

Final Report

# Conservation Area Concept Plan and Supporting Information

Conservation Area 8, Middle Road North: Tarneit Plains Precinct  
Structure Plan (PSP 1085)

Prepared for

**Metropolitan Planning Authority**

April 2015



**Ecology and Heritage Partners Pty Ltd**

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<b>Project manager</b>	Chad Browning (Consultant Zoologist)
<b>Report reviewer</b>	Andrew Taylor (Consultant Zoologist)
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## GLOSSARY

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Acronym	Description
AVW	Atlas of Victorian Wildlife
BCS	<i>Biodiversity Conservation Strategy for Melbourne's Growth Areas</i>
CACP	Conservation Area Concept Plan
CA8	Conservation Area 8
CMP	Conservation Management Plan
DEPI	Victorian Department of Environment and Primary Industries (now DELWP)
DELWP	Victorian Department of Environment, Land, Water and Planning
DoE	Federal Department of the Environment (former Department of Sustainability, Environment, Water, Population and Communities)
DTPLI	(the former) Victorian Department of Transport, Planning and Local Infrastructure (former Department of Planning and Community Development)
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
EVC	Ecological Vegetation Class
ESO	Environmental Significance Overlay
FFG Act	<i>Flora and Fauna Guarantee Act 1988</i>
FIS	Flora Information System
MPA	Victorian Metropolitan Planning Authority
NES	National Environmental Significance
PMST	Protected Matters Search Tool (DoE)
NTGVVP	Natural Temperate Grassland of the Victorian Volcanic Plain
PSP	Precinct Structure Plan
RAP	Registered Aboriginal Party
RCZ	Rural Conservation Zone
VBA	Victorian Biodiversity Atlas (DELWP)

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# 1 INTRODUCTION

## 1.1 Project Context

Ecology and Heritage Partners were commissioned by the Metropolitan Planning Authority (MPA) to prepare a Concept Plan for Conservation Area 8 (CA8), located within the Tarneit Plains Precinct Structure Plan (PSP 1085) and Western Growth Corridor. The Conservation Area is one of 36 reserves designated under the *Biodiversity Conservation Strategy for Melbourne's Growth Corridors* (BCS) (DEPI 2013), and one of four areas for which a management category has not been assigned.

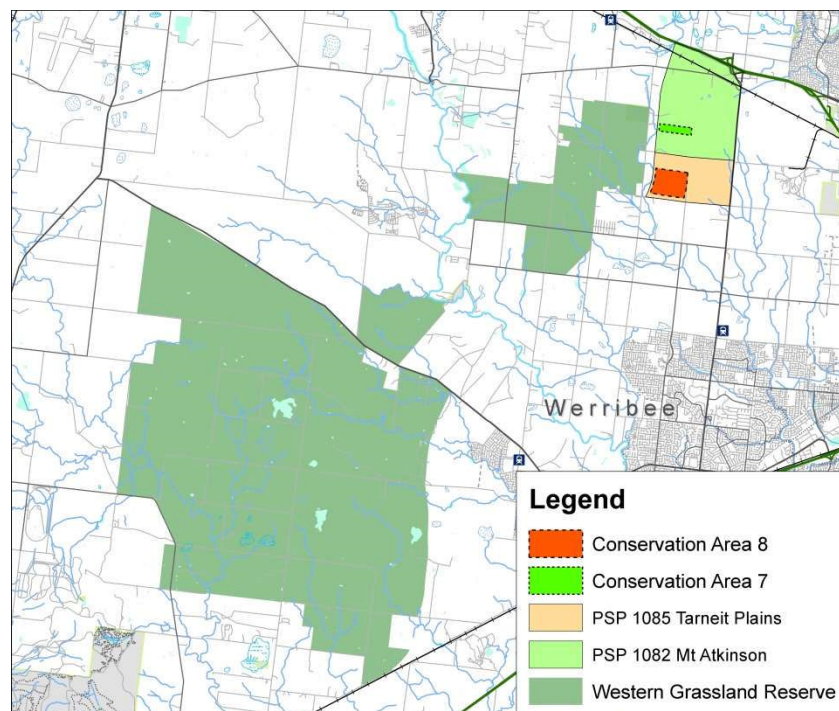
The objective of the Conservation Area Concept Plan (CACP) is to identify ecological values within the subject site, determine the applicable management category (Nature Conservation or Open Space) and assist the Victorian Department of Environment, Land, Water and Planning (DELWP) in developing a Conservation Management Plan (CMP).

The CACP is presented as Figure 1 and the following sections summarise the information referenced in its development. This document is structured as follows:

**Section 2: Methods** - Details the desktop review and field based methods used in surveying the existing environment and developing the CACP;

**Section 3: Results** - Describes the ecological values known or predicted to occur in CA8 including; vegetation communities, fauna habitats, ecological communities and significant flora and fauna species;

**Section 4: Conservation Area Concept Plan** - Provides context to the CACP, including recommendations regarding the applicable management category, a review of Aboriginal cultural heritage, and a discussion regarding the Conservation Interface Plan and Land-use/infrastructure planning.



**Inset 1 Project Context**



## 2 METHODS

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The CACP references the findings of a detailed desktop review and recent field surveys completed in properties where access was permitted. Each component of the project methodology is detailed in the following sections.

### 2.1 Desktop Review

Relevant literature, online-resources and numerous databases were reviewed to provide an up to date assessment of ecological values associated with CA8 and its immediate surrounds, including:

- The DELWP Biodiversity Interactive Map (DEPI 2014a) for:
  - Modelled data for remnant vegetation patches and habitat for rare or threatened species;
  - The extent of historic and current Ecological Vegetation Classes (EVC)s; and,
  - The location of sites of biological significance within the region.
- The Victorian Biodiversity Atlas (VBA) (DEPI 2014b), Flora Information System (FIS) (Viridans 2013a) and Atlas of Victorian Wildlife (AVW) (Viridans 2013b) for previously documented flora and fauna records within the project locality (within 10 kilometres of CA8);
- The Commonwealth Department of the Environment (DoE) Protected Matters Search Tool (PMST) for matters of National Environmental Significance (NES) protected under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) (DoE 2014);
- The DELWP Planning Maps Online to ascertain current zoning and environmental overlays (DTPLI 2014);
- Aerial photography of the subject site; and,
- Relevant reports, documents and literature, including the following key resources:
  - *Draft Tarneit Plains Precinct Structure Plan (PSP1085), Victoria: Aboriginal Heritage Impact Assessment* (Ecology and Heritage Partners 2014);
  - *Biodiversity Assessment Report (Native Vegetation), Melton - Wyndham Investigation Area: Section E* (Growth Areas Authority 2010);
  - *Biodiversity Conservation Strategy for Melbourne's Growth Corridors* (BCS) (DEPI 2013); and,
  - *Working Draft - Matters to show on Conservation Area Concept Plans* (MPA 2014).

