	Introduced
	Brassica tournefortii	Wild Turnip	-	-	Introduced
	Briza maxima	Large Quaking Grass	-	-	Introduced
	Bromus sp.	Brome	-	-	Introduced
	Cenchrus clandestinus	Kikuyu	-	-	Introduced
	Enchylaena tomentosa	Ruby Saltbush	-	-	Native
	Eucalyptus camaldulensis ssp. *camaldulensis*	River Red Gum	-	-	Native
	Eucalyptus cladocalyx	Sugar Gum	-	-	Native
	Eucalyptus leucoxylon ssp. *leucoxylon*	SA Blue Gum	-	-	Native
	Eucalyptus porosa	Mallee Box	-	-	Native
	Gazania linearis	Gazania	-	-	Introduced
	Lagurus ovatus	Hare's Tail Grass	-	-	Introduced
	Lycium ferocissimum	African Boxthorn	-	-	Introduced
	Marrubium vulgare	Horehound	-	-	Introduced
	Melaleuca lanceolata	Dryland Teatree	-	-	Native
	Olea europaea	Olive	-	-	Introduced
	Onopordum acanthium	Scotch Thistle	-	-	Introduced
	Oxalis pes-caprae	Sour Sob	-	-	Introduced
	Phalaris aquatica	Phalaris	-	-	Introduced
	Pinus halepensis	Aleppo Pine	-	-	Introduced
	Piptatherum miliaceum	Rice Millet	-	-	Introduced
	Rhagodia candolleana	Sea-berry Saltbush	-	-	Native

	Scientific Name	Common Name	EPBC Act Status	NPW Act Status	Native/Introduced
	Rhagodia parabolica	Mealy Saltbush	-	-	Native
	Rytidosperma sp.	Wallaby Grass	-	-	Native
	Schinus molle	Pepper tree	-	-	Introduced
	Sisymbrium erysimoides	Smooth Mustard	-	-	Introduced
	Sixalix atropurpurea	Pincushion	-	-	Introduced
	Tamarix aphylla	Athel Pine	-	-	Introduced
FAUNA	*Acanthiza chrysorrhoa*	Yellow-rumped Thornbill	-	-	Native
	Columba livia	Rock Dove	-	-	Introduced
	Eolophus roseicapilla albiceps	Galah	-	-	Native
	Falco cenchroides cenchroides	Nankeen Kestrel	-	-	Native
	Gavicalis virescens	Singing Honeyeater	-	-	Native
	Grallina cyanoleuca cyanoleuca	Magpielark	-	-	Native
	Gymnorhina tibicen	Australian Magpie	-	-	Native
	Macropus fuliginosus	Western Grey Kangaroo	-	-	Native
	Malurus cyaneus leggei	Superb Fairywren	-	-	Native
	Ocyphaps lophotes lophotes	Crested Pigeon	-	-	Native
	Passer domesticus	House Sparrow	-	-	
	Phylidonyris novaehollandiae	New Holland Honeyeater	-	-	Native
	Rhipidura leucophrys leucophrys	Willie Wagtail	-	-	Native
	Sturnus vulgaris	Common Starling	-	-	Introduced
	Trichoglossus moluccanus	Rainbow Lorikeet	-	-	Native
	Zanda funerea whiteae	Yellow-tailed Black Cockatoo	-	V	Native
	Zosterops lateralis pinarochrous	Silvereye	-	-	Native

EPBC Act Status: VU, Vulnerable. EN, Endangered. CR, Critically Endangered. Mi, Migratory.
NPW Act Status: R, Rare. V, Vulnerable. E, Endangered.

3.6 Habitat Trees

Most trees on the site are small, planted, introduced species that do not provide specialised habitat features for fauna. These trees do provide some habitat for common fauna species that do not require specific habitat features or structurally diverse vegetation.

Aleppo Pines planted throughout the site are an exception. These trees provide an important food resource for the Yellow-tailed Black Cockatoo. These birds require tall trees with large hollows for breeding habitat, however, this habitat feature is absent from Onkaparinga Heights.

Two trees shown on the map in **Figure 3.1** are also considered to be habitat trees. A large, planted Sugar Gum (*Eucalyptus cladocalyx*) (see **Photo 3.17**) in the northern corner of the site provides the only tree hollows found during the field survey (see **Photo 3.18**).

The Drooping Sheoak is the only remnant trees remaining on the site. It is a small tree in poor health and does not provide any hollows. However, it provides an idea of the type of vegetation likely present before the site was cleared of vegetation.

Photo 3.77 A Planted Sugar Gum and Nearby Dead Tree Provide Some Small Hollows, Important Fauna Habitat

Photo 3.88 This Drooping Sheoak is the Only Remnant Native Tree on Onkaparinga Heights

3.7 Pre-European Vegetation and Likelihood of Threatened Species

3.7.1 Pre-European Vegetation

Pre-European vegetation mapping of Onkaparinga Heights (DEW, 2025) indicates that three vegetation communities are likely to have been present, as listed below:

- *Eucalyptus camaldulensis* ssp. *camaldulensis* woodland over an open understorey of sedges, rushes, grasses and herbs
- Eucalyptus porosa / Allocasuarina verticillata / Melaleuca lanceolata low woodland
- Eucalyptus porosa / Callitris gracilis / Allocasuarina verticillata / Banksia marginata open woodland.

All three are characterised by an open canopy, with sparse shrub layers and an open, grassy understorey.

These communities are described further in **Table 3.3**. Descriptions include a list of characteristic plant species, based on nearby records of flora and descriptions of Mount Lofty Ranges plant communities provided in the *Bushland Condition Monitoring Manual – Vegetation Communities of the Southern Mt Lofty Ranges* (Croft, Pedlar, & Milne, 2005).

The predicted extent of these communities at Onkaparinga Heights is shown on the map in **Figure 3.2**.

Table 3.3 Pre-European Vegetation Community Descriptions. Chracteristic Plant Species Have Been Taken From Croft, Pedlar and Milne, 2005

Pre-European Vegetation Community	Description	Landscape Position	Chracteristic Plant Species	Plant Form (see Appendix C)
Eucalyptus camaldulensis ssp. *camaldulensis* woodland over an open understorey of sedges, rushes, grasses and herbs	Tall woodland of River Red Gum. A very sparse shrub layer of medium to tall shrubs may be present, however the understorey is dominated by an open, grassy structure. Where the community occurs along stream channels or on seasonally damp soils, sedges and rushes may dominate.	Drainage lines and floodplains of rivers and creeks. In the Mount Lofty Ranges, it occurs higher up slopes following gullies and the heads of drainage lines. Pre-European vegetation mapping indicates it was probably restricted to the southern drainage line at Onkaparinga Heights.	River Red Gum (*Eucalyptus camaldulensis*)	Tall Tree
			SA Blue Gum (*Eucalyptus leucoxylon* ssp. *leucoxylon*)	Small Tree
			Swamp Wattle (*Acacia retinodes*)	Tall Shrub
			Silver Banksia *(Banksia marginata*)	Tall Shrub
			Sweet Bursaria (*Bursaria spinosa*)	Medium Shrub
			Sticky Hop-bush (*Dodonaea viscosa*)	Low Shrub
			Ruby Saltbush (*Enchylaena tomentosa*)	Herb
			Bidgee-widgee (*Acaena* spp.)	Herb
			Hills Raspwort (*Gonocarpus tetragynus*)	Herb
			Bluebell (*Wahlenbergia stricta*)	Tall Sedge
			Spiny Flat Sedge (*Cyperus gymnocaulos*)	Tall Sedge
			Flat Sedge (*Cyperus vaginatus*)	Tall Sedge
			Juncus spp.	Tall Grass
			Tussock Grass (*Poa labillardieri*)	Tall Grass
			Kangaroo Grass (*Themeda triandra*)	Tall Grass
			Weeping Rive Grass (*Microlaena stipoides*)	Low Grass
			Wallaby Grass (*Rytidosperma* spp.)	Low Grass
Eucalyptus porosa / Allocasuarina verticillata / Melaleuca lanceolata low woodland	Low woodland with a canopy dominated by Mallee Box (Eucalyptus porosa), with Drooping Sheoak (Allocasuarina verticillata) and Dryland Teatree (Melaleuca lanceolata) also sometimes present. Sparse small trees with an open grassy understorey.	North and west facing slopes of ranges, from lower to mid slopes. Mapping indicates this community once dominated half of Onkaparinga Heights.	Mallee Box (*Eucalyptus porosa*)	Medium Tree
			Drooping Sheoak (*Allocasuarina verticillata*)	Medium Tree
			Dryland Teatree (*Melaleuca lanceolata*)	Small Tree
			Golden Wattle (*Acacia pycnantha*)	Small Tree
			Sweet Bursaria (*Bursaria spinosa*)	Tall Shrub
			Round-leaved Wattle (*Acacia acinacea*)	Medium Shrub
			Kangaroo Thorn (*Acacia paradoxa*)	Medium Shrub
			Clasping Goodenia (*Goodenia amplexans*)	Medium Shrub
			Guinea-flower (*Hibbertia exutiacies*)	Low Shrub
			Ruby Saltbush (*Enchylaena tomentosa*)	Low Shrub
			Sea-berry Saltbush (*Rhagodia candolleana*)	Low Shrub
			Grass Tree (*Xanthorrhoea semiplana*)	Grass Tree
			Hills Raspwort (*Gonocarpus elatus*)	Herb

