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Desktop Assessment of Significant Flora and Fauna Values of the Avonbank Mineral Sands Project



Prepared for: WIM Resource

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Cover photo: A patch of Buloke woodland in the project area (Matthew Le Feuvre)



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Summary

Project & Study Overview

WIM is proposing to develop the Avonbank Heavy Mineral Sands Project between the townships of Dooen and Jung, 15 km due north of the rural Victorian township of Horsham.

The Retention Licence 2014 (**the project area**) is 6,545 hectares (ha) and the proposed 1-30 years mining footprint lies within the project area and is approximately 2,500 ha (**the mining footprint**) (Figure 1).

This desktop review identifies the likely key ecological issues associated with:

- Flora & fauna values within the project area;
- Flora & fauna values in sensitive areas adjacent to the project area (**the greater project area**). These sensitive areas include nearby aquatic environments to the south and east of the project area, including Darlot and Dooen Swamps, Two Mile Creek and Yarriambiack Creek and the Wimmera River. These are identified as potentially Groundwater Dependent Ecosystems (GDEs) and as such have been included in this preliminary desktop assessment.

It builds on previous work by Okologie Consulting (2017), and incorporates a wider overview of the project area, including Dooen and Darlot swamps, following a site visit by Ecology Australia, on 21 June 2018.

Results

The key findings of the review are as follows:

- The project area has been extensively cleared and the major land use is cropping;
- Vegetation remnants indicative of dryland environments, together with clay dominated surface soils and low rainfall suggest that Plains Savannah EVC and Plains Grassland EVC were the former dominant vegetation types;
- Okologie Consulting (2017) identified some 10-15 hectares of native vegetation within the proposed years 1-30 mining footprint and 55-60 ha in the project area outside of the mining footprint, including the above EVCs and Plains Woodland EVC. Most remnants are along roadsides or in paddocks;
- Plains Savannah EVC and Plains Grassland EVC are components of the following respective listed communities:
 - EPBC Act 1999 – Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregion
 - FFG Act 1988 – Semi-arid Northwest Plains Buloke Grassy Woodland Community
 - EPBC Act – Natural Grasslands of the Murray Valley Plains
 - FFG Act – Northern Plains Grassland Community.

However, native vegetation in the project area requires a more detailed assessment against the relevant patch criteria to determine its extent and quality.

- The review indicates that the following threatened fauna could be present in the project area:
 - Growling Grass Frog (EPBC, FFG, Advisory List)
 - Striped Legless Lizard (EPBC, FFG, Advisory List)
 - Golden Sun Moth (EPBC, FFG, Advisory List)
 - Pale Sun Moth (Advisory List – critically endangered)
 - Reddish-orange Sun Moth (Advisory List – critically endangered)
 - Bearded Dragon (Advisory List – vulnerable).
- In addition, the aquatic habitats in the greater project area are known to support at least eight threatened waterbird species

Recommendations

- On the basis of this review, the following key elements of the policy and legislative framework are evident:
 - Consideration should be given to referring the project to the Commonwealth under the provisions of the EPBC Act.
 - The project would require assessment under Clause 52.17 of the municipal planning scheme, namely Guidelines for the removal, destruction or lopping of native vegetation (DELWP 2017); and
 - This desktop review accompanies a referral under the Environmental Effects Act 1978.

1 Introduction

This desktop review has been commissioned by WIM Resource Pty Ltd. Its purpose is to review the likely biodiversity issues associated with the Avonbank project and to provide input to a referral under the Environment Effects Act 1978.

WIM is proposing to develop the Avonbank Heavy Mineral Sands Project between the townships of Dooen and Jung, 15 km due north of the rural Victorian township of Horsham.

The total project area is 6,545 hectares (ha) with a proposed mining footprint of approximately 2,500 ha and is covered by granted Retention Licence 2014. The Avonbank deposit is hosted within the Loxton Parilla Sands formation and forms a sheet like body, with a surface area of approximately 40km². The Loxton-Parilla Sands formation forms the Parilla Sands Aquifer (PSA), the upper water table aquifer system in the project area.

2 Study Area

The study area is currently defined as the terrestrial and predominantly dryland environments of the Retention License RL 2014 (**the project area**), and nearby aquatic environments to the south and south east, including Dooen Swamp, Two Mile Creek, Wimmera River and Darlot Swamp (referred to as **the greater project area**). Figure 1 shows the locations of the two study areas that are referred to within this report.

The greater project area includes several potential Groundwater Dependent Ecosystems (GDEs) and as such a focus on identifying flora & fauna within these GDE is reflected in this preliminary desktop assessment. This approach has been taken to ensure that outright losses of vegetation and habitat are addressed in addition to potential indirect impacts to wetlands through altered surface hydrology or changes to groundwater conditions.

Overall the study area is characterised by low relief topography and the prevalence of cropping. The underlying geology is alluvial (Shepparton Formation) and surface soils are medium to heavy clays. Combined with a relatively low average rainfall – approximately 400 mm/pa – these conditions suggest that the former dryland vegetation was a mosaic of Plains Savannah and Plains Grassland Ecological Vegetation Classes (EVCs). These EVCs remain as scattered remnants across the project area. The Darlot and Dooen Swamps appear ephemeral and are Black Box *Eucalyptus largiflorens* and Red Gum *E. camaldulensis* dominated respectively.

The study area is within the Wimmera bioregion, the Wimmera Catchment Management Authority and the Horsham Rural City municipality.

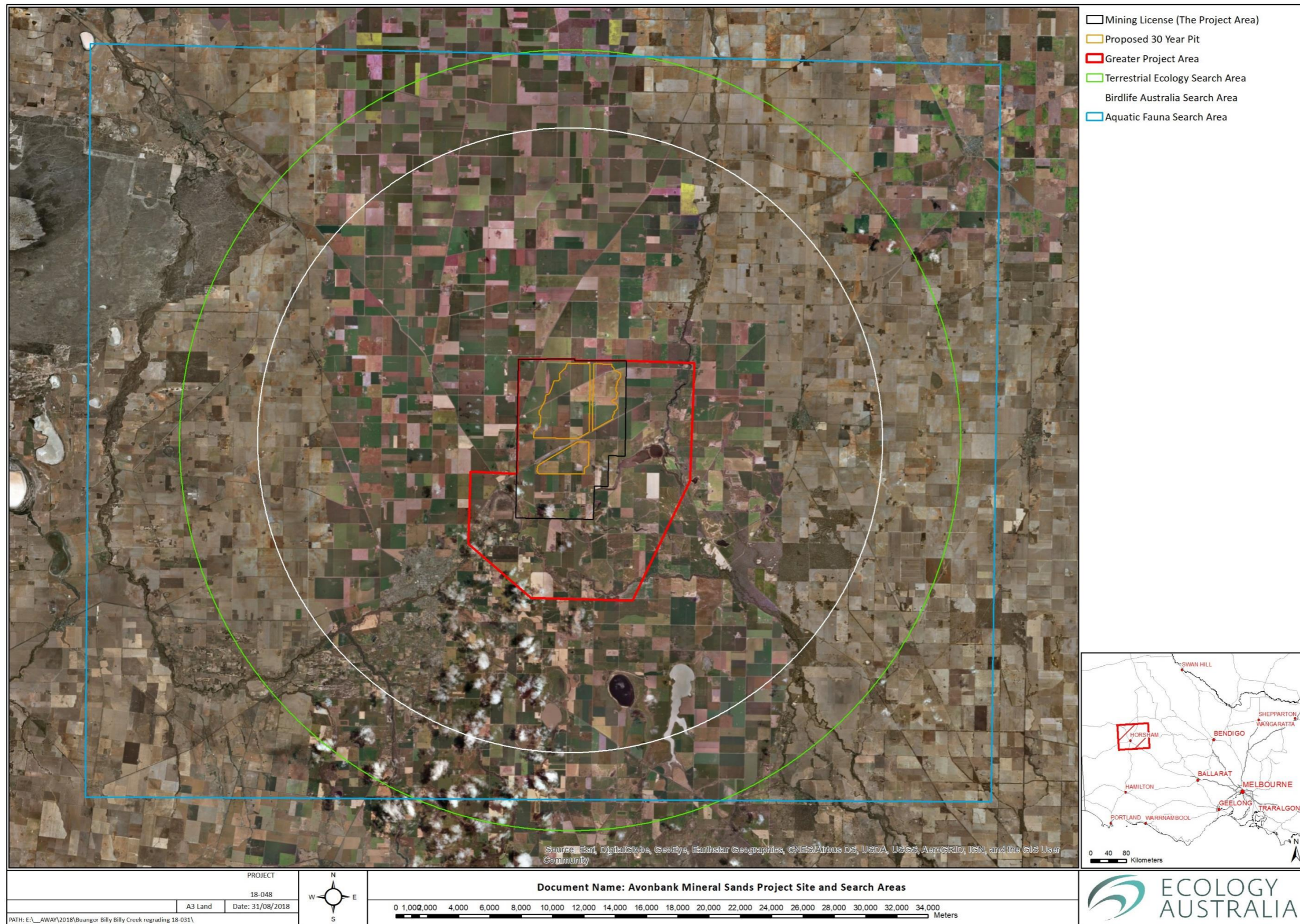


Figure 1 The Avonbank Mineral Sands Project 1-30 Year Mining Area, the Retention License (the project area), the greater project area encompassing local aquatic habitats and the search areas

3 Methods

3.1 Desktop Review

Data and information were reviewed from relevant databases and literature pertaining to the study area and surrounds, including:

- Flora and terrestrial fauna records within 25 km of the middle of the project area (approximately -36.632°, 142.303°) held in the Victoria Biodiversity Atlas (VBA), a state-wide database maintained by the Department of Environment, Land, Water and Planning (DELWP 2018a, Figure 1);
- Ecological vegetation class pre 1750 and extant modelling (DELWP 2017);
- Aquatic fauna records in the vicinity of the study area, comprising a rectangle stretching from Loch Lel to Minyip, Wal Wal and Noradjuha held in the VBA (DELWP 2018a). A larger study area is generally used for aquatic fauna due to a paucity of surveys (Figure 1);
- Bird records within 20 km of the middle of the project area held in the Birdlife Australia New Atlas database (Birdlife Australia 2018, Figure 1);
- A search for species or communities listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), that potentially occur (or potential habitat occurs) within 25 km of the centre of the study area, using the EPBC Protected Matters Search Tool (DoEE 2018a, Figure 1).
- Aerial photography from Google Earth.
- The preliminary ecological assessment of the project area by Okologie Consulting (2017).