## 2.2 Field Surveys

Field surveys were completed across the majority of the Conservation Area, with access gained to three of the four land parcels. Field surveys were not undertaken within the south-east property (Allotment 6~6\PP3431), as multiple attempts to contact the subject landowner were unsuccessful and permission could not be obtained to enter the property. The timing, location and scope of field surveys are summarised in Table 1.

**Table 1:** Completed field surveys

Date	Property	Scope
11/09/14	North-east (Allotment 4~6\PP3431)	Targeted Spiny Rice-flower surveys and broad-scale vegetation mapping
12/09/14	South-west (Allotment 5~6\PP3431)	Targeted Spiny Rice-flower surveys and detailed vegetation mapping <sup>1</sup>
16/09/14	North-west (Allotment 3~6\PP3431)	Targeted Spiny Rice-flower surveys and broad-scale vegetation mapping

Notes: 1) Survey completed in accordance with the *Vegetation Quality Assessment Manual* (DSE 2004a) and the document 'Time Stamping Project 2010/11: Vegetation mapping and condition assessment procedures' (DSE 2010).

The field surveys supplement the findings of the Biodiversity Assessment Report prepared for Section E of the Wyndham Investigation Area (Growth Areas Authority 2010). The 2010 assessment included detailed vegetation surveys of the north-west (3~6\PP3431) and north-east (4~6\PP3431) properties; however access constraints prohibited surveys within the southern parcels (5~6\PP3431 and 6~6\PP3431). Results of the Biodiversity Assessment have been incorporated into this study and are presented in Section 3.2.

During the current survey, detailed vegetation mapping was completed in the south-west (5~6\PP3431) property and broad-scale assessments were completed in the previously assessed parcels to refine the vegetation community boundaries and further inform the CACP. The detailed vegetation survey involved traversing the parcel on foot, with all observed flora species recorded and the overall condition of vegetation noted. EVCs were determined with reference to DELWP pre-1750 and extant EVC mapping and their published descriptions (DEPI 2014d).

Targeted Spiny Rice-flower *Pimelea spinescens* subsp. *spinescens* surveys were completed in the three accessed parcels (Table 1). The field assessment adhered to the survey guidelines for Spiny Rice-flower outlined in the Biodiversity Precinct Structure Planning Kit (DSE 2010) and in the Significant Impact Guidelines for the species (DEWHA 2009). A summary of the survey effort compared with both survey guidelines is provided in Table 2.

The targeted surveys were conducted by two qualified botanists familiar with the appearance and ecology of the species, walking the subject sites in linear transects less than five metres apart. The survey effort covered the entire parcels and surveys were conducted during the flowering season for Spiny Rice-flower. A known nearby (within 10 kilometres) site containing specimens of Spiny Rice-flower was checked prior to commencing each targeted survey to ensure that specimens were in flower and easily detectable.

The total number of plants within the study area was counted and recorded with a hand-held Global Positioning System (GPS) and transposed onto an aerial photograph of the study area.

**Table 2:** Survey effort compared with the Biodiversity Precinct Structure Planning Kit (DSE 2010) and the Significant Impact Guidelines for the species (DEWHA 2009).

Survey Guidelines	Achieved?/Comment
Targeted surveys should be done by people familiar with recognising the subspecies.	Yes. Surveys were completed by assessors familiar with the appearance and ecology of the species.
Multiple surveys may be required to identify the species and provide adequate survey effort.	Yes. Each survey was undertaken over a day-long period to ensure adequate survey effort.
Surveys should not be conducted for at least six months after fires and for at least three months after the cessation of grazing (DEWHA Survey Guidelines).	Partial. The assessors are not aware of any fires or within the specified timeframes. The parcels were regularly grazed; which is considered to have both positive and negative affects on the probability of detection.  Detection may be limited by the potential for individual plants to be selectively grazed, while as part of the same process, detectability is increased through the reduction in grass biomass. This constraint is discussed further in Section 3.3.1).
Survey while flowering (easily overlooked when not in flower).	Yes. A reference check at a nearby population was conducted prior to each survey to ensure specimens were in flower.
The targeted survey effort should be directed to all potential habitat areas i.e. remnant grassland including degraded grassland.	Yes. The entire parcels were traversed in linear transects.
Walk through transects at less than five metres grid intervals are required for all potential habitat.	Yes. Transects of less than five metres apart were utilised.
Record the number of plants per land parcel.	Yes.

The results of the vegetation assessments and targeted Spiny Rice-flower surveys are presented in Section 3.

## 2.3 Assessment Qualifications and Limitations

This study aims to provide an overview of key ecological values within CA8 and facilitate the completion of a CMP and the broader precinct structure planning process. It is acknowledged that the findings of this assessment are based on a desktop review and limited field surveys and that detailed field surveys across the entire Conservation Area boundary are required to accurately confirm the ecological values on ground.

Notwithstanding the above, information obtained from relevant sources (e.g. biological databases, relevant literature and completed field surveys) are considered adequate to provide an overview of the ecological values within the subject site and inform preparation of the CACP.



## 3 RESULTS

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### 3.1 Subject Site

Conservation Area 8 is approximately 112.58 hectares in size and is located between Troups Road South and Mount Atkinson Road, within the Mount Cottrell locality (Figure 1). Under the Melton City Council Planning Scheme the site is classified as Rural Conservation Zone (RCZ) and two Environmental Significance Overlays (ESOs) have been applied:

- ESO2 (Wetlands, waterway and riparian strips) - This overlay is applied as a 50 metre buffer to Dry Creek, which traverses the north-west section of the site (3~6\PP3431) (Figure 1). This overlay aims to protect riparian habitat and discourage inappropriate development.
- ESO5 (Rural Conservation Area) - This overlay applies to the entire site and aims to protect important grasslands and other significant habitat for threatened flora and fauna.

Dry Creek extends approximately 250 metres into the north-western corner of CA8, joining Skeleton Creek approximately 6.9 kilometres downstream of the site. At the time of survey (16/09/14) the creek was dry, with the impacts of grazing observed (Plates 1 and 2).