Pre-European Vegetation Community	Description	Landscape Position	Chracteristic Plant Species	Plant Form (see Appendix C)
			Native Oxalis (*Oxalis perennans*)	Herb
			Fanflower (*Scaevola albida*)	Herb
			New Holland Daisy (*Vittadinia cuneata*)	Herb
			Many-flowered Mat-rush (*Lomandra multiflora* ssp. *dura*)	Low Sedge
			Spear-grass (*Austrostipa* spp.)	Tall Grass
			Kangaroo Grass (*Themeda triandra*)	Tall Grass
			Brush Wire-grass (*Aristida behriana*)	Low Grass
			Black-head Grass (*Enneapogon nigricans*)	Low Grass
			Wallaby Grass (*Rytidosperma* spp.)	Low Grass
			Windmill Grass (*Chloris truncata*)	Low Grass
Eucalyptus porosa / Callitris gracilis / Allocasuarina verticillata / Banksia marginata open woodland.	Differs to the above community by the presence of White Cypress-pine (*Callitris gracilis*) and a more open woodland structure.	North and west facing slopes of ranges, from the mid to upper slopes and areas of higher elevation with rocky soils. Pre-European vegetation mapping indicates this community once dominated the northern half of Onkaparinga Heights.	Mallee Box (*Eucalyptus porosa*)	Medium Tree
			White Cypress-pine (*Callitris gracilis*)	Medium Tree
			Drooping Sheoak (*Allocasuarina verticillata*)	Medium Tree
			Golden Wattle (*Acacia pycnantha*)	Small Tree
			Silver Banksia (*Banksia marginata*)	Tall Shrub
			Round-leaved Wattle (*Acacia acinacea*)	Medium Shrub
			Kangaroo Thorn (*Acacia paradoxa*)	Medium Shrub
			Guinea-flower (*Hibbertia exutiacies*)	Low Shrub
			Ruby Saltbush (*Enchylaena tomentosa*)	Low Shrub
			Sea-berry Saltbush (*Rhagodia candolleana*)	Low Shrub
			Hills Raspwort (*Gonocarpus elatus*)	Herb
			Native Oxalis (*Oxalis perennans*)	Herb
			Fanflower (*Scaevola albida*)	Herb
			New Holland Daisy (*Vittadinia cuneata*)	Herb
			Many-flowered Mat-rush (*Lomandra multiflora* ssp. *dura*)	Low Sedge
			Spear-grass (*Austrostipa* spp.)	Tall Grass
			Kangaroo Grass (*Themeda triandra*)	Tall Grass
			Brush Wire-grass (*Aristida behriana*)	Low Grass
			Black-head Grass (*Enneapogon nigricans*)	Low Grass
			Wallaby Grass (*Rytidosperma* spp.)	Low Grass

Pre-European Vegetation Community	Description	Landscape Position	Chracteristic Plant Species	Plant Form (see Appendix C)
			Windmill Grass (*Chloris truncata*)	Low Grass

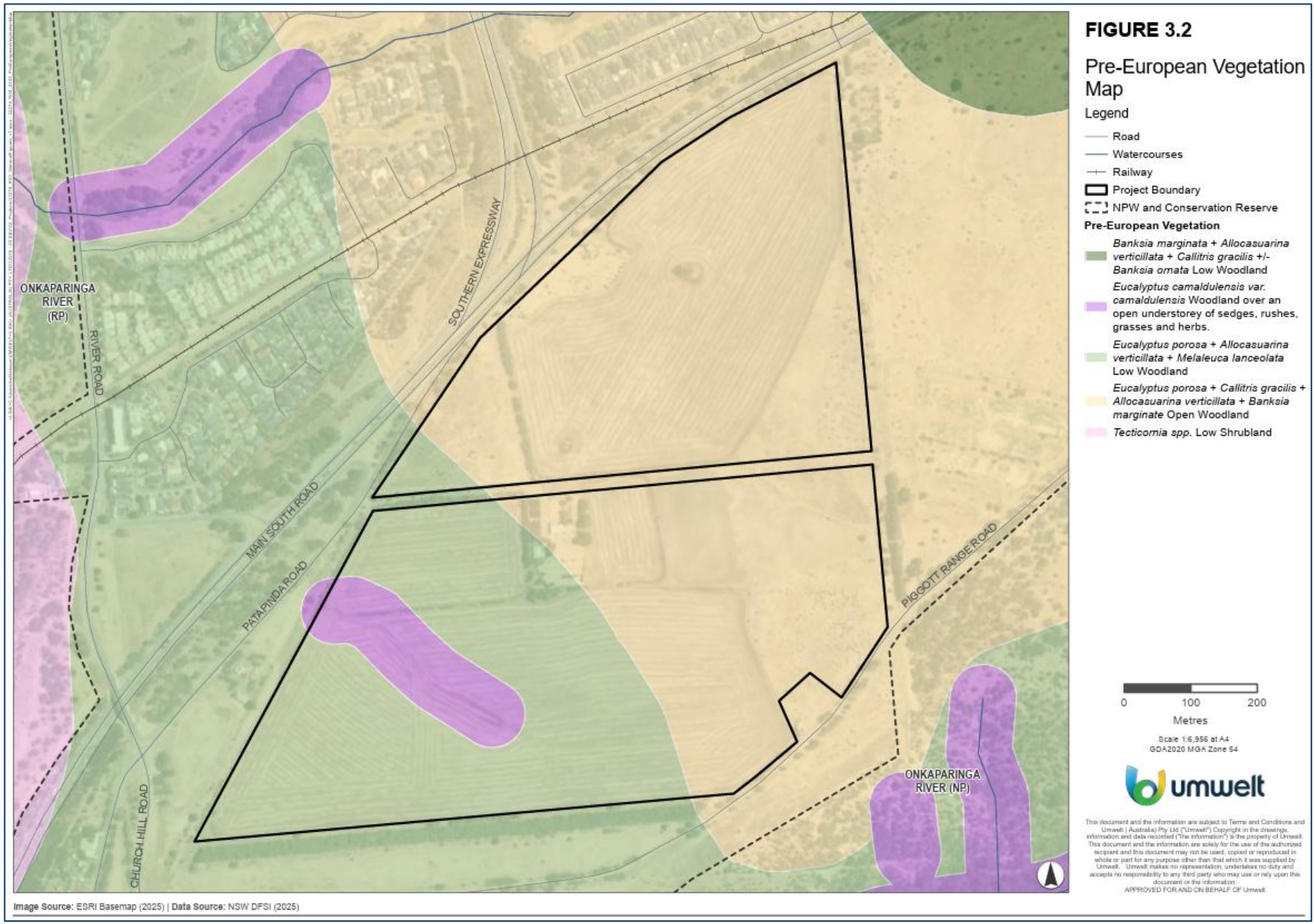

Figure 3.2 Pre-European Vegetation Mapping Over Onkaparinga Heights

3.7.2 Examples of Pre-European Vegetation

Examples of these pre-European communities occur elsewhere inside the boundaries of the City of Onkaparinga, such as at the Onkaparinga River National Park and numerous Council managed reserves. Examples that resemble the three pre-European communities present at the site are as follows:

- *Eucalyptus camaldulensis* ssp. *camaldulensis* woodland over an open understorey of sedges, rushes, grasses and herbs - **Photo 3.19.**
- *Eucalyptus porosa / Allocasuarina verticillata / Melaleuca lanceolata* low woodland - **Photo 3.20.**
- *Eucalyptus porosa / Callitris gracilis / Allocasuarina verticillata / Banksia marginata* open woodland - **Photo 3.21**.

It is likely that pre-European vegetation conditions included an open grassy structure, in which small trees and shrubs were present in the understorey but sparsely distributed. The grassy understorey is likely to have been dominated by tussock grasses such as Kangaroo Grass (*Themeda triandra*), Wallaby Grass (*Rytidosperma* spp.) and Spear-grasses (*Austrostipa* spp.) (see **Photo 3.22**).

Photo 3.99 *Eucalyptus camaldulensis* ssp. *camaldulensis* Woodland Over an Open Understorey of Sedges, Rushes, Grasses and Herbs, Panatalinga Creek.

Photo 3.20 *Eucalyptus porosa / Allocasuarina verticillata / Melaleuca lanceolata* Low Woodland, Onkaparinga River National Park.

Photo 3.101 ***Eucalyptus porosa / Callitris gracilis / Allocasuarina verticillata / Banksia marginata*** **Open Woodland, Onkaparinga River National Park. Note in this Example, *E. porosa* is replaced by Grey Box (*E. microcarpa*).**

Photo 3.11 Managed Native Grassland Dominated by Kangaroo Grass (*Themeda triandra*) and Wallaby Grass (*Rytidosperma caespitosum*) at Happy Valley (City of Onkaparinga).

3.7.3 Likelihood of Occurrence of Threatened Species

In its current state, the vegetation at Onkaparinga Heights provides few habitat resources that might be important for threatened species. However, the area is situated between remnant native vegetation and other habitat features located in Onkaparinga River National Park and at the Onkaparinga River.

Given this landscape context, it is possible that species requiring less specialised habitat may utilise Onkaparinga Heights at times, although unlikely it would be an important area for sustaining local populations. This is demonstrated by the Yellow-tailed Black Cockatoo which has suitable foraging resources at Onkaparinga Heights but a lack of suitable breeding habitat at the site.

Based on the recency and proximity of historical records of threatened species and their habitat requirements, a likelihood of occurrence assessment for threatened fauna has been undertaken. This has informed the determination of which threatened fauna species could be present on Onkaparinga Heights in the future, if habitat is protected or enhanced. Assessments have been undertaken for the site in its current condition, and hypothetically, if some woodland habitat or derived native grassland habitat was restored.

Threatened fauna species recorded within 5 km of Onkaparinga Heights since 1995 have been assessed. Species that require wetland, marine or aquatic habitats have been excluded, since these habitat types are not present, nor were they likely to be present under pre-European conditions.

The assessment found that in its current state, eight threatened fauna species might possibly occur on Onkaparinga Heights. An additional three species might utilise the site if some woodland vegetation was restored. These species are listed in **Table 3.4**.

Given that there is no native vegetation on Onkaparinga Heights, and none were found during the field survey, it is unlikely that any threatened plant species are present. However, threatened flora species that occur nearby should be considered if habitat restoration activities are to occur.

Threatened flora species recorded within 5 km of Onkaparinga Heights that are likely to occur in the three pre-European vegetation communities mapped for the site are listed in **Table 3.5**.