These were supplemented with records from the Atlas of Living Australia (ALA 2018).

3.2 Likelihood of presence

Species that were either listed as vulnerable or above under the EPBC Act and/or Victorian Threatened Species Advisory Lists (DSE 2009, 2013, DEPI 2014), and/or listed as threatened under the FFG Act were assessed for likelihood of regular occurrence in the:

1. Project area; or
2. Greater project area.

Determining likelihood of presence is a subjective process that takes into consideration:

- Site attributes, including size, shape and landscape context;
- Number, age and distribution of previous records, taking into account the likely survey history, in terms of intensity and frequency;
- Documented habitats and ecological requirements for the taxon in question; and
- Presence of suitable habitat within the study area, based on a brief site assessment.

A general description of likelihood rankings is provided in Table 1.

Table 1 Definitions of likelihood of occurrence categories.

Likelihood	Definition
Not Likely	Study area is located outside the known geographic range for the taxon or does not contain necessary landscape features and/or habitats documented for that taxon.
Low	Study area lies within, or on the edge, of the geographic range for the taxon, and supports major habitat elements, but is lacking in one or more critical features, or is located within a landscape that will most likely preclude occupancy or regular use. Historic records may be supported by more recent records within 5 km of the study area.
Moderate	The location and geographic features of the study area match that which is known for the taxon. Habitat shares numerous floristic, structural or physical similarities with documented habitats, but may be limited with regard to one or more known ecological requirements (e.g. size, landscape context or critical resources). Historic and contemporary records occur within 5 km of the study area and/or the broader region.
High	Location of the study area lies within the known range and distribution for the taxon. Habitats present within the study area match that documented for the taxon with regard to floristics and/or structure and satisfy the known ecological requirements. Multiple historic and recent records within the surrounding landscape indicate occurrence or regular use of the area.
Known	Taxon recorded within the study area during the current assessment or other recent assessment.

4 Values

The desktop survey identified 217 flora and fauna species that are listed under the EPBC Act, the *Flora and Fauna Guarantee 1998 Act* (FFG Act) and/or on Victorian Threatened Species Advisory Lists (Appendix 1).

A total of fifty species are considered to have a moderate or higher likelihood of regular occurrence in the project area. The ecology, records and likelihood of occurrence of these species is discussed below.

4.1 Fauna Species

One hundred and seventeen species of fauna of conservation significance were identified from database searches (Appendix 1). The likelihood of occurrence and the number of species in each likelihood of occurrence category are outlined in Tables 2 and 3 and Appendix 1.

Species with a moderate likelihood of occurrence or higher are discussed below.

Table 2 Number of fauna species in each likelihood of occurrence category in the project area (the retention license) and the greater project area (the retention license and surrounding waterbodies (Figure 1)

Likelihood of occurrence	Project area	Greater project area
Known	2	11
High	4	3
Moderate	7	10
Low	31	23
Not likely	15	12
Not assessed	58	58

Table 3 Threatened fauna species with a moderate or higher likelihood of occurrence in the project area and/or greater project area. For a full list of threatened and listed species from the search areas see Appendix 1.

EPBC = listing status under the Commonwealth EPBC Act

VU = listed as vulnerable, EN = listed as endangered, CR = listed as critically endangered, Mi = listed migratory species, Ma = listed marine overfly species

VIC Adv = conservation status on Victorian advisory list of threatened vertebrate fauna (DSE 2013) and invertebrate fauna (DSE 2009)

cr = classified as critically endangered, en = classified as endangered, vu = classified as vulnerable, nt = classified as near threatened,

FFG = listing status under the Victorian FFG Act

L = listed as threatened under the FFG Act

See Table 1 for definitions of likelihood of regular occurrence

indicates very poorly known species

Search = search tool where species was identified

VBA = Victorian Biodiversity Atlas, EPBC = EPBC Act Protected Matters Search Tool, BA = Birdlife Australia New Atlas

Scientific Name	Common Name	EPBC	VIC Adv	FFG	VBA		Birdlife Australia		Likelihood of Regular Occurrence		Search
					Count of Records	Last Record	Count of Sightings	Last Record	Project Area	Greater Project area	
Amphibians											
<i>Litoria raniformis</i>	Growling Grass Frog	VU	en	L	– 14	– 24/02/2011			Moderate	Moderate	VBA, EPBC
Birds											
<i>Anas rhynchos</i>	Australasian Shoveler		vu		– 42	– 23/10/2003	– 22	– 20/04/2016	Low	Known	VBA, BA
<i>Ardea alba</i>	Great Egret	Ma	vu	L	– 68	– 17/11/2011	– 100	– 12/09/2016	Known	Known	VBA, EPBC, BA
<i>Ardea intermedia</i>	Intermediate Egret	Ma	en	L	– 3	– 3/05/2006	– 50	– 12/06/2014	Low	Moderate	VBA, BA
<i>Aythya australis</i>	Hardhead		vu		– 42	– 24/10/2011	– 48	– 7/11/2017	Low	Known	VBA, BA
<i>Biziura lobata</i>	Musk Duck		vu		– 72	– 23/10/2003	– 53	– 27/05/2016	Low	Known	VBA, BA
<i>Burhinus grallarius</i>	Bush Stone-curlew		en	L	– 57	– 21/04/2009	– 44	– 13/09/2015	Moderate	Moderate	VBA, BA
<i>Falco subniger</i>	Black Falcon		vu		– 20	– 26/07/2010	– 11	– 21/01/2014	High	High	VBA
<i>Grus rubicunda</i>	Brolga		vu	L	– 6	– 1/03/2013	– 10	– 3/07/2015	Moderate	Known	VBA, BA
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	Ma	vu	L	– 5	– 17/11/2011	– 16	– 18/04/2017	Low	Moderate	VBA, EPBC
<i>Hirundapus caudacutus</i>	White-throated Needletail	Mi, Ma	vu		– 8	– 1/02/2008	– 1	– 6/01/2007	High	High	VBA, EPBC
<i>Melanodryas cucullata cucullata</i>	Hooded Robin		nt	L	– 44	– 27/07/2008	– 12	– 6/05/2012	Low	Moderate	VBA
<i>Ninox connivens connivens</i>	Barking Owl		en	L	– 2	– 1/09/2003	– 2	– 6/05/2012	Low	Moderate	VBA
<i>Porzana pusilla palustris</i>	Baillon's Crake		vu	L	– 4	– 28/10/2006	– 5	– 23/10/2015	Known	Known	VBA, BA
<i>Recurvirostra novaehollandiae</i>	Red-necked Avocet	Ma			– 3	– 24/10/2011	– 5	– 5/04/2017	Low	Known	VBA, BA
<i>Stagonopleura guttata</i>	Diamond Firetail		nt	L	– 62	– 15/04/2008	– 34	– 25/01/2015	High	Known	VBA
<i>Stictonetta naevosa</i>	Freckled Duck		en	L	– 11	– 14/08/2005	– 4	– 20/06/2013	Low	Known	VBA
<i>Tringa nebularia</i>	Common Greenshank	Mi, Ma	vu		– 1	– 20/01/1999	– 5	– 12/09/2012	Low	Known	VBA, EPBC
Fish											
<i>Bidyanus bidyanus</i>	Silver Perch	CR	vu	L	– 1	– 14/11/2012			Not likely	Moderate	VBA
<i>Tandanus tandanus</i>	Freshwater Catfish		en	L	– 27	– 4/03/2002			Not likely	Known	VBA
Invertebrates											
<i>Synemon jcaria</i>	Reddish-orange Sun Moth		cr		– 1	– 01/01/1896			Moderate#	Moderate#	VBA

Scientific Name	Common Name	EPBC	VIC Adv	FFG	VBA		Birdlife Australia		Likelihood of Regular Occurrence		Search
					Count of Records	Last Record	Count of Sightings	Last Record	Project Area	Greater Project area	
<i>Synemon plana</i>	Golden Sun Moth	CR	ce	L					Moderate#	Moderate#	EPBC
<i>Synemon selene</i>	Pale Sun Moth		cr		- 16	- 4/03/1993			Moderate#	Known#	VBA
Reptiles											
<i>Delma impar</i>	Striped Legless Lizard	VU	en	L	- 6	- 7/11/2005			Moderate	Moderate	VBA, EPBC
<i>Pogona barbata</i>	Bearded Dragon		vu		- 6	- 10/02/2006			High	High	VBA

4.1.1 Species known from the project area and/or greater project area

Eleven species of threatened fauna are known from the project area or the greater project area.

Australasian Shoveler *Anas rhynchos*

The Australasian Shoveler is classified as vulnerable in Victoria (DSE 2013).