**Plate 1:** Dry Creek (EHP 16/09/14)



**Plate 2:** Dry Creek (EHP 16/09/14)

The Conservation Area is predominately grazed, with large (180 metre) chicken farming sheds occupying the south-west corner (5~6\PP3431), which according to Google Earth were constructed between 2006 and 2010. The subject site is generally consistent with surrounding land uses, which include agriculture and rural residential developments.

## 3.2 Vegetation Communities and Fauna Habitats

A review of the DELWP Biodiversity Interactive Map (DEPI 2014a) indicates that prior to European settlement CA8 is likely to have supported Plains Grassland (EVC 132). Time-stamped vegetation mapping for CA8 incorporates the previous vegetation assessments (Growth Areas Authority 2010) and indicates that Plains Grassland covers the entire area of the northern (3~6\PP3431 and 4~6\PP3431) and south-east (6~6\PP3431) parcels. It is noted that the coverage across the south-east parcel is based on estimated data by DELWP rather than field surveys. Broad-scale vegetation mapping completed within the northern parcels during the current surveys confirmed the presence of Plains Grassland throughout the previously assessed parcels (Figure 1). No scattered trees are present within CA8.

Detailed vegetation surveys in the south-west (5~6\PP3431) parcel recorded one low quality patch of Plains Grassland (Figure 1). This patch supported a greater than 25% cover of Spear Grass (*Stipa* sp.) and was identified as being under pressure from introduced pasture weeds and ongoing land use activities, including intensive grazing.

In total, CA8 supports approximately 66.049 hectares of confirmed Plains Grassland, consisting of three Habitat Zones. Assuming that actual conditions align with those modelled for the south-east (6~6\PP3431) parcel (31.381 ha), the total area of Plains Grassland within the study area is approximately 97.430 hectares. The Habitat Hectare results for the site are combined and summarised in Table 3 below.

**Table 3:** Habitat hectare summary for native vegetation patches within CA8

Habitat Zone		PG 1	210240683 <sup>1</sup>	210240645 <sup>1</sup>
Property		South-west (5~6\PP3431)	North-west (3~6\PP3431)	North-east (4~6\PP3431)
EVC		Plains Grassland	Plains Grassland	Plains Grassland
EVC Number		132_62	132_62	132_62
Bioregion		VVP	VVP	VVP
EVC Conservation Status		Endangered	Endangered	Endangered
Patch Condition	Large Old Trees /10	-	-	-
	Canopy Cover /5	-	-	-
	Under storey /25	5	15	5
	Lack of Weeds /15	0	11	6
	Recruitment /10	0	10	3
	Organic Matter /5	0	5	4
	Logs /5	-	-	-
	Treeless EVC Multiplier	1.36	1.36	1.36
	Subtotal =	6.8	55.76	24.48
Landscape Value /25		14	15	15
Habitat Points /100		20.8	70.76	39.48
Habitat Score		0.208	0.708	0.395
Total Area (ha)		2.464	20.716	42.869
Total habitat hectares		0.513	14.667	16.933

Notes: 1) Data sourced from - *Biodiversity Assessment Report (Native Vegetation), Melton - Wyndham Investigation Area: Section E* (Growth Areas Authority 2010)

Based on a review of aerial photography, previous assessments and the current field survey, two broad fauna habitat types are considered to be represented within CA8. These are described in further detail below.

### 3.2.1 Native Grassland

The Conservation Area is covered predominately by Plains Grassland, ranging between low and high quality, and with varying levels of surface and embedded rock cover (Plate 3). This habitat is likely to support a diversity of native fauna, including the threatened Striped Legless Lizard *Delma impar* and Golden Sun Moth *Synemon plana* (Section 3.3). During the recent field surveys, a range of open-country bird species were observed using this habitat type, including Stubble Quail *Coturnix pectoralis*, Willie Wagtail *Rhipidura leucophrys*, Australian Raven *Corvus coronoides*, Magpie-lark *Grallina cyanoleuca* and Australian Magpie *Gymnorhina tibicen*.



**Plate 3:** Plains Grassland (EHP 12/09/14)

### 3.2.2 Ephemeral Aquatic Habitat

Dry Creek is an ephemeral tributary of Skeleton Creek and is considered to have a low-moderate value to fauna. The condition of the creek section within CA8 corresponds with a minor drainage line, with relatively undefined banks and a history of livestock access (Plates 1 and 2). During wet seasons and following significant rainfall events, Dry Creek has the potential to provide habitat for a range of common bird and frog species, such as Australian Wood Duck *Chenonetta jubata*, Eastern Great Egret *Ardea ibis*, Banjo Frog *Limnodynastes dumerilii* and Striped Marsh Frog *Limnodynastes peroni*.

### 3.3 Threatened Biodiversity and Other Matters of Significance

This section provides a preliminary summary of biodiversity matters of national, State and regional significance known to, or predicted to occur within 10 kilometres of CA8 (the locality). Table 4 outlines the significance criteria adopted for this study.

**Table 4** Criteria for defining ecological significance

National Significance
<b>Flora and Fauna:</b> National conservation status is based on the EPBC Act list of taxa considered threatened in Australia (i.e. Extinct, Critically Endangered, Endangered and Vulnerable).
State Significance
<b>Flora:</b> Species listed as threatened under the FFG Act. Species listed on the DSE Advisory List (DSE 2005) as Endangered, Vulnerable, Rare or Poorly Known. <b>Fauna:</b> Species listed as threatened under the FFG Act. Species listed on the DSE Advisory List (DSE 2013) as Critically Endangered, Endangered or Vulnerable.
Regional Significance
<b>Fauna:</b> Species listed on the DSE Advisory List (DSE 2013) as Near Threatened or Data Deficient.

#### 3.3.1 National Significance Assessment

Matters of NES are listed and protected under the EPBC Act. Those relating to biodiversity are discussed below in relation to CA8 and the broader locality based on the findings of the desktop review and field surveys.

Targeted surveys for Spiny Rice-flower recorded one individual within the north-east (4~6\PP3431) parcel (Figure 1). The individual was small (less than 15 centimetres tall) and appeared to have regenerated following previous disturbance, most likely from grazing. The individual occurs in moderate to good quality indigenous Plains Grassland vegetation. An extensive search was made for additional plants in the immediate vicinity of the recorded specimen and through the remainder of the property; however, additional specimens were not detected. It is considered that there is a moderate likelihood of additional Spiny Rice-flower individuals occurring throughout CA8, particularly within higher quality patches of Plains Grassland (Habitat Zones 2102406831, 2102406451).