Table 3.4 Threatened Species Likelihood of Occurrence Assessment

Scientific Name	Common Name	EPBC Act Status	NPW Act Status	Likelihood Current Site	Likelihood Restored Vegetation
Cereopsis novaehollandiae novaehollandiae	Cape Barren Goose	-	Rare	Possible	Possible
Coturnix ypsilophora australis	Brown Quail	-	Vulnerable	Possible	Likely
Falco peregrinus macropus	Peregrine Falcon	-	Rare	Highly Likely	Highly Likely
Falco subniger	Black Falcon	-	Rare	Possible	Possible
Falcunculus frontatus frontatus	Eastern Shriketit	-	Rare	Unlikely	Possible
Hieraaetus morphnoides	Little Eagle	-	Vulnerable	Likely	Highly Likely
Melithreptus gularis gularis	Black-chinned Honeyeater	-	Vulnerable	Possible	Likely
Neophema chrysostoma	Blue-winged Parrot	Vulnerable	Vulnerable	Possible	Likely
Neophema elegans elegans	Elegant Parrot	-	Rare	Highly Likely	Highly Likely
Pteropus poliocephalus	Grey-headed Flying-fox	Vulnerable	Rare	Unlikely	Highly Likely
Turnix varius varius	Painted Buttonquail	-	Rare	Unlikely	Possible
Zanda funerea whiteae	Yellow-tailed Black Cockatoo	-	Vulnerable	Highly Likely	Highly Likely

Table 3.5 Threatened Flora Species Recorded within 5 km of Onkaparinga Heights that are Likely to Occur in pre-European Vegetation Communities Mapped for the Site

Scientific Name	Common Name	EPBC Act Status	NPW Act Status	*Eucalyptus camaldulensis* ssp. *camaldulensis* woodland over an open understorey of sedges, rushes, grasses and herbs	*Eucalyptus porosa / Allocasuarina verticillata / Melaleuca lanceolata* low woodland	*Eucalyptus porosa / Callitris gracilis / Allocasuarina verticillata / Banksia marginata*
Acacia dodonaeifolia	Hop-bush Wattle	-	Rare	Yes	Yes	Yes
Amphibromus archeri	Pointed Swamp Wallaby-grass	-	Rare	Yes	No	No
Austrostipa multispiculis	Many-flowered Spear-grass	-	Rare	No	Yes	Yes
Bothriochloa macra	Red-leg Grass	-	Rare	Yes	Yes	Yes
Dianella longifolia var. grandis	Pale Flax-lily	-	Rare	Yes	Yes	Yes
Drosera praefolia	Early Sundew	-	Rare	No	Yes	Yes
Eucalyptus fasciculosa	Pink Gum	-	Rare	No	Yes	Yes

Scientific Name	Common Name	EPBC Act Status	NPW Act Status	*Eucalyptus camaldulensis* ssp. *camaldulensis* woodland over an open understorey of sedges, rushes, grasses and herbs	*Eucalyptus porosa / Allocasuarina verticillata / Melaleuca lanceolata* low woodland	*Eucalyptus porosa / Callitris gracilis / Allocasuarina verticillata / Banksia marginata*
Olearia passerinoides ssp. *glutescens*	Sticky Daisy-bush	-	Rare	No	Yes	Yes
Orobanche cernua var. *australiana*	Australian Broomrape	-	Rare	Yes	No	No
Picris squarrosa	Squat Picris	-	Rare	Yes	Yes	Yes
Pterostylis curta	Blunt Greenhood	-	Rare	Yes	Yes	Yes
Ptilotus angustifolius	Narrow-leaf Yellow-tails	-	Endangered	No	Yes	Yes
Senecio pinnatifolius var. *pinnatifolius*		-	Rare	No	Yes	Yes

4.0 Ecological and Development Objectives

4.1 Ecological Objectives

The ecological objectives for Onkaparinga Heights were identified through consultation with Renewal SA and Green Adelaide and are as follows:

- Utilise the site's landscape location to provide a connection between the Onkaparinga River National Park and the Onkaparinga River Recreation Area with Onkaparinga Heights acting as a stepping stone for fauna species.
- Identify key or target fauna and flora species and their habitat requirements to inform BSUD options and planting palettes such that Onkaparinga Heights could act as a refuge area or stepping stone for wildlife.
- Provide opportunities for net biodiversity gain on the site and integrate the options with Water Sensitive Urban Design (WSUD) principles.
- Support the site's future climate resilience through the inclusion of species historically adapted to the site and siting of species within locations across the site to optimise future survival under climate change scenarios.

4.2 Target Ecosystems

The target ecosystems were informed by the pre-European vegetation mapping of the area (see Section **3.7**), since the site does not contain any examples of remnant vegetation communities. Given the development requirements of the site and urban design constraints, two target ecosystems were identified:

- Woodland – Open woodlands with a grassy understorey, typically with <30% canopy cover. This ecosystem once covered over 80% of the Mount Lofty Ranges region.
- Grassland – Grasslands dominated by tussock grasses. Some sparse shrub cover and/or emergent low trees may be present. Native grasslands in the Mount Lofty Ranges region have been heavily cleared since European settlement.

4.3 Target Species

Target flora and fauna species that were identified based on the following factors:

- Are locally indigenous to the southern Mount Lofty Ranges and Adelaide Plains
- Are representative of the target ecosystems
- Are readily available commercially in large quantities
- Provide important fauna habitat resources, such as shelter and food

- Enhance natural ecological processes
- Provide opportunities for positive human-nature interactions
- Are likely to survive within a modified urban environment.
- Are likely to occur in the target ecosystems
- Are likely to use forage and shelter resources that will be provided by the identified target plant species
- Occur in the surrounding landscape and are therefore:
    - Likely to benefit from increased connectivity provided by BSUD, and
    - Able to naturally colonise and/or disperse to habitats created within Onkaparinga Heights
- Are socially acceptable species that might provide opportunities for positive human-nature interactions
- Are easily observable and can be used for monitoring of success.

Target flora and fauna for the site are listed in **Table 4.1**.

Table 4.1 Onkaparinga Heights BSUD Target Species

Ecosystem	Common Name	Scientific Name	EPBC Act Status[1]	NPW Status[2]	Species Type
FLORA					
Grassland	Tussock Grass	*Poa labillardierei*	-	-	Tall grass
	Many-flowered Mat Rush	*Lomandra multiflora* ssp. *dura*	-	-	Sedge
	Bluebell	*Wahlenbergia stricta*	-	-	Herb
	New Holland Daisy	*Vittadinia cuneata*	-	-	Herb
	Twining Glycine	*Glycine rubiginosa*	-	-	Herb
	Rock Sida	*Sida petrophila*	-	-	Herb
	Corrugated Sida	*Sida corrugata*	-	-	Herb
	Silver Daisy-bush	*Olearia pannosa* ssp. *pannosa*	VU	V	Low shrub
	Kangaroo Thorn	*Acacia paradoxa*	-	-	Medium shrub
	Clasping Goodenia	*Goodenia amplexans*	-	-	Medium shrub
	Grass Tree	*Xanthorrhoea quadrangulata*	-	-	Tall shrub
Grassland / Woodland	Brush Wire-grass	*Aristida behriana*	-	-	Low grass
	Black Head-grass	*Enneapogon nigricans*	-	-	Low grass
	Wallaby Grass	*Rytidosperma* spp.	-	-	Low grass
	Windmill Grass	*Chloris truncata*	-	-	Low grass
	Spear Grass	*Austrostipa* spp.	-	-	Tall grass
	Kangaroo Grass	*Themeda triandra*	-	-	Tall grass
	Soft Tussock Mat-rush	*Lomandra densiflora*	-	-	Sedge
	Pale Flax-lily	*Dianella longifolia*	-	-	Sedge
	Fanflower	*Scaevola albida*	-	-	Herb
	Guinea Flower	*Hibbertia exutiacies*	-	-	Low shrub
	White Goodenia	*Goodenia albiflora*	-	-	Low shrub
	Tall Scurf-pea	*Cullen australasicum*	-	-	Low shrub
	Round-leaved Wattle	*Acacia acinacea*	-	-	Medium shrub
Woodland	Smooth Riceflower	*Pimelea glauca*	-	-	Low shrub
	Curved Riceflower	*Pimelea curvula*	-	-	Low shrub
	Austral Indigo	*Indigofera australis*	-	-	Low shrub

Ecosystem	Common Name	Scientific Name	EPBC Act Status[1]	NPW Status[2]	Species Type
	Silver Banksia	*Banksia marginata*	-	-	Tall shrub
	Golden Wattle	*Acacia pycnantha*	-	-	Small tree
	Wirilda	*Acacia retinodes*	-	-	Small tree
	Native Apricot	*Pittosporum angustifolium*	-	-	Small tree
	Mallee Box	*Eucalyptus porosa*	-	-	Medium tree
	White Cypress-pine	*Callitris gracilis*	-	-	Medium tree
	Drooping Sheoak	*Allocasuarina verticillata*	-	-	Medium tree
	River Red Gum	*Eucalyptus camaldulensis* ssp. *camaldulensis*	-	-	Large tree
FAUNA					
Grassland	Blue-banded Bee	*Amegilla cingulata*	-	-	Insect
	Australian Painted Lady	*Vanessa kershawi*	-	-	Insect
	Eastern Banjo Frog	*Limnodynastes dumerilii*	-	-	Frog
	Adelaide Delma	*Delma molleri*	-	-	Reptile
	Red-browed Finch	*Neochmia temporalis*	-	-	Bird
	Echidna	*Tachyglossus aculeatus*	-	-	Mammal
Woodland	Chequered Swallowtail	*Papilio demoleus*	-	-	Insect
	Eastern Blue-tongue Lizard	*Tiliqua scincoides*	-	-	Reptile
	Superb Fairy-wren	*Malurus cyaneus*	-	-	Bird
	Diamond Firetail	*Stagonopleura guttata*	VU	V	Bird
	Yellow-tailed Black Cockatoo	*Zanda funerea*	-	V	Bird
	Koala	*Phascolarctos cinereus*	-	-	Mammal

[1]EPBC Act: CR (Critically Endangered), EN (Endangered), V (Vulnerable).
[2]NPW Act: E (Endangered), V (Vulnerable), R (Rare).