The Australasian Shoveler is known from the southern two-thirds of Australia. It prefers permanent well vegetated wetlands, but will inhabit most freshwater environments (Menkhorst et al 2017).

There are 42 records of the Australasian Shoveler within 25km of the project area in the VBA, and 22 sightings from the Birdlife Australia Atlas within 20 km of the survey site, with the most recent record dating from 2016. The species is known from the greater project area, as there are two sightings of Australasian Shovelers from Darlot Swamp, with the most recent from 2012. The species has also been recorded from the Wimmera River in Horsham, so it is likely that further suitable habitat exists in Dooen Swamp, and along the Wimmera River and associated waterbodies in the greater project area. The Australasian Shoveler has a low likelihood of occurrence in the project area.

Great Egret *Ardea alba*

The Great Egret is listed under the marine schedule of the EPBC Act, listed as threatened under the FFG Act and is classified as vulnerable in Victoria (DSE 2013).

Great Egrets are found across Australia. They inhabit a variety of wet environments — including freshwater and tidal areas and flooded grasslands — provided there is shallow open water for wading (Menkhorst et al 2017).

There are 68 records of the Great Egret within 25km of the project area in the VBA and 100 sightings from the Birdlife Australia Atlas within 20 km of the survey site with the most recent record dating from 2016. The Great Egret is known from the project area, with a record from Longerenong College in 2009. There are also records from Darlot Swamp and the Wimmera River in the greater project area. It is likely that suitable habitat is also present across the project area and Dooen Swamp.

Hardhead *Aythya australis*

Hardheads are classified as vulnerable in Victoria (DSE 2013).

Hardheads are found across much of Australia. They are found in freshwater swamps and wetlands, preferring deep open water (Menkhorst et al 2017).

There are 42 records of Hardheads within 25km of the project area in the VBA and 48 sightings from the Birdlife Australia Atlas within 20 km of the survey site with the most recent record dating from 2017. The species is known from the greater project area, as there are two sightings of Hardheads from Darlot Swamp, with the most recent from 2017. The species has also been recorded from the Wimmera River in Horsham, so it is likely that further suitable habitat exists in Dooen Swamp, and along the Wimmera River and associated waterbodies in the greater project area. The Hardhead has a low likelihood of occurrence in the project area.

Musk Duck *Biziura lobata*

Musk Ducks are classified as vulnerable in Victoria (DSE 2013).

Musk Ducks are found across much of southern Australia, where they inhabit deep well vegetated freshwater wetlands (Menkhorst et al 2017).

There are 72 records of Musk Ducks within 25km of the project area in the VBA and 53 sightings from the Birdlife Australia Atlas within 20 km of the survey site with the most recent record dating from 2017. The species is known from the greater project area, as there is a sighting of Musk Ducks from Darlot Swamp from 1988. The species has also been recorded from the Wimmera River in Horsham, so it is likely that further suitable habitat exists in Dooen Swamp, and along the Wimmera River and associated waterbodies in the greater project area. The Musk Duck has a low likelihood of occurrence in the project area.

Brolga *Grus rubicunda*

Brolgas are listed as threatened under the FFG Act and is classified as vulnerable in Victoria (DSE 2013).

Brolgas are known from much of eastern and northern Australia. They generally inhabit open country associated with a variety of wetlands (Menkhorst et al 2017).

There are six records of the Brolga within 25km of the project area in the VBA, and 10 sightings from the Birdlife Australia Atlas within 20 km of the project area with the most recent record dating from 2015. The species is known from the greater project area, with a record from Darlot Swamp dating from 1996. Suitable habitat is likely present for this species in the greater project area at Darlot and Dooen Swamps, and along the Wimmera River and associated waterbodies. The Brolga has a moderate likelihood of occurrence in the project area.

Baillon's Crake *Porzana pusilla palustris*

Baillon's Crake is listed as threatened under the FFG Act and is classified as vulnerable in Victoria (DSE 2013).

Baillon's Crake is mostly found in south-eastern Australia, but there are occasional records across much of the continent. It is found in freshwater wetlands with a dense cover of vegetation and rarely encountered (Menkhorst et al 2017).

There are four records of Baillon's Crake within 25km of the project area in the VBA, and 5 sightings from the Birdlife Australia Atlas within 20 km of the survey site with the most recent record dating from 2015. Baillon's Crake is known from the project area, as there is a record from Longerenong College in 2006. This species has a moderate likelihood of occurrence in the greater project area, as it may be present in Darlot and Dooen Swamps in favourable years.

Diamond Firetail *Stagonopleura guttata*

The Diamond Firetail is listed as threatened under the FFG Act and is classified as near threatened in Victoria (DSE 2013).

Diamond Firetails are found across much of south-eastern Australia. It occupies drier forests and open grassy woodlands, and is often found in dry pasture adjacent to wooded areas (Menkhorst et al 2017).

There are 62 records of Diamond Firetails within 25km of the project area in the VBA, and 34 sightings from the Birdlife Australia Atlas within 20 km of the survey site with the most recent record dating from 2015. In addition, there is a record from Darlot Swamp in the Atlas of Living Australia dating from 2017.

As a result Diamond Firetails are known from the greater project area. Suitable habitat is present across the project area, as a result they have a high likelihood of occurrence in the project area

Freckled Duck *Stictonetta naevosa*

The Freckled Duck is listed as threatened under the FFG Act and is classified as endangered in Victoria (DSE 2013).

The Freckled Duck is known from much of Australia, where it inhabits permanent freshwater swamps and creeks with dense vegetation (Menkhorst et al 2017).

There are 11 records of Freckled Ducks within 25km of the project area in the VBA, and four sightings from the Birdlife Australia Atlas within 20 km of the survey site with the most recent record dating from 2013. There is a record of a Freckled Duck from the Wimmera River directly south of Longerenong College dating from 2005, so this species is known from the greater project area. Suitable habitat is likely present along the Wimmera River and associated waterbodies, and habitat may be present at Dooen and Darlot swamp in wet years. The Freckled Duck has a low likelihood of occurrence in the project area.

Common Greenshank *Tringa nebularia*

The Common Greenshank is a listed migratory species under the EPBC Act, is listed under the marine schedule of the EPBC Act and is classified as vulnerable in Victoria (DSE 2013).

The Common Greenshank is found across much of Australia, except inland western Australia. It inhabits a variety of shallow coastal and freshwater wetlands with open mudflats. Common Greenshanks breed in Siberia, and migrate south for the Australian summer (Menkhorst et al 2017).

There is one record of the Common Greenshank within 25km of the project area in the VBA, and five sightings from the Birdlife Australia Atlas within 20 km of the survey site with the most recent record dating from 2012. The species is known from the greater project area, with a record from Darlot Swamp dating from 2012. Suitable habitat is likely present for this species in the greater project area at Darlot and Dooen Swamps during wet years. The Common Greenshank has a low likelihood of occurrence in the project area.

Pale Sun Moth *Synemon selene*

The Pale Sun Moth is classified as critically endangered in Victoria (DSE 2009).

Pale Sun Moths are poorly known, but their patchy distribution extends from the Adelaide region to near Echuca, with the majority of records from the Horsham region. The habitat for Pale Sun Moth is native grassland and grassy woodland with an understorey that is dominated by Wallaby Grasses, *Rytidosperma* spp. and to a lesser extent Spear Grasses, *Austrostipa* spp. These two plant species are the primary food plants for Pale Sun Moth larvae. Pale Sun Moths tend to inhabit areas with heavier soils. The flight season for Pale Sun Moths is mid-February to early March (Douglas 2004, 2008).

There are 16 records of Pale Sun Moths within 25km of the project area in the VBA, with the most recent record dating from 1993. This species is known from the greater project area; there are two records roughly 1 km from Darlot Swamp (one south and one east), both dating from 1993. Suitable habitat may be present in road reserves throughout the project area, and in the vicinity of Darlot and Dooen Swamps. The Pale Sun Moth has a moderate likelihood of occurrence in the project area.

Freshwater Catfish *Tandanus tandanus*

The Freshwater Catfish is listed as threatened under the FFG Act and is classified as endangered in Victoria (DSE 2013).

Freshwater Catfish are known from the Murray-Darling Basin and eastern Australia and inhabit slow flowing rivers and lakes. Historically Freshwater Catfish were introduced to the Wimmera River, where they have now formed an important, self-sustaining population (Lintermans 2007).

There are 27 records of Freshwater Catfish in the VBA from the search area, with the most recent dating from 2012. The species is known from the greater project area, as there are records from the Wimmera River immediately adjacent to Dooen Swamp with the most recent dating from 1988. There is also a known population in the lake upstream of Horsham Weir. Freshwater catfish are not likely to occur in the project area.

4.1.2 High likelihood of occurrence

Three species of threatened fauna have a high likelihood of regular occurrence in the project area and/or greater project area.

Black Falcon *Falco subniger*

The Black Falcon is classified as vulnerable in Victoria (DSE 2013).

Black Falcons are known from most of Australia, where they tend to inhabit open areas, including agricultural zones.

There are 20 records of the Black Falcon within 25km of the project area in the VBA and 11 sightings from the Birdlife Australia Atlas within 20 km of the survey site with the most recent record dating from 2014. Due to the number of records regionally and the suitability of habitat in the project area, this species has a high likelihood of occurrence in the project and greater project areas.

White-throated Needletail *Hirundapus caudacutus*

The White-throated Needletail is a listed migratory species under the EPBC Act, is listed under the marine schedule of the EPBC Act and is classified as vulnerable in Victoria (DSE 2013).