**Plate 4:** Spiny Rice-flower recorded in CA8 (EHP 11/09/14)



**Plate 5:** Spiny Rice-flower recorded in CA8 (EHP 11/09/14)



It is noted that this species was not recorded during previous detailed vegetation surveys of the north-west and north-east properties in 2010 (Growth Areas Authority 2010). The detectability of individual plants is considered to be partially limited by all assessed areas being subject to grazing at the time of survey. Ideally, surveys should not be conducted for at least six months after fires and for at least three months after the cessation of grazing (Table 2). In consideration of this constraint, it is possible that additional Spiny Rice-flower individuals were present on-site, persisting as heavily grazed plants or underground lignotubers.

Based on a review of the VBA (DEPI 2014b), FIS and AVW (Viridians 2013a; 2013b), seven flora species and 13 fauna species listed under EPBC Act have been recorded in the locality. The PMST (DoE 2014) nominated an additional two nationally significant flora species and four fauna species which have not been recorded in the locality but have the potential to occur (Appendices A and B).

Of the 26 EPBC Act listed species known or predicted to occur in the locality, two are considered to have a moderate likelihood of occurrence within CA8 (in addition to the recorded Spiny Rice-flower):

- Striped Legless Lizard *Delma impar* - Striped Legless Lizard inhabits lowland native grasslands, typically dominated by native tussock forming grass species such as Kangaroo Grass *Themeda triandra* and spear grasses. Before European settlement the species was probably quite common across the Victorian Volcanic Plains, although subsequent loss and modification of native grassland areas have reduced the available habitat for this species. In Victoria, the species primarily occurs around the basalt plains to the west of Melbourne, and areas around Ballarat and Bendigo (DEPI 2014b, Hadden 1995).

The VBA contains 101 records of the Striped Legless Lizard in the locality, including within two kilometres of CA8. Within the Conservation Area, the Striped Legless Lizard is most likely to occur in higher quality remnant indigenous grassland dominated by Kangaroo Grass, with scattered basalt rocks (Habitat Zones 2102406831, 2102406451 and potentially the south-east parcel [6~6\PP343], which has not been surveyed).

- Golden Sun Moth *Synemon plana* - Golden Sun Moth generally occurs in native grassland dominated by greater than 40% cover of wallaby grass, in particular Short Wallaby-grass *Rytidosperma carphoides* (DSE 2004b) but may also inhabit areas dominated by Kangaroo Grass (Endersby and Koehler 2006) and introduced grassland (A. Organ, pers obs.). Prior to European settlement, the Golden Sun Moth was widespread and relatively continuous throughout its range, inhabiting grassy open woodlands and grassland, although it currently inhabits small isolated sites (DSE 2004b).

The VBA contains 30 records of the Golden Sun Moth in the locality, including within 1.4 kilometres of CA8. This species is considered likely to occur within the Conservation Area based on the extent of previous records in the surrounding landscape and the presence of suitable habitat. Within CA8, the Golden Sun Moth is most likely to utilise interconnected patches of indigenous grassland, including Habitat Zones PG1, 2102406831, 2102406451 and potentially the south-east (6~6\PP3431) parcel.

All other nominated EPBC Act listed species are unlikely to occur as there is no suitable habitat in CA8 or they are presumed to be extinct in the locality (e.g. Regent Honeyeater *Anthochaera phrygia*).

Five significant ecological communities listed under the EPBC Act are known or predicted to occur in the project locality (DoE 2014). Habitat Zones 2102406831 and 2102406451 in the northern parcels are considered likely to correspond with the *Natural Temperate Grassland of the Victorian Volcanic Plain* (NTGVVP) community (Growth Areas Authority 2010). Detailed vegetation mapping in the south-west (5~6\PP3431) parcel confirmed that PG1 does not meet the condition thresholds to be considered a nationally significant ecological community. Plains Grassland within the south-east (6~6\PP3431) parcel has the potential to correspond with the community; however, this is yet to be confirmed through field surveys.

### 3.3.2 State Significance Assessment

Biodiversity matters present or likely to occur within CA8 and the broader locality that are considered of significance to the State of Victoria are outlined below.

No State significant species of flora or fauna have been recorded within CA8. Based on a review of the VBA (DEPI 2014b), FIS and AVW (Viridians 2013a; 2013b), 31 flora species and 31 fauna species of State significance have been recorded in the locality (Appendices A and B). Of the 62 State significant species nominated, five flora species and three fauna species are considered to have a moderate likelihood of occurrence within CA8:

- Small Scurf-pea *Cullen parvum*
- Tough Scurf-pea *Cullen tenax*
- Heath Spear-grass *Austrostipa exilis*
- Plains Joyweed *Alternanthera* sp. 1 (Plains)
- Slender Bindweed *Convolvulus angustissimus* subsp. *omnigracilis*
- Eastern Great Egret *Ardea modesta*
- Diamond Firetail *Stagonopleura guttata*
- Tussock Skink *Pseudemoia pagenstecheri*

In addition to providing potential habitat for threatened and rare species, all patches of Plains Grassland within CA8 correspond with the State significant (FFG Act listed) ecological community *Western (Basalt) Plains Grassland*. It is noted that the State listings for ecological communities do not specify condition thresholds and therefore can include low quality patches that are excluded from the EPBC Act-listed ecological communities.

### 3.3.3 Regional Significance Assessment

Based on a review of the VBA (DEPI 2014b) and AVW (Viridians 2013b), 15 regionally significant fauna species have been recorded in the locality. Of the 15 nominated species, only Royal Spoonbill *Platalea regia* is considered to have a moderate likelihood of occurrence within CA8 (Appendix B).



## 4 CONSERVATION AREA CONCEPT PLAN

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### 4.1 Conservation Area Category

Based on the information presented in Section 3, it is recommended that CA8 is designated and managed in accordance with the Nature Conservation Category (DEPI 2013). This endorsement is based on the presence of the following key values:

- High quality native grassland (Habitat Zones 2102406831 and 2102406451, and potentially the south-east [6~6\PP3431] parcel) (Section 3.2);
- Large areas of the EPBC Act listed ecological community NTGVVP (Habitat Zones 2102406831 and 2102406451, and potentially the south-east parcel) (Section 3.3.1);
- The known occurrence of one Spiny Rice-flower individual and the potential for this species to occur throughout the broader Conservation Area (particularly given that detectability during surveys may have been limited by grazing) (Section 3.3.1);
- Potential habitat for two nationally significant species, Golden Sun Moth and Striped Legless Lizard, both of which have been recorded in the surrounding landscape (Section 3.3.1); and,
- Potential habitat for State and regionally significant flora and fauna species (Sections 3.3.2 and 3.3.3).