4.4 Development Objectives

Renewal SA identified the following objectives for the Onkaparinga Heights development:

- Provide up to 1,000 new homes across the site, including 20% affordable dwellings
- Development to have a gross open area greater than 12.5%
- Mandatory tree canopy requirements will be specified
- The development design is to:
    - Reflect sustainability principles
    - Integrate with the surrounding neighbourhood
    - Provide a well-connected and serviced community
    - Showcase industry-leading development
    - Set a new benchmark for future developments
    - Provide access to transport routes, local amenities and employment hubs

- Maximise the proximity of the site to sought after natural and recreational areas including beaches, scenic bushland, an extensive network of cycling trails and award-winning food and wine

Incorporate the BSUD principles by integrating design options that encourage the presence of and enable the dispersal and movement of the target flora and fauna species.

5.0 BSUD Options Considered for Onkaparinga Heights

5.1 BSUD Options Considered for Onkaparinga Heights

The BSUD Options that were initially considered for Onkaparinga Heights included:

- **Grassed swales and planted drainage lines** to move water around the site and providing watering points for fauna.
- **Linear reserves** with natural areas, incorporating pedestrian pathways and cycleways, which connect to nature reserves and streetscapes.
- **Drainage basin with integrated wetland** for collection and slow release of stormwater.
- **Pocket parks** with some native plants included in design along with recreational facilities like playgrounds, picnic areas, seating and open spaces.
- **Backyard landscape designs** with a variety of designs to select from.
- **Infrastructure** with integrated biodiversity gains, in particular stormwater management areas and road verges between roads and footpaths.
- **Woodland plantings** in reserves and pocket parks reflect open ecosystems while offering habitat, cooling, and visual interest.
- **Grassland plantings** enhance biodiversity, create habitat, support healthy soils and trees, and promote human wellbeing while serving as vital links in broader wildlife corridors.
- **Biodiversity impact minimisation initiatives** utilise design strategies to reduce impacts on wildlife whilst encouraging behaviour modification to strengthen long-term success.

5.2 BSUD Options for Onkparinga Heights

The recommended BSUD options for Onkaparinga Heights that balance and deliver both biodiversity and development objectives, whilst enhancing the liveability, attractiveness, amenity and recreational values of the area are listed and listed below:

- **Linear reserves** with natural areas, incorporating pedestrian pathways and cycleways, which connect to nature reserves and streetscapes.
- **Pocket parks** with some native plants included in design along with recreational facilities like playgrounds, picnic areas, seating and open spaces.
- **Infrastructure** with integrated biodiversity gains, in particular stormwater management areas and road verges between roads and footpaths.
- **Woodland plantings** in reserves and pocket parks reflect open ecosystems while offering habitat, cooling, and visual interest.
- **Grassland plantings** enhance biodiversity, create habitat, support healthy soils and trees, and promote human wellbeing while serving as vital links in broader wildlife corridors.

- **Biodiversity impact minimisation initiatives** utilise design strategies to reduce impacts on wildlife whilst encouraging behaviour modification to strengthen long-term success.

These six options are further described in the following Sections.

5.2.1 Linear Reserves

Linear reserves are a means of connecting residential areas, community hubs and nearby nature parks, local attractions, recreational areas, cycle ways and amenity hubs. These reserves could incorporate pedestrian paths alongside plantings characteristic of native ecological communities, along with recreational and community facilities like picnic areas, seating and playgrounds.

Streetscapes and verge plantings are also forms of linear plantings that can deliver similar ecological and community benefits. These reserves should start and end at key points where they allow continuity with surrounding areas and should ideally run in different directions to facilitate movement to multiple points of interest in and around Onkaparinga Heights

5.2.2 Pocket Parks

Pocket parks are small-scale green spaces integrated within residential neighbourhoods, offering both recreational facilities and areas of natural habitat. These parks provide green links to verges and larger green spaces and should be no more than 300m from each other and ideally closer.

The size of pocket parks can vary but could typically include open areas with seating, playgrounds or picnic facilities supported by landscape designs that incorporate native plant species and that act as stepping stones for birds, insects and other mobile fauna species to move through the landscape.

5.2.3 Infrastructure with Biodiversity Gains

Biodiverse infrastructure incorporates ecological principles into the design of essential urban systems, such as verges, drainage lines and stormwater management zones. These spaces, typically seen as purely functional, can be reimagined to support habitat creation, species movement and the reinstatement of natural processes across residential developments.

The integration of Water Sensitive Urban Design (WSUD) with vegetation and habitat features contribute to broader ecological networks and enhance the liveability of urban environments.

5.2.4 Woodland Plantings

Linear reserves, pocket parks and community infrastructure such as verges and stormwater management areas and other common areas offer an opportunity for native woodland plantings to be integrated into the design.

These areas would feature an open canopy (less than 30% canopy cover) over a ground layer of native grasses, sedges and herbs with occasional small shrubs and with open ground spaces between native plant tussocks.

5.2.5 Grassland Plantings

Grassland areas are largely free of trees although they have a high diversity of grass species and other understorey species, and spaces between plants that offer ideal habitat for reptiles and insects. The ecological communities that would have been present across the site are all woodland communities, however, these communities can all present as derived native grasslands if the trees are removed but the understorey remains intact.

Linear reserves, pocket parks and common areas that can remain unmown offer an opportunity for native grassland plantings to be integrated into the design. Areas that are less likely to be periodically inundated or act as drainage lines, are most suited to grassland plantings.

5.2.6 Biodiversity Impact Minimisation Initiatives

Biodiversity impact minimisation is a core principle of BSUD, ensuring that urban development actively reduces harm to native species and ecosystems. Design strategies that will reduce direct impacts to biodiversity and support ecological function include retaining habitat features like mature trees, private landscaping with native plant species or with nonnative species that provide forage or shelter for wildlife, using wildlife-sensitive lighting, open fencing designed to allow wildlife to pass through, gentle slopes on curbs and fauna crossings below roads to allow wildlife movement.

Behaviour modification strategies such as ‘cues to care’ and requirements for pet containment further strengthen the long-term success of these interventions which can and should be adopted or encouraged at all scales, across the development through to private yards and gardens.

6.0 References

Bureau of Meteorology (BOM). (2025, May 2). *Climate Data Online*. Retrieved from Bureau of Meteorology: http://www.bom.gov.au/climate/data/?ref=ftr

City of Onkaparinga. (2025, May 2). *History of European Settlement*. Retrieved from City of Onkaparinga: https://www.onkaparingacity.com/Services/History-and-heritage/History-of-European-settlement

Croft, S. J., Pedlar, J. A., & Milne, T. I. (2005). *Bushland Condition Monitoring Manual - Vegetation Communities of the Mt Lofty Ranges.* Adelaide: Nature Conservation Society of South Australia.

Department for Environment and Water (DEW). (2025, April 28). *NatureMaps*. Retrieved from NatureMaps: http://spatialwebapps.environment.sa.gov.au/naturemaps/?locale=en-us&viewer=naturemaps

EBS Ecology. (2021). *Hackham Code Amendment - Natural Environment (Flora and Fauna) Investigation Report.* Adelaide: Report to Holmes Dyer Pty Ltd by EBS Ecology.

EBS Ecology. (2022). *Hackham Code Amendment - Flora and Fauna Ecological Report.* Adelaide: Report to Holmes Dyer Pty Ltd by EBS Ecology.

EPA South Australia. (2025, May 2). *Environmental Info - Onkaparinga River*. Retrieved from EPA South Australia: https://www.epa.sa.gov.au/reports_water/c0273-ecosystem-2011

Geoscience Australia. (2025, May 6). *Commonwealth Historical Aerial Photo (HAP) Collection*. Retrieved from https://experience.arcgis.com/experience/9a0ecbafe94f49829712b46fc69186ff/page/Page/?views=View-21

Gerrard, G. E., Williams, N. S., Mata, L., Thomas, J., & Bekessy, S. A. (2018). Biodiversity Sensitive Urban Design. *Conservation Letters*, 11: e12411.

Native Vegetation Council. (2024). *Bushland Assessment Manual.* Adelaide: Native Vegetation Council.