The White-throated Needletail breeds in Asia over the Australian winter, before migrating to eastern Australia from approximately October to April. It is found across much of eastern Australia from Darwin to Adelaide. White-throated Needletails are almost exclusively aerial, flying up to 1000m above ground, over wooded habitats, including open forest and rainforest; however, they are also known to roost in dense woodland or forest canopies or tree hollows (Menkhorst et al 2017).

There are eight records of White-throated Needletails within 25km of the project area in the VBA and 1 sightings from the Birdlife Australia Atlas within 20 km of the survey site with the most recent record dating from 2008. Due to the number of records, the broad habitat preferences of the species and the vagility of the species there is a high likelihood of regular occurrence for the White-throated Needletail in the project and greater project areas.

Bearded Dragon *Pogona barbata*

The bearded Dragon is classified as vulnerable in Victoria (DSE 2013).

Bearded Dragons are known from Cairns to Ceduna where it is recorded in open and dense forests, heathland and scrub (Wilson and Swan 2017).

There are six records of a Bearded Dragon within 25 km of the project area in the VBA, with the most recent dating from 2006. However due to broad habitat requirements of this species and the large number of records from the broader region, there is a high likelihood of regular occurrence for the Bearded Dragon in the project and greater project areas.

4.1.3 Moderate likelihood of occurrence

Ten species of threatened fauna have a moderate likelihood of occurrence in the project area and/or greater project area.

Growling Grass Frog *Litoria raniformis*

The Growling Grass Frog is listed as vulnerable under the EPBC Act, listed as threatened under the FFG Act and is classified as endangered in Victoria (DSE 2013).

The Growling Grass Frog is known from south eastern Australia, from approximately Sydney to Adelaide including Tasmania. Growling Grass Frogs are predominantly found in still or slow moving wetland systems such as lagoons, swamps, lakes and ponds with grassland habitat and emergent vegetation. Breeding occurs between November and March (DoEE 2018b).

There are 14 records of Growling Grass Frog within 25 km of the project area in the VBA. Due to the presence of potentially suitable habitat around farm dams, in Dooen and Darlot Swamps, and along the Wimmera River and its tributaries adjacent to the project area, there is a moderate likelihood of this species occurring in the project area and greater project area.

Intermediate Egret *Ardea intermedia*

The Intermediate Egret is listed under the marine schedule of the EPBC Act, listed as threatened under the FFG Act and is classified as endangered in Victoria (DSE 2013).

Intermediate Egrets are found across much of eastern and northern Australia. They prefer freshwater wetlands with still waters that have a dense cover of aquatic and emergent vegetation (Menkhorst et al. 2017).

There are three records of the Intermediate Egret within 25km of the project area in the VBA, and 50 sightings from the Birdlife Australia Atlas within 20 km of the survey site with the most recent record dating from 2014. Due to the potential presence of suitable habitat in the greater project area at Darlot and Dooen Swamps, and along the Wimmera River and associated waterbodies, this species has a moderate likelihood of occurrence in the greater project area. Intermediate Egrets have a low likelihood of occurrence in the project area.

Bush Stone Curlew *Burhinus grallarius*

The Bush Stone Curlew is listed as threatened under the FFG Act and is classified as endangered in Victoria (DSE 2013).

Bush Stone Curlews are found across much of Australia, inhabiting grassy woodlands and open forests, including remnants on farmland.

There are 57 records of the Bush Stone Curlew within 25km of the project area in the VBA, and 44 sightings from the Birdlife Australia Atlas within 20 km of the survey site with the most recent record dating from 2015. Due to the number of records in the area and presence of potentially suitable habitat in the project area, this species has a moderate likelihood of occurrence in the project area and greater project area.

White-bellied Sea-Eagle *Haliaeetus leucogaster*

The White-bellied Sea-Eagle is listed under the marine schedule of the EPBC Act and listed as threatened under the FFG Act and is classified as vulnerable in Victoria (DSE 2013).

White-bellied Sea-Eagles are known from coastal regions across Australia and large inland waterbodies, where they fly over waterways and adjacent land searching for food and perch and nest in large trees.

There are five records of the White-bellied Sea-Eagle within 25km of the project area in the VBA, and 16 sightings from the Birdlife Australia Atlas within 20 km of the survey site with the most recent record dating from 2017. Due to the presence of suitable habitat in the greater project area, particularly in Dooen and Darlot Swamps and along the Wimmera River and associated waterbodies, there is a moderate likelihood of occurrence for this species the greater project area. There is a low likelihood of occurrence for White-bellied Sea-Eagles in the project area.

Hooded Robin *Melanodryas cucullata cucullata*

The Hooded Robin is listed as threatened under the FFG Act and is classified as near threatened in Victoria (DSE 2013).

Hooded Robins are found across much of Australia, where they inhabit lightly timbered habitats, such as woodlands.

There are 44 records of Hooded Robins within 25km of the project area in the VBA, and 12 sightings from the Birdlife Australia Atlas within 20 km of the survey site with the most recent record dating from 2012. Due to the presence of suitable habitat at Darlot and Dooen Swamp and along the Wimmera River and associated waterbodies, there is a moderate likelihood of regular occurrence in the greater project area. There is a low likelihood of occurrence for Hooded Robins in the project area.

Barking Owl *Ninox connivens*

The Barking Owl is listed as threatened under the FFG Act and is classified as endangered in Victoria (DSE 2013).

Barking Owls are known from much of Australia, except for the arid interior. They occupy dry forests and woodlands, often in edge habitats and partly cleared areas.

There are Two records of Barking Owls within 25km of the project area in the VBA, and two sightings from the Birdlife Australia Atlas within 20 km of the project area with the most recent record dating from 2012. Due to the presence of suitable habitat, there is a moderate likelihood of Barking Owls occurring in the greater project area. There is a low likelihood of occurrence for Hooded Robins in the project area.

Reddish-orange Sun Moth *Synemon jcaria*

The Reddish Orange Sun Moth is classified as critically endangered in Victoria (DSE 2009).

The Reddish-orange Sun Moth is very poorly known. It is known from small disjunct populations in north-western Victoria, New South Wales, South Australia and Western Australia. The principal food plant for Reddish-orange Sun Moth larvae is Scented Mat-rush *Lomandra effusa* and tends to be found in open woodlands and scrubland with Scented Mat-rush in the understorey. The flight season for this species is January to early March (Douglas 2008).

There is one record of Reddish-orange Sun Moth within 25 km of the project area in the VBA dating from 1896. However due to the cryptic nature of this species and low survey effort, this is not indicative of the absence of this species. Due to the potential for Reddish-orange Sun Moth habitat in the project area and greater project area particularly in roadside verges and associated with Darlot and Dooen Swamps, there is a moderate likelihood that this species may occur.

Golden Sun Moth *Synemon plana*

The Golden Sun Moth is listed as critically endangered under the EPBC Act, listed as threatened under the FFG Act and is classified as critically endangered in Victoria (DSE 2009).

The Golden Sun Moth is poorly known. It is known from grasslands across south eastern Australia from Nhill to Sydney. The habitat for Golden Sun Moth is native grassland and grassy woodland that is dominated by Wallaby Grasses, *Rytidosperma* spp. and to a lesser extent Spear Grasses, *Austrostipa* spp., and these species are the primary food plants for Golden Sun Moth larvae that live underground. Golden Sun Moths tend to inhabit areas with lighter soils. The regional flight season for this species is October to early December (Douglas 2008).

There are no records of Golden Sun Moth from the project area. However due to the cryptic nature of this species and low survey effort, this is not indicative of the absence of this species. Due to the potential for Golden Sun Moth habitat in the project area and greater project area particularly in roadside verges and associated with Darlot and Dooen Swamps, there is a moderate likelihood that this species may occur.

Striped Legless Lizard *Delma impar*

The Striped Legless Lizard is listed as vulnerable under the EPBC Act, listed as threatened under the FFG Act and is classified as endangered in Victoria (DSE 2013).

Striped Legless Lizards inhabits grasslands and grassy woodlands that have not been ploughed from the Naracoorte region in South Australia to Goulburn in New South Wales (DoEE 2018b).

There are six records of Striped Legless Lizards within 25 km of the project area in the VBA, with the most recent dating from 2005. Due to the potential for relatively undisturbed grasslands in roadside verges and associated with Darlot and Dooen Swamps, there is a moderate likelihood of this species occurring in the project area and greater project area.

Silver Perch *Bidyanus bidyanus*

The Silver Perch is listed as critically endangered under the EPBC Act, listed as threatened under the FFG Act and is classified as vulnerable in Victoria (DSE 2013).

Silver Perch are distributed throughout much of the Murray Darling Basin, where it inhabits lowland, turbid slow-flowing rivers. Silver Perch were introduced into the Wimmera River where it is still stocked and may be a self-sustaining population (Lintermans 2007).

There is one record of Silver Perch in the VBA from the search area, located near Dimboola and dating from 2012. Due to the presence of suitable habitat in the Wimmera River immediately south of the project area and the species has been stocked near Horsham, there is a moderate likelihood that this species will occur in the greater project area. This species is not likely to occur in the project area.

4.1.4 Low likelihood of occurrence

While generally low likelihood of occurrence species will not be covered in the report, due to concerns raised the Red-tailed Black Cockatoo will be discussed below.

Red-tailed Black-Cockatoo (south-eastern sub species) *Calyptorhynchus banksii graptogyne*

The Red-tailed Black-Cockatoo is listed as endangered under the EPBC Act, listed as threatened under the FFG Act and is classified as endangered in Victoria (DSE 2013).