Consistent with the BCS (DEPI 2013), this area should be protected and managed primarily for nature conservation, including the Matters of NES and State significant values noted above.

### 4.2 Preliminary Review of Aboriginal Cultural Heritage

The extent of known and potential Aboriginal heritage values within the Tarneit Plains Precinct is currently under investigation, with draft findings presented in the document *Draft Tarneit Plains Precinct Structure Plan (PSP 1085), Victoria: Aboriginal Heritage Impact Assessment* (Ecology and Heritage Partners Pty Ltd 2014). All four parcels within CA8 are included in the assessment, with Property Identification Numbers 5 [north-west], 6 [north-east], 9 [south-west] and 10 [south-east] corresponding with the Conservation Area (Figure 1, Ecology and Heritage Partners Pty Ltd 2014).

The draft cultural heritage report presents the following key points relevant to CA8:

- There was no Registered Aboriginal Party (RAP) in place for CA8 at the time of preparation. The Boon Wurrung Foundation Limited (BWFL) have an application for RAP status over land inclusive of the Conservation Area currently before the Aboriginal Heritage Council, and therefore should be consulted in relation to cultural heritage values within the site.
- There are no Native Title claims or determinations over CA8, as the site comprises private land.
- Areas of Cultural Heritage Sensitivity associated with Dry Creek are present within the north-west (3~6\PP3431) and south-west (5~6\PP3431) parcels.
- No Aboriginal archaeological sites have been recorded within CA8, however there have been 21 significant sites recorded within three kilometres of the broader precinct, including within approximately 300 metres of the north-east corner of CA8.

- The draft report identified that the north-west, north-east and south-west parcels had the potential to support sensitive cultural heritage values. Development works within the north-west and south-west parcels would trigger a mandatory requirement to prepare Cultural Heritage Management Plan (CHMPs), and a voluntary CHMP is recommended for works in the north-east parcel. Given the low likelihood of sensitivity in the south-east parcel, there is no need to complete further cultural heritage investigations within this area prior to development works.

Areas of Cultural Heritage Significance are included in the CACP (Figure 1). It is noted that the findings above have been extracted from the draft report and have not been finalised.

### 4.3 Conservation Interface Plan and Future Land Use Considerations

Careful consideration should be given to the interface between CA8 and future urban development during the precinct planning process. The CACP (Figure 1) nominates a minimum buffer zone of 20 metres, with 10 metres proposed within the reserve as a Fuel Management Zone and 10 metres proposed outside the reserve as passive recreation (Figure 1). This buffer zone has been developed in order to address the following principles (DEPI 2013):

- Manage edge effects from weeds, the abundance of which are likely to increase with future activity in the precinct;
- Manage run-off and nutrient absorption associated with future developments;
- Maintain a fire break, allowing the opportunity to safely implement an ecological burning program; and,
- Provide complimentary public space and the potential for integration with future urban environments.

The following standards specified in the BCS should be referenced during preparation of the CMP and the ongoing design of the Tarneit Plains Precinct.

- Fences of urban or industrial properties should not abut the Conservation Area, rather roads should define the area boundary;
- Natural hydrological patterns of Dry Creek should be restored and maintained where practicable. The impact of the large dam located upstream of CA8 on the hydrological patterns of Dry Creek requires further investigation;
- The buffer zone should not be planted with species which could behave as environmental weeds (including vigorous rhizomatous grasses such as Buffalo, Kikuyu and Couch). The planting of trees within the buffer zone should be avoided; and,
- The buffer zone should be managed in accordance with the CMP, including ongoing weed management activities (e.g. mowing or spraying).

If consistent with the PSP, public access within CA8 may be encouraged assuming that CA8 is transferred to public ownership or public access is granted under private ownership agreements. Given the lack of existing linkages, the specific siting of pedestrian access features, such as shared paths, has not been incorporated into the CACP. It is recommended that as development of the PSP progresses, the appropriateness of these features is further investigated. In the event that public infrastructure is proposed within CA8, these features should be sited in appropriate areas identified within the CACP, which are less ecologically constrained and include introduced grassland, existing disturbed/ developed areas and low quality patches of Plains Grassland (Figure 1).