Appendix A

Native Flora Recorded Within 5 km of Onkaparinga Heights

Scientific Name	Common Name	EPBC Act Status	NPW Act Status	Date of Most Recent Record
Acacia acinacea	Wreath Wattle	-	-	12/11/2015
Acacia argyrophylla	Silver Mulga-bush	-	-	15/12/2023
Acacia brachybotrya	Grey Mulga-bush	-	-	12/11/2015
Acacia calamifolia	Wallowa	-	-	15/12/2023
Acacia cupularis	Cup Wattle	-	-	16/06/2018
Acacia cyclops	Western Coastal Wattle	-	-	29/10/2021
Acacia dodonaeifolia	Hop-bush Wattle	-	R	5/05/2009
Acacia ligulata	Umbrella Bush	-	-	15/12/2023
Acacia longifolia ssp. sophorae	Coastal Wattle	-	-	29/10/2021
Acacia melanoxylon	Blackwood	-	-	27/06/2012
Acacia myrtifolia	Myrtle Wattle	-	-	29/07/2008
Acacia nematophylla	Coast Wallowa	-	-	13/05/2018
Acacia paradoxa	Kangaroo Thorn	-	-	15/12/2023
Acacia pycnantha	Golden Wattle	-	-	15/12/2023
Acacia retinodes	Wirilda	-	-	12/11/2015
Acacia rupicola	Rock Wattle	-	-	22/11/2022
Acacia salicina	Willow Wattle	-	-	2/12/2019
Acacia sp.	Wattle	-	-	15/06/2021
Acacia verniciflua	Varnish Wattle	-	-	23/07/2014
Acacia verticillata ssp. ovoidea	Prickly Moses	-	-	27/06/2012
Acaena echinata	Sheep's Burr	-	-	13/07/2022
Acaena sp.	Sheep's Burr	-	-	22/11/2022
Acrotriche patula	Prickly Ground-berry	-	-	25/09/2016
Acrotriche serrulata	Cushion Ground-berry	-	-	13/07/2022
Actites megalocarpus	Coast Sow-thistle	-	-	25/09/2016
Adriana quadripartita	Coast Bitter-bush	-	-	29/05/2018
Ajuga australis f. B (R.L.Taplin 972)	Lesser Bugle	-	-	27/06/2012
Allocasuarina muelleriana	Common Oak-bush	-	-	12/11/2015
Allocasuarina sp.	Sheoak/Oak-bush	-	-	24/08/2008
Allocasuarina verticillata	Drooping Sheoak	-	-	15/12/2023
Alternanthera denticulata (NC)	Lesser Joyweed	-	-	5/05/2009
Alyxia buxifolia	Sea Box	-	-	25/09/2016
Amyema miquelii	Box Mistletoe	-	-	13/07/2022
Amyema preissii	Wire-leaf Mistletoe	-	-	31/01/2009
Apium prostratum var.	Native Celery	-	-	12/11/2015
Aristida behriana	Brush Wire-grass	-	-	15/12/2023
Arthropodium fimbriatum	Nodding Vanilla-lily	-	-	16/06/2018
Arthropodium strictum	Common Vanilla-lily	-	-	1/03/2009
Asplenium subglandulosus	Blanket Fern	-	-	5/05/2009
Atriplex paludosa ssp.	Marsh Saltbush	-	-	10/08/2010
Atriplex paludosa ssp. cordata	Marsh Saltbush	-	-	26/11/2014
Atriplex paludosa ssp. paludosa	Marsh Saltbush	-	-	25/09/2016
Atriplex semibaccata	Berry Saltbush	-	-	25/09/2016
Atriplex suberecta	Lagoon Saltbush	-	-	25/09/2016
Austrodanthonia sp. (NC)		-	-	17/08/2008

Scientific Name	Common Name	EPBC Act Status	NPW Act Status	Date of Most Recent Record
Austrostipa acrociliata	Graceful Spear-grass	-	-	28/10/2005
Austrostipa blackii	Crested Spear-grass	-	-	15/12/2023
Austrostipa curticoma	Short-crest Spear-grass	-	-	15/12/2023
Austrostipa drummondii	Cottony Spear-grass	-	-	5/05/2009
Austrostipa eremophila	Rusty Spear-grass	-	-	15/12/2023
Austrostipa mollis	Soft Spear-grass	-	-	27/06/2012
Austrostipa nitida	Balcarra Spear-grass	-	-	15/12/2023
Austrostipa nodosa	Tall Spear-grass	-	-	15/12/2023
Austrostipa scabra ssp. falcata	Slender Spear-grass	-	-	15/12/2023
Austrostipa sp.	Spear-grass	-	-	22/11/2022
Avicennia marina ssp. marina	Grey Mangrove	-	-	1/05/2005
Banksia marginata	Silver Banksia	-	-	29/07/2008
Beyeria lechenaultii	Pale Turpentine Bush	-	-	13/07/2022
Billardiera cymosa ssp. cymosa	Sweet Apple-berry	-	-	13/07/2022
Boerhavia dominii	Tar-vine	-	-	15/12/2023
Bromus sp.	Brome	-	-	23/07/2014
Bulbine bulbosa	Bulbine-lily	-	-	1/03/2009
Bursaria spinosa ssp.	Bursaria	-	-	12/11/2015
Bursaria spinosa ssp. lasiophylla	Downy Bursaria	-	-	31/01/2009
Bursaria spinosa ssp. spinosa	Sweet Bursaria	-	-	15/12/2023
Caesia calliantha	Blue Grass-lily	-	-	1/03/2009
Caladenia sp.	Spider-orchid	-	-	13/07/2022
Caladenia tentaculata	King Spider-orchid	-	-	13/07/2022
Calandrinia sp.	Purslane/Parakeelya	-	-	23/07/2014
Callistemon rugulosus	Scarlet Bottlebrush	-	-	22/08/2008
Callistemon sieberi	River Bottlebrush	-	-	12/11/2015
Callitris gracilis	Southern Cypress Pine	-	-	15/12/2023
Callitris sp. Limestone (M.D.Crisp 11785)	Limestone Cypress Pine	-	-	22/01/2010
Calocephalus citreus	Lemon Beauty-heads	-	-	15/12/2023
Calystegia sepium	Large Bindweed	-	-	23/07/2014
Carex bichenoviana	Notched Sedge	-	-	16/06/2018
Carex breviculmis	Short-stem Sedge	-	-	5/05/2009
Carpobrotus rossii	Native Pigface	-	-	29/10/2021
Cassinia laevis ssp. laevis	Curry Bush	-	-	27/06/2012
Cassytha pubescens	Downy Dodder-laurel	-	-	23/07/2014
Centella asiatica	Asian Centella	-	-	5/05/2009
Ceramium filiculum		-	-	28/02/2006
Chloris truncata	Windmill Grass	-	-	15/12/2023
Clematis microphylla	Old Man's Beard	-	-	13/07/2022
Codium lucasii		-	-	1/04/2005
Codium pomoides		-	-	18/01/2005
Convolvulaceae sp.	Bindweed Family	-	-	23/07/2014
Convolvulus angustissimus ssp. angustissimus (NC)	Narrow-leaf Bindweed	-	-	12/11/2015
Convolvulus remotus	Grassy Bindweed	-	-	1/03/2009
Crassula colligata ssp. colligata		-	-	25/09/2016
Cullen australasicum	Tall Scurf-pea	-	-	24/06/2018

Scientific Name	Common Name	EPBC Act Status	NPW Act Status	Date of Most Recent Record
Cymbopogon ambiguus	Lemon-grass	-	-	27/06/2012
Cymbopogon obtectus	Silky-head Lemon-grass	-	-	5/05/2009
Cynodon dactylon var.	Couch	-	-	29/10/2021
Cynoglossum australe	Australian Hound's-tongue	-	-	25/09/2016
Cyperus gymnocaulos	Spiny Flat-sedge	-	-	23/07/2014
Cyperus vaginatus	Stiff Flat-sedge	-	-	13/05/2016
Daucus glochidiatus	Native Carrot	-	-	15/06/2021
Dianella brevicaulis	Short-stem Flax-lily	-	-	15/12/2023
Dianella brevicaulis/revoluta var.	Black-anther Flax-lily	-	-	23/07/2014
Dianella longifolia var. grandis	Pale Flax-lily	-	R	15/12/2023
Dianella revoluta var.		-	-	1/03/2009
Dianella revoluta var. revoluta	Black-anther Flax-lily	-	-	15/12/2023
Dichondra repens	Kidney Weed	-	-	5/05/2009
Dictyota alternifida		-	-	28/02/2005
Distichlis distichophylla	Emu-grass	-	-	25/09/2016
Dodonaea viscosa ssp.	Sticky Hop-bush	-	-	14/01/2016
Dodonaea viscosa ssp. spatulata	Sticky Hop-bush	-	-	13/07/2022
Drosera auriculata	Tall Sundew	-	-	31/01/2009
Drosera glanduligera	Scarlet Sundew	-	-	1/03/2009
Drosera macrantha ssp. planchonii	Climbing Sundew	-	-	1/03/2009
Drosera whittakeri	Scented Sundew	-	-	13/07/2022
Eclipta platyglossa ssp. platyglossa	Yellow Twin-heads	-	-	5/05/2009
Einadia nutans ssp.	Climbing Saltbush	-	-	23/07/2014
Einadia nutans ssp. eremaea	Dryland Climbing Saltbush	-	-	31/01/2009
Einadia nutans ssp. nutans	Climbing Saltbush	-	-	25/09/2016
Enchylaena tomentosa var.	Ruby Saltbush	-	-	15/12/2023
Enchylaena tomentosa var. tomentosa	Ruby Saltbush	-	-	25/09/2016
Enneapogon nigricans	Black-head Grass	-	-	15/12/2023
Entoloma angulatum		-	-	20/05/2006
Eragrostis brownii	Bentham's Love-grass	-	-	24/06/2018
Erodium sp.	Heron's-bill/Crowfoot	-	-	8/08/2008
Eucalyptus camaldulensis ssp. camaldulensis	River Red Gum	-	-	15/06/2021
Eucalyptus cladocalyx	Sugar Gum	-	-	15/06/2021
Eucalyptus cneorifolia	Kangaroo Island Narrow-leaf Mallee	-	-	25/09/2016
Eucalyptus cosmophylla	Cup Gum	-	-	12/11/2015
Eucalyptus dumosa	White Mallee	-	-	22/01/2010
Eucalyptus fasciculosa	Pink Gum	-	R	5/05/2009
Eucalyptus leucoxylon hybrid	South Australian Blue Gum Hybrid	-	-	14/01/2016
Eucalyptus leucoxylon ssp. leucoxylon	South Australian Blue Gum	-	-	15/12/2023
Eucalyptus leucoxylon ssp. megalocarpa	Large-fruit Blue Gum	-	R	22/01/2010
Eucalyptus microcarpa	Grey Box	-	-	15/12/2023
Eucalyptus odorata	Peppermint Box	-	-	23/07/2014
Eucalyptus oleosa ssp. oleosa	Red Mallee	-	-	22/01/2010
Eucalyptus porosa	Mallee Box	-	-	25/09/2016
Eucalyptus sp.		-	-	15/06/2021
Euphorbia drummondii		-	-	15/12/2023