The Red-tailed Black-Cockatoo is distributed across much of Australia and consists of five sub species. The south-eastern subspecies is known from south-western Victoria and south-eastern South Australia (Figure 2). The population consists of approximately 1000 individual, and 600-700 breeding adults. They are specialist feeders, feeding almost exclusively on Brown Stringybark *Eucalyptus baxteri*, Desert Stringybark *E. arenacea* and Buloke *Allocasuarina luehmannii* trees. Stringybark seeds form the main part of their diet year round, but Buloke seeds are an important part of their diet between December and April. Red Tailed Black Cockatoos nest in large hollows in very old Eucalypts (usually River Red Gums *E. camaldulensis*). To be successful, a nest needs to be within 5 km of Stringybark woodland of at least 5 ha in area with a seed crop (DSE 2006).

There are 2 records of the Red-tailed Black within 25km of the project area in the VBA, and no sightings from the Birdlife Australia Atlas within 20 km of the survey site, with the most recent records from 1978. As Red-tailed Black Cockatoos are very conspicuous when present and an easily identifiable, iconic species, it is likely that these records represents low visitation to the area, rather than low survey effort or failure to detect the species.

The project area is outside the normal range for Red-tailed Black Cockatoos (Figure 2). While Red-tailed Black Cockatoos may visit the project area and greater project area very occasionally, the few Bulokes and absence of Stringybarks mean that these visits will be for brief periods to forage in the small stands of Buloke and lone trees in the area. Due to the absence of Stringybark, nesting is most unlikely to occur in the project area.

Due to the very low coverage of suitable habitat, the absence of Stringybark eucalypts, the low number of records from the area, and the project being outside the normal range of the Red-tailed Black Cockatoo, the likelihood of occurrence in the project area is low.

4.1.5 Marine and Migratory Species

While not formally assessed in this report, many EPBC Act listed migratory species and species listed under the marine schedule of the EPBC Act do occur or are likely to occur in the greater project area. The Wimmera River and associated waterways immediately adjacent are likely to support suitable habitat for many waterbirds year round. During wetter periods Darlot Swamp is known to support waterbird communities, and Dooen Swamp is similarly likely to support waterbirds. Marine and Migratory species may occur in the project area, particularly near farm dams.

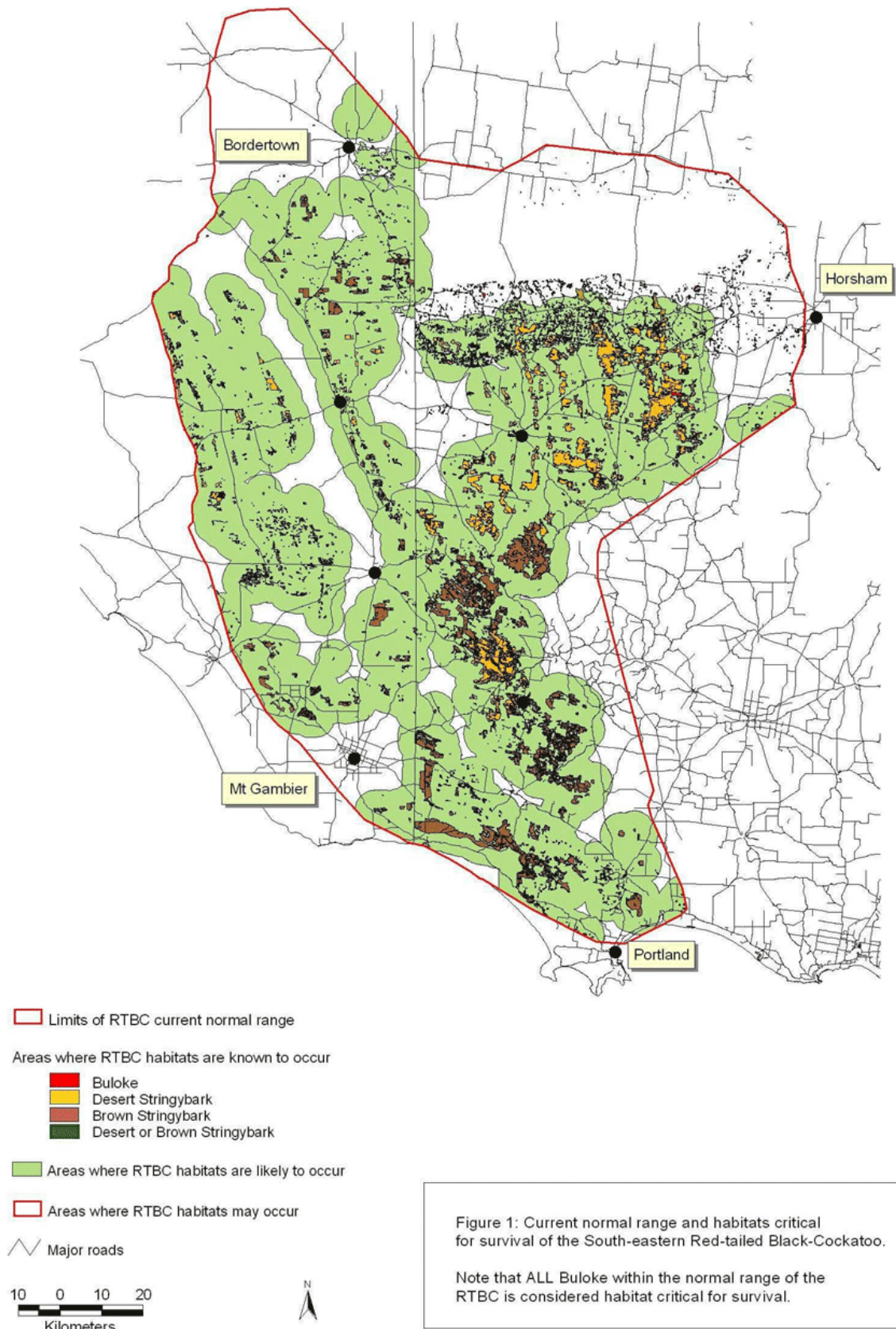


Figure 2 The distribution of South-eastern Red-tailed Black Cockatoo and their habitat. Taken from DEWHA (2009)

4.2 Threatened Flora Species

Of the 100 threatened flora species identified from the search area (Table 4, Appendix 1):

- One is currently known from the project area – Buloke
- One is currently known from the greater project area – Buloke
- One has a high likelihood of occurrence – Buloke Mistletoe
- Twenty-two have a moderate likelihood of occurrence in the project area or greater project area
- Seventy-five have a low likelihood of occurrence.

4.3 Ecological Vegetation Communities

4.3.1 Overview

The project area has been extensively cleared with remnants persisting in roadsides and paddocks. Okologie Consulting (2017) identified the following areas of native vegetation:

- Plains Woodland EVC 803
- Plains Savannah EVC 862
- Plains Grassland EVC 132
- Scattered Trees

Based on the proposed 30-year mine footprint, approximately 10-15 ha of native vegetation is expected to be impacted (**Figure 3**).

The presence of these EVCs was confirmed during our site inspection (21 June 2018) and also conforms with the extant EVC modelling (DELWP 2005).

The wetland vegetation of the greater project area – Dooen and Darlot swamps, Two Mile Creek and the Wimmera River supports several additional EVCs including:

- Riparian Woodland EVC 641
- Riverine Chenopod Woodland EVC 103
- Red Gum Swamp EVC 292
- Black Box Lignum Woodland EVC 663
- Sand-ridge Woodland EVC 264
- Plains Sedgy Woodland EVC 283
- Cane Grass Wetland EVC 291
- Lignum Swampy Woodland EVC 942

Table 4 Threatened flora species identified from the VBA with a moderate or higher likelihood of occurrence in the project area or greater project area
Key:

EPBC = listing status under the Commonwealth EPBC Act

VU = listed as vulnerable, EN = listed as endangered, CR = listed as critically endangered, Mi = listed migratory species, Ma = listed marine overfly species

VIC Adv = conservation status on Victorian advisory list of threatened (DEPI 2014)

e = classified as endangered, v = classified as vulnerable, r = rare, k = poorly known

FFG = listing status under the Victorian FFG Act 1988

L = listed as threatened under the FFG Act 1988

* indicates species identified from the greater project area (i.e. including Doon and Darlot Swamps and the Wimmera River in associated waterbodies in the vicinity of the project area.