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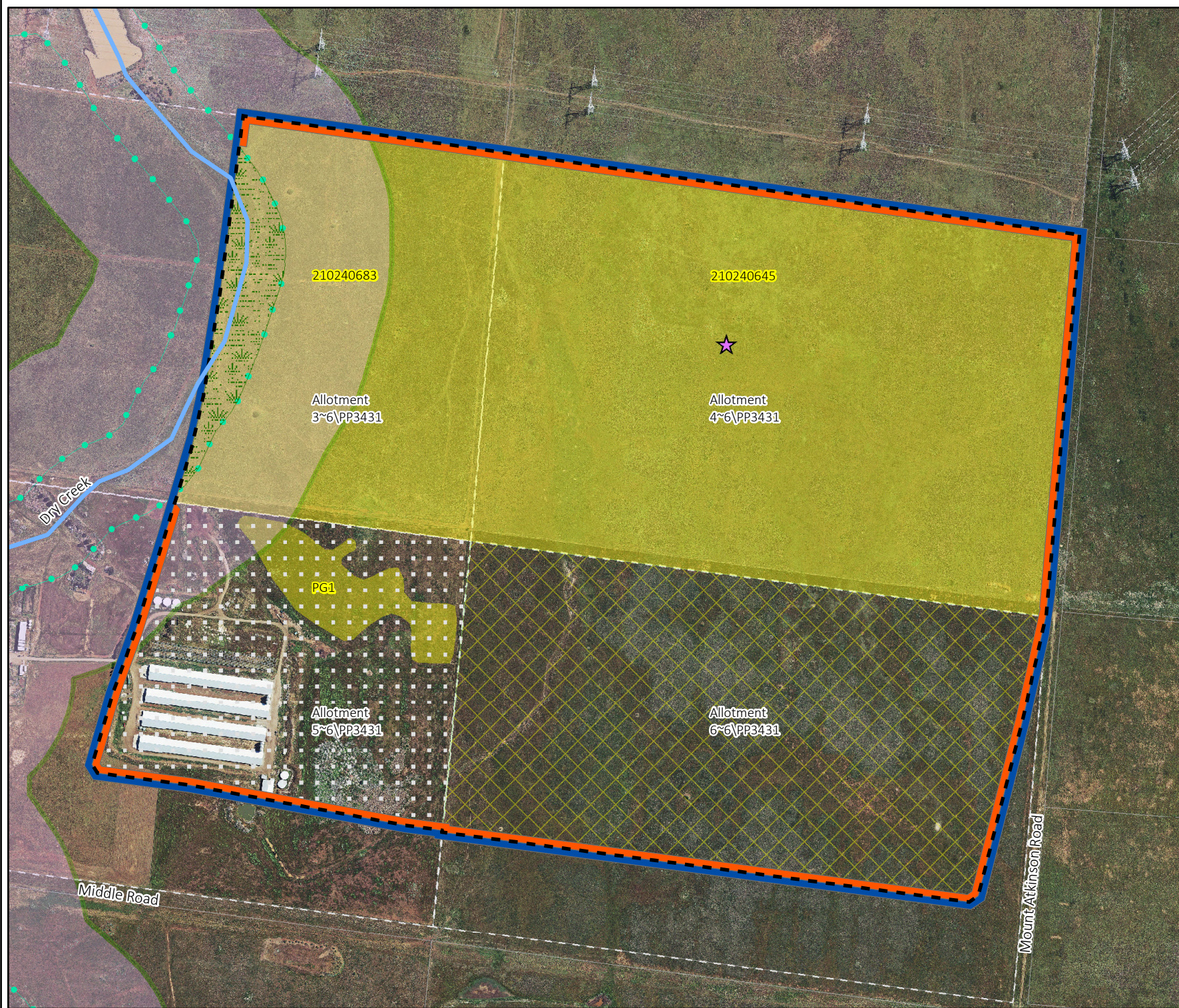
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## Figure 1 – **CONSERVATION AREA CONCEPT PLAN (CACP)**

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## Legend

Conservation Area Boundary (Steel cable fencing)

Spiny Rice-flower Record (2014)

Dry Creek

Fuel Management Zone

Passive Recreation Zone (Min 10m buffer)

Revegetation Zone

Low Constraint Area

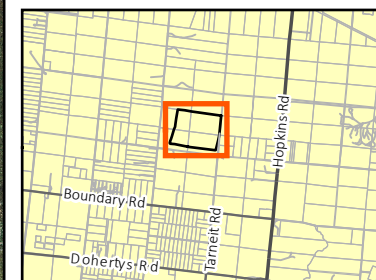
Cultural Heritage Sensitivity

ESO2

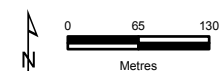
## Native Vegetation

Plains Grassland (EVC 132\_62)

Unconfirmed Plains Grassland



**Figure 1**  
**Conservation Area Concept Plan (CACP)**  
**CA8, Tarneit Plains PSP**



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VicMap Data: The State of Victoria does not warrant the accuracy or completeness of information in this publication and any person using or relying upon such information does so on the basis that the State of Victoria shall bear no responsibility or liability whatsoever for any errors, faults, defects or omissions in the information.

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## APPENDICES

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## Appendix A – Significant Flora Species

**Table A1** Significant flora recorded or predicted to occur within 10 kilometres of CA8 (VBA [DEPI 2014b], FIS [Viridans 2013a] and EPBC PMST [DoE 2014] records)

Scientific name	Common name	Total number of documented records	Last documented record	EPBC Act <sup>1</sup>	FFG Act <sup>2</sup>	VICI <sup>3</sup>	Likelihood of Occurrence <sup>4</sup>
<b>NATIONAL SIGNIFICANCE</b>							
<i>Amphibromus fluitans</i>	River Swamp Wallaby-grass	3	2008	VU	-	-	4
<i>Glycine latrobeana</i>	Clover Glycine	3	2006	VU	L	vu	4
<i>Senecio macrocarpus</i>	Large-headed Fireweed	11	2009	VU	L	en	4
<i>Dianella amoena</i>	Matted Flax-lily	6	2010	EN	L	en	4
<i>Diuris basaltica</i>	Small Golden Moths	10	2009	EN	L	vu	4
<i>Rutidosia leptorhynchoides</i>	Button Wrinklewort	11	2009	EN	L	en	4
<i>Pimelea spinescens</i> subsp. <i>spinescens</i>	Spiny Rice-flower	241	2012	CR	L	en	1 (present)
<i>#Carex tasmanica</i>	Curly Sedge	-	-	VU	L	vu	4
<i>#Prasophyllum frenchii</i>	Maroon Leek-orchid	-	-	EN	L	en	4
<b>STATE SIGNIFICANCE</b>							
<i>Allocasuarina luehmannii</i>	Buloke	115	2010	-	L	-	5
<i>Amphibromus pithogastrus</i>	Plump Swamp Wallaby-grass	2	2004	-	L	en	4
<i>Comesperma polygaloides</i>	Small Milkwort	1	1988	-	L	vu	4
<i>Cullen parvum</i>	Small Scurf-pea	64	2010	-	L	en	3
<i>Cullen tenax</i>	Tough Scurf-pea	24	2010	-	L	en	3
<i>Eucalyptus baueriana</i> subsp. <i>thalassina</i>	Werribee Blue-box	6	2010	-	-	en	5
<i>Podolepis</i> sp. 1	Basalt Podolepis	1	1991	-	-	en	4
<i>Acacia rostriformis</i>	Bacchus Marsh Wattle	1	2010	-	-	vu	5
<i>Amyema linophylla</i> subsp. <i>orientale</i>	Buloke Mistletoe	10	2010	-	-	vu	5
<i>Coronidium scorpioides</i> 'aff. <i>rutidolepis</i> (Lowland Swamps)' v	Pale Swamp Everlasting	8	2008	-	-	vu	4
<i>Dianella</i> sp. aff. <i>longifolia</i> (Benambra)	Arching Flax-lily	271	2010	-	-	vu	4