Scientific Name	Common Name	EPBC Act Status	NPW Act Status	Date of Most Recent Record
Eutaxia diffusa	Large-leaf Eutaxia	-	-	11/11/2018
Exocarpos cupressiformis	Native Cherry	-	-	13/07/2022
Ficinia nodosa	Knobby Club-rush	-	-	29/10/2021
Frankenia pauciflora var. gunnii	Southern Sea-heath	-	-	25/09/2016
Gahnia filum	Thatching Grass	-	-	25/09/2016
Geranium potentilloides var. potentilloides	Downy Geranium	-	-	25/09/2016
Geranium retrorsum	Grassland Geranium	-	-	5/05/2009
Geranium solanderi	Austral Geranium	-	-	27/06/2012
Geranium sp.	Geranium	-	-	5/05/2009
Gonocarpus elatus	Hill Raspwort	-	-	27/06/2012
Gonocarpus mezianus	Broad-leaf Raspwort	-	-	25/09/2016
Gonocarpus sp.	Raspwort	-	-	23/07/2014
Goodenia amplexans	Clasping Goodenia	-	-	13/07/2022
Goodenia pinnatifida	Cut-leaf Goodenia	-	-	16/06/2018
Gramineae sp.	Grass Family	-	-	5/05/2009
Grevillea sp.	Grevillea	-	-	15/06/2021
Hakea carinata	Erect Hakea	-	-	13/07/2022
Hakea rugosa	Dwarf Hakea	-	-	29/07/2008
Hardenbergia violacea	Native Lilac	-	-	13/07/2022
Helichrysum leucopsideum	Satin Everlasting	-	-	25/09/2016
Heterosiphonia muelleri		-	-	1/04/2005
Hibbertia virgata	Twiggy Guinea-flower	-	-	13/07/2022
Hydrocotyle verticillata	Shield Pennywort	-	-	5/05/2009
Isolepis cernua	Nodding Club-rush	-	-	5/05/2009
Juncus kraussii	Sea Rush	-	-	12/11/2015
Kennedia prostrata	Scarlet Runner	-	-	25/09/2016
Kunzea pomifera	Muntries	-	-	25/09/2016
Lachnagrostis sp.	Blown-grass	-	-	5/05/2009
Lawrencia squamata	Thorny Lawrencia	-	-	11/11/2018
Leucophyta brownii	Coast Cushion Bush	-	-	25/09/2016
Lobelia anceps	Angled Lobelia	-	-	5/05/2009
Lomandra collina	Sand Mat-rush	-	-	1/03/2009
Lomandra effusa	Scented Mat-rush	-	-	24/06/2018
Lomandra longifolia	Spiny-headed Mat-rush	-	-	25/09/2016
Lomandra micrantha ssp.	Small-flower Mat-rush	-	-	1/03/2009
Lomandra multiflora ssp. dura	Hard Mat-rush	-	-	27/06/2012
Lomandra nana	Small Mat-rush	-	-	8/11/2012
Lomandra sororia	Sword Mat-rush	-	-	8/11/2012
Lycopus australis	Australian Gipsywort	-	-	29/05/2018
Lysiana exocarpi ssp. exocarpi	Harlequin Mistletoe	-	-	5/05/2009
Lythrum hyssopifolia	Lesser Loosestrife	-	-	12/11/2015
Machaerina juncea	Bare Twig-rush	-	-	5/05/2009
Maireana decalvans	Black Cotton-bush	-	E	11/11/2018
Malvaceae sp.		-	-	23/07/2014
Melaleuca brevifolia	Short-leaf Honey-myrtle	-	-	5/05/2009
Melaleuca decussata	Totem-poles	-	-	23/07/2014
Melaleuca halmaturorum	Swamp Paper-bark	-	-	2/12/2019

Scientific Name	Common Name	EPBC Act Status	NPW Act Status	Date of Most Recent Record
Melicytus angustifolius ssp. divaricatus	Tree Violet	-	-	29/05/2018
Muehlenbeckia gunnii	Coastal Climbing Lignum	-	-	29/10/2021
Myoporum sp.		-	-	29/07/2008
Myoporum viscosum	Sticky Boobialla	-	-	23/07/2014
Nitraria billardierei	Nitre-bush	-	-	29/10/2021
Olearia axillaris	Coast Daisy-bush	-	-	13/07/2022
Olearia passerinoides ssp. glutescens	Sticky Daisy-bush	-	R	27/06/2023
Olearia ramulosa	Twiggy Daisy-bush	-	-	12/11/2015
Oxalis perennans	Native Sorrel	-	-	15/12/2023
Paraserianthes lophantha	Cape Leeuwin Wattle	-	-	23/07/2014
Pelargonium australe	Austral Stork's-bill	-	-	25/09/2016
Pelargonium littorale	Native Pelargonium	-	-	29/05/2018
Persicaria prostrata	Creeping Knotweed	-	-	27/05/2018
Peyssonnelia boudouresquei		-	-	19/01/2008
Peyssonnelia capensis		-	-	18/01/2005
Phloiocaulon spectabile		-	-	4/03/2005
Phragmites australis	Common Reed	-	-	12/11/2015
Picris angustifolia ssp. angustifolia	Coast Picris	-	-	25/09/2016
Pimelea curviflora ssp. sericea	Curved Riceflower	-	-	15/12/2023
Pimelea flava ssp. dichotoma	Diosma Riceflower	-	-	13/07/2022
Pimelea phylicoides	Heath Riceflower	-	-	12/11/2015
Pimelea serpyllifolia ssp. serpyllifolia	Thyme Riceflower	-	-	25/09/2016
Pittosporum angustifolium	Native Apricot	-	-	12/11/2015
Plantago gaudichaudii	Narrow-leaf Plantain	-	-	1/03/2009
Plantago sp.	Plantain	-	-	5/05/2009
Poa poiformis var. poiformis	Coast Tussock-grass	-	-	25/09/2016
Poa sp.	Meadow-grass/Tussock-grass	-	-	5/05/2009
Poa tenera	Slender Tussock-grass	-	-	5/05/2009
Ptilotus angustifolius	Narrow-leaf Yellow-tails	-	E	10/11/2022
Ptilotus nobilis ssp.		-	-	24/06/2018
Rhagodia candolleana	Sea-berry Saltbush	-	-	29/10/2021
Rhagodia parabolica	Mealy Saltbush	-	-	24/06/2018
Rhagodia sp.	Saltbush	-	-	1/03/2009
Rumex sp.	Dock	-	-	15/06/2021
Rytidosperma caespitosum	Common Wallaby-grass	-	-	15/12/2023
Rytidosperma caespitosum (NC)	Common Wallaby-grass	-	-	12/11/2015
Rytidosperma pilosum	Velvet Wallaby-grass	-	-	5/05/2009
Rytidosperma setaceum	Small-flower Wallaby-grass	-	-	15/12/2023
Rytidosperma sp.	Wallaby-grass	-	-	20/07/2022
Salicornia blackiana	Thick-head Samphire	-	-	25/09/2016
Salicornia quinqueflora ssp. quinqueflora	Beaded Samphire	-	-	25/09/2016
Salsola australis	Buckbush	-	-	22/01/2010
Samolus repens	Creeping Brookweed	-	-	25/09/2016
Sargassum lacerifolium		-	-	1/04/2005
Scaevola albida	Pale Fanflower	-	-	15/12/2023
Scaevola crassifolia	Cushion Fanflower	-	-	25/09/2016
Schoenus apogon	Common Bog-rush	-	-	1/03/2009

Scientific Name	Common Name	EPBC Act Status	NPW Act Status	Date of Most Recent Record
Senecio pinnatifolius group	Variable Groundsel	-	-	29/10/2021
Senecio pinnatifolius var. pinnatifolius		-	R	25/09/2016
Setaria basiclada		-	-	25/09/2016
Setaria constricta	Knotty-butt Paspalidium	-	-	15/12/2023
Setaria jubiflora	Warrego Summer-grass	-	-	29/05/2018
Setaria sp.	Pigeon-grass	-	-	1/03/2009
Sida corrugata var.	Corrugated Sida	-	-	15/12/2023
Sida petrophila	Rock Sida	-	-	10/11/2022
Sigesbeckia orientalis	Oriental Sigesbeckia	-	-	29/05/2018
Solanum sp.	Nightshade/Potato-bush	-	-	31/01/2009
Spinifex hirsutus	Rolling Spinifex	-	-	29/10/2021
Sporobolus caroli	Yakka Grass	-	-	17/11/2011
Stackhousia monogyna	Creamy Candles	-	-	1/03/2009
Struvea plumosa		-	-	18/01/2005
Styphelia humifusa	Cranberry Heath	-	-	29/07/2008
Suaeda australis	Austral Seablite	-	-	29/10/2021
Tecticornia arbuscula	Shrubby Samphire	-	-	11/11/2018
Tecticornia halocnemoides ssp.	Grey Samphire	-	-	9/08/2010
Tecticornia pergranulata ssp. pergranulata	Black-seed Samphire	-	-	25/09/2016
Tetragonia implexicoma	Bower Spinach	-	-	25/09/2016
Teucrium racemosum	Grey Germander	-	-	16/06/2018
Teucrium sessiliflorum	Mallee Germander	-	-	16/06/2018
Thelymitra sp.	Sun-orchid	-	-	13/07/2022
Themeda triandra	Kangaroo Grass	-	-	15/12/2023
Threlkeldia diffusa	Coast Bonefruit	-	-	25/09/2016
Triglochin striata	Streaked Arrowgrass	-	-	5/05/2009
Trymalium wayi	Grey Trymalium	-	-	5/05/2009
Typha domingensis	Narrow-leaf Bulrush	-	-	25/09/2016
Vittadinia australasica var.	Sticky New Holland Daisy	-	-	15/12/2023
Vittadinia blackii	Narrow-leaf New Holland Daisy	-	-	15/12/2023
Vittadinia cuneata var. cuneata	Fuzzy New Holland Daisy	-	-	16/06/2018
Vittadinia gracilis	Woolly New Holland Daisy	-	-	27/06/2012
Vittadinia sp.	New Holland Daisy	-	-	23/07/2014
Wahlenbergia communis	Tufted Bluebell	-	-	25/09/2016
Wilsonia humilis	Silky Wilsonia	-	-	25/09/2016
Xanthorrhoea semiplana ssp.	Yacca	-	-	13/07/2022

EPBC Act: VU, Vulnerable. EN, Endangered. CR, Critically Endangered. Mi, Migratory.
NPW Act: R, Rare. V, Vulnerable. E, Endangered.