Search = search tool where species was identified

VBA = Victorian Biodiversity Atlas, EPBC = EPBC Act Protected Matters Search Tool

Scientific Name	Common Name	EPBC	VIC Adv	FFG	VBA		Likelihood of Regular Occurrence	Search
					Count of Records	Last Record		
<i>Allocasuarina luehmannii</i>	Buloke		en	L	93	25/01/2012	Known	VBA
<i>Alternanthera sp. 1 (Plains)</i>	Plains Joyweed		k		1	9/06/2011	Moderate	VBA
<i>Amyema linophylla subsp. orientalis</i>	Buloke Mistletoe		vu		20	1/10/2011	High	VBA
<i>Aristida calycina var. calycina</i>	Dark Wire-grass		r		6	5/02/2010	Moderate	VBA
<i>Asperula wimmerana</i>	Wimmera Woodruff		r		4	24/01/2012	Moderate*	VBA
<i>Austrostipa hemipogon</i>	Half-bearded Spear-grass		r		1	11/04/2011	Moderate	VBA
<i>Brachyscome chrysoglossa</i>	Yellow-tongue Daisy		vu	L	6	31/10/2013	Moderate	VBA
<i>Callitriche umbonata</i>	Winged Water-starwort		r	X	4	3/11/2010	Moderate*	VBA
<i>Calotis anthemoides</i>	Cut-leaf Burr-daisy		L		4	12/12/1996	Moderate	VBA
<i>Centipeda nidiformis</i>	Cotton Sneezeweed		r		2	14/09/1902	Moderate	VBA
<i>Convolvulus angustissimus subsp. omnigracilis</i>	Slender Bindweed		k		5	22/12/2011	Moderate	VBA
<i>Dianella sp. aff. longifolia (Riverina)</i>	Pale Flax-lily		vu		4	22/12/2011	Moderate	VBA
<i>Duma horrida subsp. horrida</i>	Spiny Lignum		r		3	5/11/1996	Moderate*	VBA
<i>Eleocharis macbarronii</i>	Grey Spike-sedge		k		1	3/11/2010	Moderate*	VBA
<i>Eleocharis pallens</i>	Pale Spike-sedge		k		6	10/06/2011	Moderate*	VBA
<i>Eucalyptus camaldulensis</i>	River Red-gum		X		47	14/03/2012	Known*	VBA
<i>Goodenia lunata</i>	Stiff Goodenia		vu		5	20/03/1904	Moderate	VBA
<i>Isolepis congrua</i>	Slender Club-sedge		vu	L	1	3/11/2010	Moderate*	VBA
<i>Maireana aphylla</i>	Leafless Bluebush		k		2	16/03/2010	Moderate	VBA
<i>Ptilotus erubescens</i>	Hairy Tails		vu	L	7	22/12/2011	Moderate	VBA
<i>Ranunculus sessiliflorus var. pilulifer</i>	Annual Buttercup		k		1	5/11/1996	Moderate	VBA
<i>Ranunculus undosus</i>	Swamp Buttercup		vu		2	15/09/1990	Moderate*	VBA
<i>Sclerolaena napiformis</i>	Turnip Copperburr	EN	en	L	9	30/06/2011	Moderate	VBA, EPBC
<i>Senecio macrocarpus</i>	Large-headed Fireweed	VU	en	L	1	18/09/1860	Moderate	VBA
<i>Swainsona behriana</i>	Southern Swainson-pea		r		7	5/10/2005	Moderate	VBA

4.3.2 Listed Ecological Communities

The following EPBC Act listed communities are known in the project area:

- Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions (Endangered)
- Natural Grasslands of the Murray Valley Plains (Critically Endangered)

There is also a possibility that the following community is present:

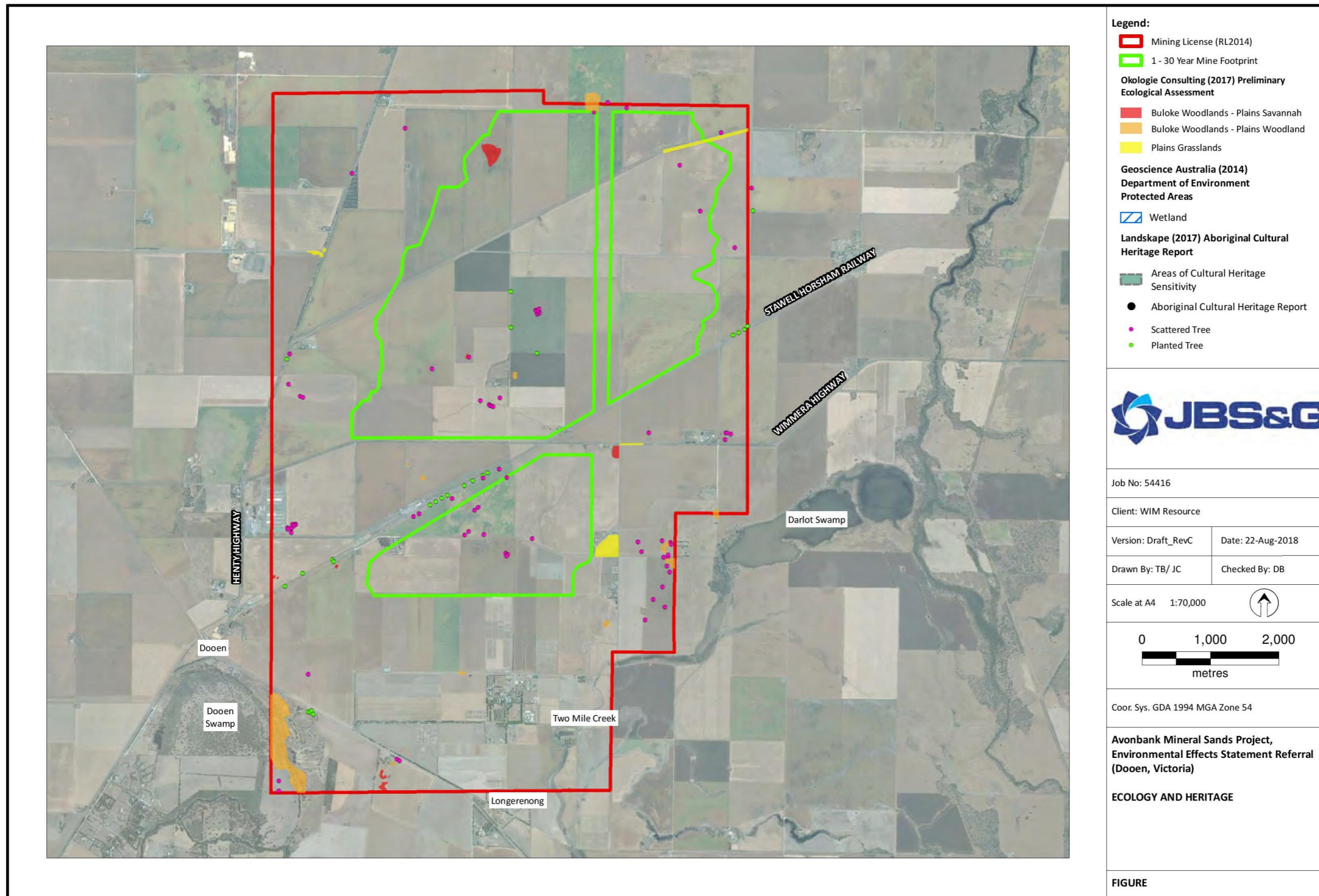
- Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains (Critically Endangered)

On site assessments will be required to determine whether the habitat in the project area meets the condition thresholds for these listed communities.

The following FFG Act listed communities are known or may also be present on site:

- Grey Box – Buloke Grassy Woodland Community
- Semi-arid Northwest Plains Buloke Grassy Woodland Community
- Semi-arid Shrubby Pine-Buloke Woodland Community
- Northern Plains Grassland Community.

However, native vegetation in the project area requires a more detailed assessment against the relevant patch criteria to determine its extent and quality. This will be done as part of the existing conditions surveys and report.



Document Path: V:\05 Projects\WIM Resource\54416 WIM Resource - Avonbank\11 - ArcGIS\Maps\DELWP Referral Report_RevC\09 Ecology and Heritage 10.5 Intro. Veg. Omitted.mxd
 Image Reference: Google Maps © 2018
 Disclaimer: While all reasonable care has been taken to ensure the information contained on this map is up to date and accurate, no guarantee is given that the information portrayed is free from error or omission. Please verify the accuracy of all information prior to use.

Figure 3 Location of the retention license, 1-30 year mine footprint and the native vegetation in the project area identified in Okologie Consulting (2017). However, native vegetation in the project area requires a more detailed assessment against the relevant patch criteria to determine its extent and quality.

5 Policy and Legislative Implications

Key instruments of the biodiversity policy and legislation are relevant to this review:

Environmental Effects Act 1978

The review forms part of a referral under the Environmental Effects Act 1978, on the basis that the project has the potential for significant environmental effects.

Environment Protection and Biodiversity Conservation Act 1999

On the available evidence the project area supports two ecological communities listed under the Act and has the potential to support several listed fauna species. In addition the greater project area has the potential to support waterbird species that are either listed under the migratory, marine and/or threatened EPBC Act schedules as well as other EPBC Act listed species .

Consideration should be given to referring the project to the Commonwealth under the provisions of the EPBC Act.

Guidelines for the removal, destruction or lopping of native vegetation (DELWP 2017) – The Guidelines

The guidelines are incorporated into the Victorian Planning Provisions and all planning schemes in Victoria. The policy regulates the clearing of native vegetation and must be applied when a permit is required under Clause 52.16 or 52.17 of planning scheme. The project would require assessment under this policy.