Scientific name	Common name	Total number of documented records	Last documented record	EPBC Act <sup>1</sup>	FFG Act <sup>2</sup>	VIC <sup>3</sup>	Likelihood of Occurrence <sup>4</sup>
<i>Eleocharis plana</i>	Flat Spike-sedge	1	2011	-	-	vu	4
<i>Geranium solanderi</i> var. <i>solanderi</i> s.s.	Austral Crane's-bill	8	2009	-	-	vu	4
<i>Lasiopetalum ferrugineum</i>	Rusty Velvet-bush	1	2010	-	-	vu	4
<i>Austrostipa exilis</i>	Heath Spear-grass	6	1995	-	-	r	3
<i>Austrostipa hemipogon</i>	Half-bearded Spear-grass	2	2006	-	-	r	4
<i>Geranium</i> sp. 3	Pale-flower Crane's-bill	11	2010	-	-	r	4
<i>Melaleuca armillaris</i> subsp. <i>armillaris</i>	Giant Honey-myrtle	4	2009	-	-	r	5
<i>Nicotiana suaveolens</i>	Austral Tobacco	5	2005	-	-	r	4
<i>Ranunculus diminitus</i>	Brackish Plains Buttercup	1	1990	-	-	r	4
<i>Rhagodia parabolica</i>	Fragrant Saltbush	18	2010	-	-	r	4
<i>Tripogon loliiformis</i>	Rye Beetle-grass	25	2012	-	-	r	4
<i>Alternanthera</i> sp. 1 (Plains)	Plains Joyweed	35	2010	-	-	k	3
<i>Ceratophyllum demersum</i>	Hornwort	1	1962	-	-	k	4
<i>Clematis leptophylla</i>	Skeleton Vine	1	2010	-	-	k	4
<i>Convolvulus angustissimus</i> subsp. <i>omnigracilis</i>	Slender Bindweed	38	2010	-	-	k	3
<i>Desmodium varians</i>	Slender Tick-trefoil	18	2010	-	-	k	4
<i>Eleocharis macbarronii</i>	Grey Spike-sedge	2	1993	-	-	k	4
<i>Eleocharis pallens</i>	Pale Spike-sedge	21	2010	-	-	k	4
<i>Lepidium pseudohyssopifolium</i>	Native Peppercress	1	2009	-	-	k	4
<i>Sclerolaena muricata</i> var. <i>muricata</i>	Black Roly-poly	3	2010	-	-	k	4

**Notes:** 1) Listed as Critically Endangered (CR), Endangered (E) or Vulnerable (V) under the EPBC Act

2) Listed (L) under the FFG Act

3) Listed as Endangered (en), Vulnerable (vu), Rare (r) or Status Poorly Known (k) on the Victoria Advisory List (DEPI 2014c)

4) Likelihood of occurrence: 1 Known Occurrence - Recorded within the study area recently (i.e. within ten years), 2 High Likelihood - Previous records of the species in the local vicinity; and/or, the study area contains areas of high quality habitat, 3 Moderate Likelihood - Limited previous records of the species in the local vicinity; and/or, the study area contains poor or limited habitat, 4 Low Likelihood - Poor or limited habitat for the species however other evidence (such as a lack of records or environmental factors) indicates there is a very low likelihood of presence, 5 Unlikely - No suitable habitat and/or outside the species range.

# - Records only identified from the EPBC Act Protected Matters Search Tool

## Appendix B – Significant Fauna Species

**Table B1** Significant fauna recorded or predicted to occur within 10 kilometres of CA8 (VBA [DEPI 2014b], AVW [Viridans 2013b] and EPBC PMST [DoE 2014] records)

Scientific name	Common name	Total number of documented records	Last documented record	EPBC Act <sup>1</sup>	FFG Act <sup>2</sup>	VIC <sup>3</sup>	Likelihood of Occurrence <sup>4</sup>
<b>NATIONAL SIGNIFICANCE</b>							
<u>Birds</u>							
<i>Pedionomus torquatus</i>	Plains-wanderer	9	1979	VU	L	cr	3
<i>Polytelis swainsonii</i>	Superb Parrot	1	1870	VU	L	en	4
<i>Rostratula australis</i>	Australian Painted Snipe	1	1977	VU, M	L	cr	3
<i>Anthochaera phrygia</i>	Regent Honeyeater	2	1905	EN	L	cr	4
<i>Botaurus poiciloptilus</i>	Australasian Bittern	1	1973	EN	L	en	3
<i>Lathamus discolor</i>	Swift Parrot	4	1990	EN	L	en	4
<i>Neophema chrysogaster</i>	Orange-bellied Parrot	1	1977	CR	L	cr	4
<i>#Sternula nereis nereis</i>	Australian Fairy Tern	-	-	VU	L	en	4
<u>Mammals</u>							
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	4	2010	VU	L	vu	3
<i>#Pseudomys novaehollandiae</i>	New Holland Mouse	-	-	VU	L	en	4
<u>Reptiles</u>							
<i>Delma impar</i>	Striped Legless Lizard	101	2010	VU	L	en	2
<i>Tympanocryptis pinguicolla</i>	Grassland Earless Dragon	1	1960	EN	L	cr	3
<u>Frogs</u>							
<i>Litoria raniformis</i>	Growling Grass Frog	229	2011	VU	L	en	3
<u>Fish</u>							
<i>Macquaria australasica</i>	Macquarie Perch	4	1930	EN	L	en	3
<i>#Galaxiella pusilla</i>	Eastern Dwarf Galaxias	-	-	VU	L	en	3
<i>#Prototroctes maraena</i>	Australian Grayling	-	-	VU	L	vu	3