Appendix B

Native Fauna Recorded Within 5 km of Onkaparinga Heights

Scientific Name	Common Name	EPBC Act Status	NPW Act Status	Date of Most Recent Record
Acanthagenys rufogularis	Spiny-cheeked Honeyeater	-	-	23/09/2007
Acanthiza chrysorrhoa	Yellow-rumped Thornbill	-	-	22/10/2015
Acanthiza chrysorrhoa leighi	Yellow-rumped Thornbill (eastern SA)	-	-	16/10/2014
Acanthiza lineata clelandi	Striated Thornbill (MLR, SE)	-	-	29/06/2011
Acanthiza nana	Yellow Thornbill	-	-	2/12/2019
Acanthiza pusilla samueli	Brown Thornbill (MLR)	-	-	22/10/2015
Accipiter cirrocephalus cirrocephalus	Collared Sparrowhawk	-	-	14/01/2016
Accipiter fasciatus fasciatus	Brown Goshawk	-	-	17/12/2009
Acrocephalus australis australis	Australian Reed Warbler	-	-	18/11/2021
Actitis hypoleucos	Common Sandpiper	Mi	R	19/03/2018
Anas castanea	Chestnut Teal	-	-	14/01/2016
Anas gracilis gracilis	Grey Teal	-	-	3/11/2024
Anas superciliosa superciliosa	Pacific Black Duck	-	-	3/11/2024
Anhinga novaehollandiae novaehollandiae	Australasian Darter	-	R	16/10/2014
Anthochaera carunculata woodwardi	Red Wattlebird (MLR, AP, YP, EP, far west, Yellabinna)	-	-	20/07/2022
Anthochaera chrysoptera chrysoptera	Little Wattlebird (mainland SA)	-	-	18/08/2005
Aquila audax audax	Wedge-tailed Eagle	-	-	1/11/2022
Ardea alba modesta	Great Egret	-	-	11/01/2020
Ardea pacifica	White-necked Heron	-	-	16/10/2014
Artamus cyanopterus cyanopterus	Dusky Woodswallow (eastern SA)	-	-	8/11/2021
Austronomus australis	White-striped Free-tailed Bat	-	-	11/10/2022
Aythya australis	Hardhead	-	-	5/11/2022
Biziura lobata menziesi	Musk Duck	-	R	14/01/2016
Cacatua galerita	Sulphur-crested Cockatoo	-	-	2/12/2019
Cacatua sanguinea gymnopis	Little Corella	-	-	11/01/2020
Cacatua tenuirostris	Long-billed Corella	-	-	14/02/2013
Calidris acuminata	Sharp-tailed Sandpiper	VU	-	23/09/2007
Calidris ruficollis	Red-necked Stint	Mi	-	14/01/2016
Caretta caretta	Loggerhead Sea Turtle	EN	E	23/04/2012
Cereopsis novaehollandiae novaehollandiae	Cape Barren Goose	-	R	21/11/2023
Chalcites basalis	Horsfield's Bronze Cuckoo	-	-	16/10/2014
Chalinolobus gouldii	Gould's Wattled Bat	-	-	11/10/2022
Chalinolobus morio	Chocolate Wattled Bat	-	-	1/02/2019
Charadrius ruficapillus	Red-capped Plover	-	-	14/01/2016
Chenonetta jubata	Maned Duck	-	-	3/11/2024
Chlidonias hybrida javanicus	Whiskered Tern	-	-	27/11/2011
Christinus marmoratus	Marbled Gecko	-	-	8/12/2016
Chroicocephalus novaehollandiae novaehollandiae	Silver Gull	-	-	1/09/2022
Cincloramphus cruralis	Brown Songlark	-	-	18/12/2008
Circus approximans	Swamp Harrier	-	-	15/08/2013
Cisticola exilis exilis	Golden-headed Cisticola	-	-	8/11/2021
Colluricincla harmonica harmonica	Grey Shrikethrush (eastern SA)	-	-	20/07/2022
Coracina novaehollandiae	Black-faced Cuckooshrike	-	-	8/11/2021
Corvus mellori	Little Raven	-	-	18/11/2021

Scientific Name	Common Name	EPBC Act Status	NPW Act Status	Date of Most Recent Record
Coturnix ypsilophora australis	Brown Quail	-	V	8/11/2021
Cracticus torquatus leucopterus	Grey Butcherbird	-	-	17/04/2013
Crinia signifera	Common Froglet	-	-	26/06/2023
Cygnus atratus	Black Swan	-	-	11/01/2020
Daphoenositta chrysoptera pileata	Black-capped Sittella	-	-	19/07/2006
Dermochelys coriacea	Leatherback Turtle	EN	V	1/01/2010
Dicaeum hirundinaceum hirundinaceum	Mistletoebird	-	-	22/10/2015
Egretta garzetta nigripes	Little Egret	-	R	19/03/2018
Egretta novaehollandiae	White-faced Heron	-	-	8/11/2021
Egretta sacra sacra	Pacific Reef Heron	-	R	17/05/2007
Elanus axillaris	Black-shouldered Kite	-	-	19/03/2018
Elseyornis melanops	Black-fronted Dotterel	-	-	8/11/2021
Eolophus roseicapilla albiceps	Galah	-	-	11/01/2020
Epthianura albifrons	White-fronted Chat	-	-	16/10/2014
Erythrogonys cinctus	Red-kneed Dotterel	-	-	14/01/2016
Falco berigora berigora	Brown Falcon	-	-	15/08/2013
Falco cenchroides cenchroides	Nankeen Kestrel	-	-	7/12/2023
Falco longipennis murchisonianus	Australian Hobby	-	-	19/11/2015
Falco peregrinus macropus	Peregrine Falcon	-	R	22/10/2015
Fulica atra australis	Eurasian Coot	-	-	7/11/2023
Gallinago hardwickii	Latham's Snipe	VU	R	14/01/2016
Gallinula tenebrosa tenebrosa	Dusky Moorhen	-	-	8/11/2021
Gallirallus philippensis mellori	Buff-banded Rail	-	-	14/01/2016
Gavicalis virescens sonorus	Singing Honeyeater (EP, YP, FR, MN, AP, MM, coastal SE)	-	-	28/01/2022
Geopelia placida placida	Peaceful Dove	-	-	18/08/2005
Glossopsitta concinna	Musk Lorikeet	-	-	8/11/2021
Grallina cyanoleuca cyanoleuca	Magpielark	-	-	8/11/2021
Gymnorhina tibicen tyrannica	White-backed Magpie (SE)	-	-	1/09/2022
Haematopus fuliginosus fuliginosus	Sooty Oystercatcher	-	R	19/03/2018
Haliastur sphenurus	Whistling Kite	-	-	11/01/2020
Hemiergis peronii	Four-toed Earless Skink	-	-	26/10/2014
Hieraaetus morphnoides	Little Eagle	-	V	17/12/2009
Himantopus leucocephalus	Pied Stilt	-	-	18/11/2021
Hirundo neoxena neoxena	Welcome Swallow	-	-	8/11/2021
Hydroprogne caspia	Caspian Tern	Mi	-	16/10/2014
Lalage tricolor	White-winged Triller	-	-	17/12/2009
Larus pacificus georgii	Pacific Gull	-	-	1/09/2022
Lepidochelys olivacea	Olive Ridley Turtle	-	-	23/04/2012
Lerista dorsalis	Southern Four-toed Slider	-	-	28/01/2022
Limnodynastes dumerilii	Banjo Frog	-	-	29/10/2022
Limnodynastes tasmaniensis	Spotted Marsh Frog	-	-	10/02/2022
Litoria calliscelis	South Australian Tree Frog (MLR MN)	-	-	8/11/2021
Macropus fuliginosus	Western Grey Kangaroo	-	-	20/07/2022
Malacorhynchus membranaceus	Pink-eared Duck	-	-	8/11/2021
Malurus cyaneus leggei	Superb Fairywren (Mainland SA)	-	-	18/11/2021
Manorina melanocephala	Noisy Miner	-	-	20/07/2022
Melithreptus gularis gularis	Black-chinned Honeyeater	-	V	6/04/2022