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7 Glossary

Biodiversity	The variety of all life-forms, plants, animals, fungi, protists (including algae) and bacteria, their encoded genes, and the ecosystems of which they form a part
Bioregion	Defined geographical regions of Australia with similar climatic and geophysical characteristics, and which generally contain a suite of distinct ecosystems and species
CaLP Act	<i>Victorian Catchment and Land Protection Act 1994</i>
Conservation status	Categorisation of the threat risk to biological assets (plant and animal species, EVCs or plant communities) at a defined scale (e.g. national, state), as determined by specific criteria
Ecological Vegetation Class (EVC)	A vegetation classification described through a combination of its floristic composition, life form and ecological characteristics, and its association with particular environmental attributes. EVCs may include one or more floristic communities that occur across a biogeographic range, and have similar habitat and ecological processes operating
Endemic	Naturally found only in a defined geographic area
EPBC Act	<i>Commonwealth Environment Protection and Biodiversity Conservation Act 1999</i>
Exotic	Plants, animals, fungi and other organisms that have been introduced (deliberately or accidentally) to Australia or a given area after European settlement
Exotic vegetation	Vegetation comprised wholly or substantially of exotic species
FFG Act	<i>Victorian Flora and Fauna Guarantee Act 1988</i>
Floristic	Of or pertaining to plant species, i.e. flora
GIS	Geographic Information System. A digital platform for creating, analysing and viewing maps and other spatially referenced data
Habitat Hectares	A measure of the quality and extent of native vegetation, incorporating attributes including presence of large trees, tree canopy health, understorey structure and diversity, weed cover and landscape context
High threat weeds	Introduced species (including non-indigenous 'natives') which, as invading species have highly deleterious impacts on indigenous vegetation and faunal habitats
Indigenous	Plant and animal species found naturally in pre-European Australia
Indigenous vegetation	Vegetation native to Australia or native to a specific geographic region
Introduced	Deliberately or accidentally brought to Australia or part of Australia, usually by human agency

Life form	An abbreviated description of the habit, growth form and longevity of a plant species (e.g. tree, shrub, vine, annual, submerged aquatic)
Native vegetation	Species occurring naturally in Australia as part of the pre-European flora or fauna
Vegetation community	Term for interacting plant populations forming vegetation. A vegetation community in formal classifications may have characteristic plant species, composition and structure
VROTS	Victorian Rare or Threatened Species
WONS	Weeds of National Significance

Appendix 1 Threatened species identified in the search area

Key:

EPBC = listing status under the Commonwealth EPBC Act

VU = listed as vulnerable, EN = listed as endangered, CR = listed as critically endangered, Mi = listed migratory species, Ma = listed marine overfly species

VIC Adv = conservation status on Victorian advisory list of threatened vertebrate fauna (DSE 2013) and invertebrate fauna (DSE 2009)

cr = classified as critically endangered, en = classified as endangered, vu = classified as vulnerable, nt = classified as near threatened, dd = classified as data deficient, r = rare, k = poorly known

FFG = listing status under the Victorian FFG Act

L = listed as threatened under the FFG Act

See Table 1 for definitions of likelihood of regular occurrence

indicates very poorly known species

Search = search tool where species was identified

VBA = Victorian Biodiversity Atlas, EPBC = EPBC Act Protected Matters Search Tool, BA = Birdlife Australia New Atlas

Scientific Name	Common Name	EPBC	VIC Adv	FFG	VBA		Birdlife Australia		Likelihood of Regular Occurrence		Search
					Count of Records	Last Record	Count of Sightings	Last Record	Project Area	Greater Project area	
Amphibians											
<i>Litoria raniformis</i>	Growling Grass Frog	VU	en	L	14	24/02/2011			Moderate	Moderate	VBA, EPBC
Aquatic Invertebrates											
<i>Cherax destructor albidus</i>	White Yabby		dd		2	27/04/1983			-	-	VBA
Birds											
<i>Accipiter fasciatus</i>	Brown Goshawk	Ma			31	24/10/2011	10	5/04/2015	-	-	VBA, BA
<i>Acrocephalus australis</i>	Australian Reed-Warbler	Ma					77	7/11/2017	-	-	BA
<i>Actitis hypoleucos</i>	Common Sandpiper	Mi, Ma	vu						-	-	EPBC
<i>Anas rhynchotis</i>	Australasian Shoveler		vu		42	23/10/2003	22	20/04/2016	Low	Known	VBA, BA
<i>Anseranas semipalmata</i>	Magpie Goose		nt	L	2	8/07/2006			Low	Low	VBA
<i>Anthochaera phrygia</i>	Regent Honeyeater	CR	cr	L	1	17/11/1900			Not likely	Not likely	VBA
<i>Apus pacificus</i>	Fork-tailed Swift	Mi, Ma			5	29/12/1985	2	10/03/2014	-	-	VBA, EPBC, BA
<i>Ardea alba</i>	Great Egret	Ma	vu	L	68	17/11/2011	100	12/09/2016	Known	Known	VBA, EPBC, BA
<i>Ardea intermedia</i>	Intermediate Egret	Ma	en	L	3	3/05/2006	50	12/06/2014	Low	Moderate	VBA, BA
<i>Ardeotis australis</i>	Australian Bustard		cr	L	1	22/10/2014			Low	Low	VBA
<i>Aythya australis</i>	Hardhead		vu		42	24/10/2011	48	7/11/2017	Low	Known	VBA, BA
<i>Biziura lobata</i>	Musk Duck		vu		72	23/10/2003	53	27/05/2016	Low	Known	VBA, BA
<i>Botaurus poiciloptilus</i>	Australasian Bittern	EN	en	L	4	3/01/1996			Low	Low	VBA, EPBC
<i>Bubulcus ibis</i>	Cattle Egret	Ma			8	18/03/1999	3	25/07/2014	-	-	VBA, EPBC, BA
<i>Burhinus grallarius</i>	Bush Stone-curlew		en	L	57	21/04/2009	44	13/09/2015	Moderate	Moderate	VBA, BA
<i>Cacomantis flabelliformis</i>	Fan-tailed Cuckoo	Ma			9	24/10/2011	4	25/09/2003	-	-	VBA, BA
<i>Cacomantis pallidus</i>	Pallid Cuckoo	Ma			24	5/07/2007	12	26/06/2015	-	-	VBA, BA
<i>Calidris acuminata</i>	Sharp-tailed Sandpiper	Mi, Ma			1	22/02/1981	2	23/01/2015	-	-	VBA, EPBC, BA
<i>Calidris ferruginea</i>	Curlew Sandpiper	CR, Mi, Ma	en	L			2	8/07/1983	Low	Low	EPBC, BA
<i>Calidris melanotos</i>	Pectoral Sandpiper	Mi, Ma	nt		1	12/09/1982			-	-	VBA, EPBC
<i>Calidris ruficollis</i>	Red-necked Stint	Mi, Ma			3	18/12/1998	5	31/08/2015	-	-	VBA, BA
<i>Calyptorhynchus banksii graptogyne</i>	Red-tailed Black-Cockatoo	EN	en	L	2	1/01/1978			Low	Low	VBA, EPBC
<i>Charadrius bicinctus</i>	Double-banded Plover	Mi, Ma					2	17/06/1984	-	-	BA
<i>Charadrius ruficapillus</i>	Red-capped Plover	Ma			12	10/06/2000	22	20/04/2016	-	-	VBA, BA

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<i>Chlidonias hybrida javanicus</i>	Whiskered Tern		nt		5	16/10/2005	9	7/11/2017	-	-	VBA, BA
<i>Chroicocephalus novaehollandiae</i>	Silver Gull	Ma			119	5/10/2008	202	5/04/2017	-	-	VBA, BA
<i>Chrysococcyx basalis</i>	Horsfield's Bronze-Cuckoo	Ma			28	9/10/2007	13	11/09/2015	-	-	VBA, BA
<i>Chrysococcyx lucidus</i>	Shining Bronze-Cuckoo	Ma			8	18/09/1999	2	3/10/2007	-	-	VBA, BA
<i>Chrysococcyx osculans</i>	Black-eared Cuckoo		nt		2	3/09/1979			-	-	VBA
<i>Circus approximans</i>	Swamp Harrier	Ma			36	9/12/2004	10	20/06/2013	-	-	VBA, BA
<i>Circus assimilis</i>	Spotted Harrier		nt		21	24/10/2011	5	20/06/2013	-	-	VBA, BA
<i>Climacteris picumnus victoriae</i>	Brown Treecreeper (south-eastern ssp.)		nt		193	24/10/2011	167	11/11/2016	-	-	-
<i>Corvus mellori</i>	Little Raven	Ma			78	8/12/2010	189	3/04/2018	-	-	VBA, BA
<i>Coturnix pectoralis</i>	Stubble Quail	Ma			20	10/03/2002	5	7/05/2014	-	-	VBA, BA
<i>Dromaius novaehollandiae</i>	Emu		nt		18	8/10/2007			-	-	VBA
<i>Egretta garzetta nigripes</i>	Little Egret	Ma	en	L	1	18/04/2000	4	7/04/2002	Low	Low	VBA, BA
<i>Eurystomus orientalis</i>	Dollarbird	Ma			2	1/11/2009	2	1/11/2009	-	-	VBA, BA
<i>Falco cenchroides</i>	Nankeen Kestrel	Ma			127	16/09/2007	79	5/04/2017	-	-	VBA, BA
<i>Falco hypoleucos</i>	Grey Falcon		en	L	3	12/09/1989			Low	Low	VBA
<i>Falco subniger</i>	Black Falcon		vu		20	26/07/2010	11	21/01/2014	High	High	VBA
<i>Gallinago hardwickii</i>	Latham's Snipe	Mi, Ma	nt		9	7/11/1998	4	31/12/2001	-	-	VBA, EPBC
<i>Gallirallus philippensis</i>	Buff-banded Rail	Ma			9	1/10/1999	16	15/05/2013	-	-	VBA, BA
<i>Geopelia cuneata</i>	Diamond Dove		nt	L	2	24/10/2011			Low	Low	VBA
<i>Grallina cyanoleuca</i>	Magpie-lark	Ma			251	19/12/2010	419	3/04/2018	-	-	VBA, BA
<i>Grantiella picta</i>	Painted Honeyeater	VU	vu	L	3	20/09/1980			Low	Low	VBA, EPBC
<i>Grus rubicunda</i>	Brolga		vu	L	6	1/03/2013	10	3/07/2015	Moderate	Known	VBA, BA
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	Ma	vu	L	5	17/11/2011	16	18/04/2017	Low	Moderate	VBA, EPBC
<i>Haliastur sphenurus</i>	Whistling Kite	Ma			51	4/04/2008	66	3/04/2018	-	-	VBA, BA
<i>Himantopus leucocephalus</i>	Black-winged Stilt	Ma			18	18/09/2008	41	20/04/2016	-	-	VBA, BA
<i>Hirundapus caudacutus</i>	White-throated Needletail	Mi, Ma	vu		8	1/02/2008	1	6/01/2007	High	High	VBA, EPBC
<i>Hirundo neoxena</i>	Welcome Swallow	Ma			256	19/12/2010	332	7/11/2017	-	-	VBA, BA
<i>Hydroprogne caspia</i>	Caspian Tern	Mi, Ma	nt	L	3	18/10/1998	1	18/10/1998	Not likely	Low	VBA, BA
<i>Lathamus discolor</i>	Swift Parrot	CR, Ma	en	L	6	6/04/2005			Low	Low	VBA, EPBC
<i>Leipoa ocellata</i>	Malleefowl	VU	en	L	1	2/01/1995			Not Likely	Not Likely	VBA, EPBC
<i>Lewinia pectoralis pectoralis</i>	Lewin's Rail		vu	L	1	1/01/1993			Not Likely	Not Likely	VBA
<i>Lichenostomus cratitius</i>	Purple-gaped Honeyeater		vu		1	1/01/1976			Not likely	Not likely	VBA
<i>Lophoictinia isura</i>	Square-tailed Kite		vu	L	1	1/03/1980			Low	Low	VBA
<i>Melanodryas cucullata cucullata</i>	Hooded Robin		nt	L	44	27/07/2008	12	6/05/2012	Low	Moderate	VBA
<i>Merops ornatus</i>	Rainbow Bee-eater	Ma			48	12/10/2009	15	1/02/2015	-	-	VBA, EPBC
<i>Motacilla flava</i>	Yellow Wagtail	Mi, Ma							-	-	EPBC
<i>Myiagra cyanoleuca</i>	Satin Flycatcher	Mi, Ma			2	26/12/1998			-	-	VBA, EPBC
<i>Neophema chrysostoma</i>	Blue-winged Parrot	Ma			6	21/10/1996	7	6/09/2014	-	-	VBA, BA
<i>Ninox connivens connivens</i>	Barking Owl		en	L	2	1/09/2003	2	6/05/2012	Low	Moderate	VBA
<i>Ninox novaeseelandiae</i>	Southern Boobook	Ma			38	11/12/2010	32	10/02/2015	-	-	VBA, BA
<i>Numenius madagascariensis</i>	Eastern Curlew	CR, Mi, Ma	vu		1	25/11/2001			Not likely	Not likely	VBA, EPBC
<i>Nycticorax caledonicus hillii</i>	Nankeen Night Heron	Ma	nt		14	24/10/2011	26	23/10/2015	-	-	VBA