Scientific name	Common name	Total number of documented records	Last documented record	EPBC Act <sup>1</sup>	FFG Act <sup>2</sup>	VIC <sup>3</sup>	Likelihood of Occurrence <sup>4</sup>
<u>Invertebrates</u>							
<i>Synemon plana</i>	Golden Sun Moth	30	2011	CE	L	cr	2
STATE SIGNIFICANCE							
<u>Birds</u>							
<i>Accipiter novaehollandiae novaehollandiae</i>	Grey Goshawk	1	2006	-	L	vu	3
<i>Ardea intermedia</i>	Intermediate Egret	3	1980	-	L	en	3
<i>Ardea modesta</i>	Eastern Great Egret	17	2001	M	L	vu	2
<i>Burhinus grallarius</i>	Bush Stone-curlew	1	1889	-	L	en	4
<i>Chthonicola sagittatus</i>	Speckled Warbler	10	2011	-	L	vu	4
<i>Grus rubicunda</i>	Brolga	2	1989	-	L	vu	3
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	1	1999	M	L	vu	3
<i>Lewinia pectoralis pectoralis</i>	Lewin's Rail	1	1889	-	L	vu	4
<i>Lophocroa leadbeateri</i>	Major Mitchell's Cockatoo	1	2004	-	L	vu	4
<i>Melanodryas cucullata cucullata</i>	Hooded Robin	4	1988	-	L	nt	4
<i>Ninox connivens connivens</i>	Barking Owl	2	1986	-	L	en	4
<i>Ninox strenua</i>	Powerful Owl	2	1972	-	L	vu	4
<i>Oreoica gutturalis gutturalis</i>	Crested Bellbird	3	1988	-	L	nt	4
<i>Oxyura australis</i>	Blue-billed Duck	14	2006	-	L	en	3
<i>Pomatostomus temporalis temporalis</i>	Grey-crowned Babbler	4	1987	-	L	en	4
<i>Porzana pusilla palustris</i>	Baillon's Crane	3	2003	-	L	vu	4
<i>Stagonopleura guttata</i>	Diamond Firetail	28	2011	-	L	nt	2
<i>Stictonetta naevosa</i>	Freckled Duck	3	1991	-	L	en	3
<i>Turnix pyrrhorthorax</i>	Red-chested Button-quail	4	1990	-	L	vu	3
<i>Tyto novaehollandiae novaehollandiae</i>	Masked Owl	1	1989	-	L	en	4
<i>Calidris ferruginea</i>	Curlew Sandpiper	2	1990	M	-	en	4
<i>Actitis hypoleucos</i>	Common Sandpiper	1	1990	M	-	vu	4

Scientific name	Common name	Total number of documented records	Last documented record	EPBC Act <sup>1</sup>	FFG Act <sup>2</sup>	VIC <sup>3</sup>	Likelihood of Occurrence <sup>4</sup>
<i>Anas rhynchotis</i>	Australasian Shoveler	27	2010	-	-	vu	4
<i>Aythya australis</i>	Hardhead	26	2006	-	-	vu	3
<i>Biziura lobata</i>	Musk Duck	22	2010	-	-	vu	3
<i>Falco subniger</i>	Black Falcon	5	2009	-	-	vu	3
<i>Hirundapus caudacutus</i>	White-throated Needletail	1	1971	M	-	vu	3
<i>Tringa nebularia</i>	Common Greenshank	3	1990	M	-	vu	4
<i>Tringa stagnatilis</i>	Marsh Sandpiper	2	1988	M	-	vu	4
<u>Reptiles</u>							
<i>Pseudemoia pagenstecheri</i>	Tussock Skink	33	2011	-	-	vu	2
<u>Frogs</u>							
<i>Pseudophryne bibronii</i>	Brown Toadlet	4	2010	-	L	en	3
REGIONAL SIGNIFICANCE							
<u>Birds</u>							
<i>Calidris melanotos</i>	Pectoral Sandpiper	1	1990	M	-	nt	4
<i>Chlidonias hybridus javanicus</i>	Whiskered Tern	4	1990	M	-	nt	4
<i>Chrysococcyx osculans</i>	Black-eared Cuckoo	3	1908	-	-	nt	4
<i>Circus assimilis</i>	Spotted Harrier	5	2007	-	-	nt	3
<i>Climacteris picumnus victoriae</i>	Brown Treecreeper (south-eastern ssp.)	36	2011	-	-	nt	4
<i>Dromaius novaehollandiae</i>	Emu	1	2004	-	-	nt	4
<i>Gallinago hardwickii</i>	Latham's Snipe	8	2004	M	-	nt	3
<i>Nycticorax caledonicus hillii</i>	Nankeen Night Heron	8	1999	-	-	nt	3
<i>Phalacrocorax varius</i>	Pied Cormorant	3	2006	-	-	nt	4
<i>Platalea regia</i>	Royal Spoonbill	10	2006	-	-	nt	2
<i>Stiltia isabella</i>	Australian Pratincole	1	1990	-	-	nt	4
<i>Turnix velox</i>	Little Button-quail	1	1974	-	-	nt	3
<u>Mammals</u>							



Scientific name	Common name	Total number of documented records	Last documented record	EPBC Act <sup>1</sup>	FFG Act <sup>2</sup>	VIC <sup>3</sup>	Likelihood of Occurrence <sup>4</sup>
<i>Sminthopsis crassicaudata</i>	Fat-tailed Dunnart	11	2004	-	-	nt	3
<i>Cercartetus nanus</i>	Eastern Pygmy-possum	1	1933	-	-	nt	4
<u>Reptiles</u>							
<i>Chelodina longicollis</i>	Common Long-necked Turtle	5	2011	-	-	dd	4

**Notes:** 1) Listed as Critically Endangered (CR), Endangered (E), Vulnerable (V) or Migratory (M) under the EPBC Act

2) Listed (L) under the FFG Act

3) Listed as Critically Endangered (cr), Endangered (en), Vulnerable (vu), Near Threatened (nt) or Data Deficient (dd) on the Victoria Advisory List (DSE 2009a, DSE 2013)

4) Likelihood of occurrence:

1	High Likelihood	<ul style="list-style-type: none"> <li>Known resident in the Study area based on site observations, database records, or expert advice; and/or,</li> <li>Recent records (i.e. within five years) of the species in the local area (VBA 2011); and/or,</li> <li>The Study area contains the species' preferred habitat.</li> </ul>	2	Moderate Likelihood	<ul style="list-style-type: none"> <li>The species is likely to visit the Study area regularly (i.e. at least seasonally); and/or,</li> <li>Previous records of the species in the local area (DSE 2011b); and/or,</li> <li>The Study area contains some characteristics of the species' preferred habitat.</li> </ul>
3	Low Likelihood	<ul style="list-style-type: none"> <li>The species is likely to visit the Study area occasionally or opportunistically whilst en route to more suitable sites; and/or,</li> <li>There are only limited or historical records of the species in the local area (i.e. more than 20 years old); and/or,</li> <li>The Study area contains few or no characteristics of the species' preferred habitat.</li> </ul>	4	Unlikely	<ul style="list-style-type: none"> <li>No previous records of the species in the local area; and/or,</li> <li>The species may fly over the Study area when moving between areas of more suitable habitat; and/or,</li> <li>Out of the species' range; and/or,</li> <li>No suitable habitat present.</li> </ul>

# - Records only identified from the EPBC Act Protected Matters Search Tool