Scientific Name	Common Name	EPBC Act Status	NPW Act Status	Date of Most Recent Record
Menetia greyii	Dwarf Skink	-	-	28/01/2022
Microcarbo melanoleucos melanoleucos	Little Pied Cormorant	-	-	8/11/2022
Mormopterus planiceps	Southern Free-tailed Bat	-	-	11/10/2022
Morus serrator	Australasian Gannet	-	-	15/08/2013
Neochmia temporalis temporalis	Red-browed Finch	-	-	19/03/2018
Neophema chrysostoma	Blue-winged Parrot	VU	V	31/07/2013
Neophema elegans elegans	Elegant Parrot	-	R	19/03/2018
Ninox boobook	Australian Boobook	-	-	12/04/2006
Nycticorax caledonicus australasiae	Nankeen Night Heron	-	-	8/11/2021
Nyctophilus geoffroyi	Lesser Long-eared Bat	-	-	11/10/2022
Ocyphaps lophotes lophotes	Crested Pigeon	-	-	15/06/2021
Oxyura australis	Blue-billed Duck	-	R	5/11/2022
Pachycephala fuliginosa fuliginosa	Western Whistler	-	-	22/10/2015
Pachycephala rufiventris rufiventris	Rufous Whistler	-	-	17/04/2013
Pandion haliaetus cristatus	Eastern Osprey	-	E	27/11/2011
Pardalotus punctatus	Spotted Pardalote	-	-	10/11/2022
Pardalotus striatus substriatus	Striated Pardalote	-	-	11/01/2020
Pelecanus conspicillatus	Australian Pelican	-	-	8/11/2021
Peltohyas australis	Inland Dotterel	-	-	16/10/2014
Petrochelidon ariel	Fairy Martin	-	-	8/11/2021
Petrochelidon nigricans neglecta	Tree Martin	-	-	11/01/2020
Phalacrocorax carbo	Great Cormorant	-	-	18/11/2021
Phalacrocorax sulcirostris	Little Black Cormorant	-	-	18/11/2021
Phalacrocorax varius hypoleucos	Australian Pied Cormorant	-	-	11/01/2020
Phaps chalcoptera	Common Bronzewing	-	-	8/11/2021
Phaps elegans elegans	Brush Bronzewing	-	-	17/04/2013
Phascolarctos cinereus	Koala	-	-	8/10/2022
Phylidonyris novaehollandiae novaehollandiae	New Holland Honeyeater	-	-	8/11/2021
Phylidonyris pyrrhopterus halmaturinus	Crescent Honeyeater (KI and MLR)	-	-	22/10/2015
Platalea flavipes	Yellow-billed Spoonbill	-	-	19/03/2018
Platalea regia	Royal Spoonbill	-	-	11/01/2020
Platycercus elegans fleurieuensis	Adelaide Rosella (MN, AP, MLR)	-	-	8/11/2021
Platycercus eximius eximius	Eastern Rosella	-	-	20/07/2022
Plegadis falcinellus	Glossy Ibis	Mi	R	29/11/2005
Podargus strigoides	Tawny Frogmouth	-	-	12/09/2005
Pogona barbata	Eastern Bearded Dragon	-	-	8/12/2016
Poliocephalus poliocephalus	Hoary-headed Grebe	-	-	14/01/2016
Pomatostomus superciliosus superciliosus	White-browed Babbler (southern SA)	-	-	11/01/2020
Poodytes gramineus goulburni	Little Grassbird	-	-	18/11/2021
Porphyrio melanotus melanotus	Australasian Swamphen	-	-	18/11/2021
Porzana fluminea	Australian Crake (Australian Spotted Crake)	-	-	19/03/2018
Pteropus poliocephalus	Grey-headed Flying-fox	VU	R	3/02/2025
Ptilotula penicillata penicillata	White-plumed Honeyeater (northern YP, MN, AP, MLR, LNE, MM, SE)	-	-	18/11/2021
Rhipidura albiscapa alisteri	Grey Fantail (southern SA)	-	-	22/10/2015

Scientific Name	Common Name	EPBC Act Status	NPW Act Status	Date of Most Recent Record
Rhipidura leucophrys leucophrys	Willie Wagtail	-	-	18/11/2021
Rostratula australis	Australian Painted-snipe	EN	E	27/11/2011
Sericornis frontalis rosinae	White-browed Scrubwren (MLR)	-	-	19/11/2015
Smicrornis brevirostris occidentalis	Weebill (Yellabinna, Gawler Ranges, EP, YP, southern FR, MN, MLR, MM)	-	-	14/01/2016
Spatula rhynchotis	Australasian Shoveler	-	R	24/09/2016
Stictonetta naevosa	Freckled Duck		V	11/01/2021
Strepera versicolor	Grey Currawong	-	-	2/11/2006
Strepera versicolor melanoptera	Black-winged Currawong (MLR, MM, SE)	-	-	8/11/2021
Tachybaptus novaehollandiae novaehollandiae	Australasian Grebe	-	-	8/11/2021
Thalasseus bergii cristatus	Greater Crested Tern	Mi	-	11/01/2020
Thinornis cucullatus cucullatus	Hooded Plover	VU	V	29/11/2022
Threskiornis molucca molucca	Australian White Ibis	-	-	8/11/2021
Threskiornis spinicollis	Straw-necked Ibis	-	-	11/01/2020
Tiliqua rugosa	Sleepy Lizard	-	-	28/01/2022
Tiliqua scincoides	Eastern Bluetongue	-	-	6/11/2017
Tribonyx ventralis	Black-tailed Nativehen	-	-	19/11/2015
Trichoglossus moluccanus moluccanus	Rainbow Lorikeet	-	-	20/07/2022
Tringa nebularia	Common Greenshank	EN	-	19/03/2018
Tringa stagnatilis	Marsh Sandpiper	Mi	-	16/10/2014
Tyto javanica delicatula	Eastern Barn Owl	-	-	8/11/2021
Vanellus miles novaehollandiae	Spur-winged Plover	-	-	1/09/2022
Vespadelus darlingtoni	Large Forest Bat	-	-	11/10/2022
Vespadelus regulus	Southern Forest Bat	-	-	1/02/2019
Zanda funerea whiteae	Yellow-tailed Black Cockatoo	-	V	3/05/2022
Zapornia pusilla palustris	Baillon's Crake	-	-	27/11/2011
Zosterops lateralis pinarochrous	Silvereye (EP, YP, FR, MLR, MM, SE)	-	-	18/11/2021

EPBC Act Status: VU, Vulnerable. EN, Endangered. CR, Critically Endangered. Mi, Migratory.
NPW Act: R, Rare. V, Vulnerable. E, Endangered.

Appendix C

Plant Life Form Definitions

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	Life Form	Height Class	Notes
Trees	Tall Tree	>15m	Erect woody plants with the canopy held well above the ground. Often single-stemmed but if multi-stemmed, with fewer than 5 trunks that result from branching of a single trunk.
	Medium Tree	5-15m	
	Small tree	<5m	
Mallees	Tall Mallee	>5m	Multi-stemmed trees, the individual trunks rising from a swelling or lignotuber at the base of the stem, or below soil level.
	Small Mallee	<5m	
Shrubs	Tall Shrub	>2m	Multi-stemmed woody plants with stems and branches rising from a rootstock or very short common trunk.
	Medium Shrub	0.5-2m	
	Low Shrub	<0.5m	
Herbs	Herb		Soft or slightly woody plants, annual or sometimes perennial, usually with soft, broad leaves. Includes lilies and orchids.
Mat Plants	Mat Plant and Groundcovers		Ground hugging plants forming a mat or groundcover, with ground hugging main stems. Usually perennial, may be succulent. Rarely exceed 0.2m tall.
Grasses	Tall Grass	>0.5m	Perennial or annual, generally erect or spreading. Usually with individual shoots rising from a single root system.
	Low Grass	<0.5m	
Hummock Grass	Hummock Grass		Grasses in the *Triodia* genus.
Sedges	Tall Sedge	>0.5m	Herbaceous, usually perennial, tufted plants, often with stiff leaf blades including sedges and rushes (e.g. *Juncus, Gahnia* and *Isolepis*)
	Low Sedge	<0.5m	
Vines	Vine, Scrambler, Climber		Climbing, winding, twining or scrambling plants, usually with a woody stem.
Mistletoes	Mistletoe		Aerial shrubs, parasitic. Growing on host trees and shrubs.
Ferns	Fern		Plants with fronds, underground rhizome and reproduced by spores.
Grass Trees	Grass trees		*Xanthorrhoea* species.

Appendix D

Photograph Library

Golden Wattle (*Acacia pycnantha*) seed pods

Golden Wattle flower buds

Box Mistletoe (*Amyema miquelii*)

Fossilferous limestone from Onkaparinga

African Boxthorn (*Lycium ferocissimum*)

Sea-berry Saltbush (*Rhagodia candolleana*)

Grass Tree (*Xanthorrhoea semiplana*)

Detail of the trunk of a SA Blue Gum (*Eucalyptus leucoxylon* ssp. *leucoxylon*)

Round-leaf Wattle (*Acacia acinacea*)

Kangaroo Thorn (*Acacia paradoxa*)

Kangaroo Thorn seed pods

Common Correa (*Correa reflexa*)

Flat Sedge (*Cyperus vaginatus*) inflorescence

Flax Lily (*Dianella* sp.)

White Cypress-pine (*Callitris gracilis*) cone

White Cyress-pine foliage

SA Blue Gum buds

River Red Gum (*Eucalyptus camaldulensis* ssp. *camaldulensis*) buds

Kangaroo Grass (*Themeda triandra*) inflorescence

Wallaby Grass (*Rytidosperma caespitosum*) tussock

New Holland Daisy (*Vittadinia cuneata*) seed head

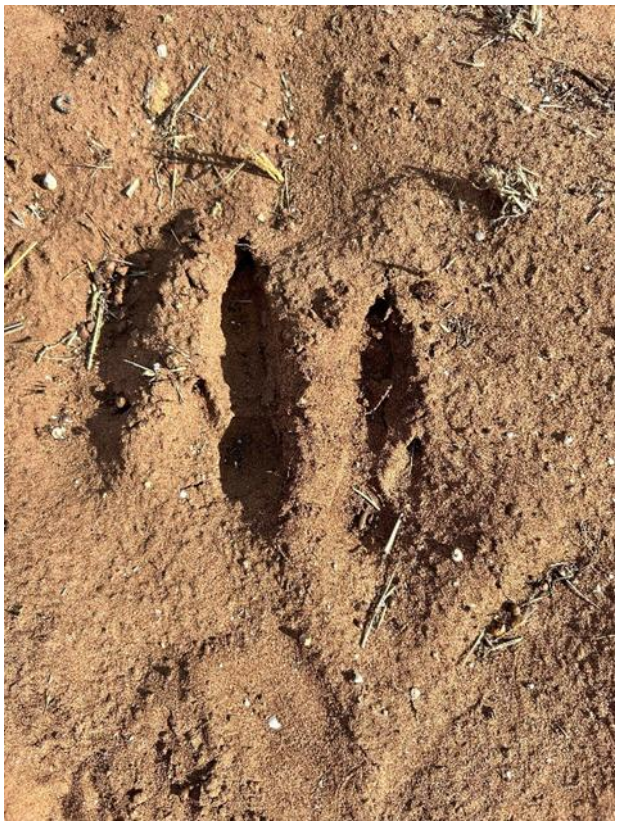
Bluebell (*Wahlenbergia stricta*) flower

Sweet Bursaria (*Bursaria spinosa*)

Sweet Bursaria seed pods

Clasping Goodenia (*Goodenia amplexans*)

Fallen timber, an important habitat feature of woodlands



Tracks left by a Western Grey Kangaroo (*Macropus fuliginosus*) at Onkaparinga Heights

Row of olives (*Olea europaea*) planted as a windbreak at Onkaparinga Heights

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