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<i>Oreoica gutturalis gutturalis</i>	Crested Bellbird		nt	L	2	1/01/1960			Not likely	Not likely	VBA
<i>Oxyura australis</i>	Blue-billed Duck		en	L	6	23/10/2003	1	1/03/2009	Low	Low	VBA
<i>Pedionomus torquatus</i>	Plains-wanderer	CR	cr	L	13	1/09/1984			Low	Low	VBA, EPBC
<i>Pelecanus conspicillatus</i>	Australian Pelican	Ma			77	30/08/2006	155	7/11/2017	-	-	VBA, BA
<i>Petrochelidon nigricans</i>	Tree Martin	Ma			113	3/11/2009	119	8/09/2017	-	-	VBA, BA
<i>Petroica phoenicea</i>	Flame Robin	Ma			6	12/08/2007	10	20/06/2015	-	-	VBA, BA
<i>Phalacrocorax varius</i>	Pied Cormorant		nt		14	17/07/2007	54	5/04/2015	-	-	VBA
<i>Platalea regia</i>	Royal Spoonbill		nt		14	23/04/2009	13	3/07/2015	-	-	VBA
<i>Plegadis falcinellus</i>	Glossy Ibis	Ma	nt		6	23/02/1992	1	20/10/2001	-	-	VBA
<i>Polytelis anthopeplus monarchoides</i>	Regent Parrot	VU	vu	L	1	18/10/1896			Not likely	Not likely	VBA
<i>Pomatostomus temporalis temporalis</i>	Grey-crowned Babbler		en	L	15	29/07/2009	5	20/05/2001	Low	Low	VBA
<i>Porphyrio porphyrio</i>	Purple Swamphen	Ma			112	23/04/2009	282	3/04/2018	-	-	VBA, BA
<i>Porzana pusilla palustris</i>	Baillon's Crake		vu	L	4	28/10/2006	5	23/10/2015	Known	Known	VBA, BA
<i>Pyrrholaemus sagittatus</i>	Speckled Warbler		vu	L			1	5/05/2002	Low	Low	BA
<i>Recurvirostra novaehollandiae</i>	Red-necked Avocet	Ma			3	24/10/2011	5	5/04/2017	Low	Known	VBA, BA
<i>Rostratula australis</i>	Australian Painted Snipe	EN, Ma	ce	L					Low	Low	EPBC
<i>Stagonopleura guttata</i>	Diamond Firetail		nt	L	62	15/04/2008	34	25/01/2015	High	Known	VBA
<i>Stictonetta naevosa</i>	Freckled Duck		en	L	11	14/08/2005	4	20/06/2013	Low	Known	VBA
<i>Stiltia isabella</i>	Australian Pratincole		nt		8	16/09/2007			-	-	VBA
<i>Struthidea cinerea</i>	Apostlebird			L	1	22/11/1903			Not likely	Not likely	VBA
<i>Threskiornis moluccus</i>	Australian White Ibis	Ma			103	24/10/2011	100	22/01/2016	-	-	VBA, BA
<i>Threskiornis spinicollis</i>	Straw-necked Ibis	Ma			105	1/10/2003	48	1/02/2015	-	-	VBA, BA
<i>Todiramphus pyrropygia pyrropygia</i>	Red-backed Kingfisher		nt		1	1/10/1978			-	-	VBA
<i>Todiramphus sanctus</i>	Sacred Kingfisher	Ma			55	24/10/2011	39	7/11/2017	-	-	VBA, BA
<i>Tringa nebularia</i>	Common Greenshank	Mi, Ma	vu		1	20/01/1999	5	12/09/2012	Low	Known	VBA, EPBC
<i>Turnix pyrrhorostrax</i>	Red-chested Button-quail		vu	L	1	1/12/1979			Low	Low	VBA
<i>Turnix velox</i>	Little Button-quail		nt		4	9/02/1994			-	-	VBA
<i>Tyto novaehollandiae novaehollandiae</i>	Masked Owl		en	L	1	28/06/1982			Not likely	Not likely	VBA
<i>Zosterops lateralis</i>	Silvereye	Ma			65	1/07/2008	56	10/09/2015	-	-	VBA, BA
Fish											
<i>Bidyanus bidyanus</i>	Silver Perch	CR	vu	L	1	14/11/2012			Not likely	Moderate	VBA
<i>Maccullochella peelii</i>	Murray Cod	VU	vu	L	48	1/03/1993			Not likely	Low	VBA, EPBC
<i>Macquaria ambigua</i>	Golden Perch		nt	X	52	14/11/2012			-	-	VBA
<i>Macquaria australasica</i>	Macquarie Perch	EN	en	L	9	28/03/1977			Not likely	Not likely	VBA
<i>Tandanus tandanus</i>	Freshwater Catfish		en	L	27	4/03/2002			Not likely	Known	VBA
Invertebrates											
<i>Pseudalmenus chlorinda zephyrus</i>	Silky Hairstreak Butterfly		vu	X	1	2/03/1958			Low	Low	VBA
<i>Synemon jcaria</i>	Reddish-orange Sun Moth		cr		1	01/01/1896			Moderate#	Moderate#	VBA
<i>Synemon plana</i>	Golden Sun Moth	CR	ce	L					Moderate#	Moderate#	EPBC
<i>Synemon selene</i>	Pale Sun Moth		cr		16	4/03/1993			Moderate#	Known#	VBA
Mammals											
<i>Cercartetus concinnus minor</i>	Western Pygmy-possum		nt		5	14/08/1966			-	-	VBA

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<i>Isoodon obesulus obesulus</i>	Southern Brown Bandicoot	EN	nt	L	1	15/07/1928			Not likely	Not likely	VBA
<i>Petaurus norfolcensis</i>	Squirrel Glider		en	L	1	7/09/1992			Low	Low	VBA
<i>Pseudomys apodemoides</i>	Silky Mouse		nt		6	8/04/1979			-	-	VBA
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	VU	vu	L	1	20/02/1987			Low	Low	VBA, EPBC
<i>Sminthopsis crassicaudata</i>	Fat-tailed Dunnart		nt		7	17/11/2011			-	-	VBA
Reptiles											
<i>Chelodina longicollis</i>	Eastern Snake-necked Turtle		dd		3	25/11/1991			-	-	VBA
<i>Delma impar</i>	Striped Legless Lizard	VU	en	L	6	7/11/2005			Moderate	Moderate	VBA, EPBC
<i>Pogona barbata</i>	Bearded Dragon		vu		6	10/02/2006			High	High	VBA
<i>Pygopus schraderi</i>	Hooded Scaly-foot		cr	L	4	01/01/1890			Not likely	Not likely	VBA
<i>Varanus varius</i>	Lace Monitor		en		2	17/11/2011			Low	Low	VBA
Plants											
<i>Acacia argyrophylla</i>	Silver Mulga		ex		6	05/10/1892			Low	Low	VBA
<i>Acacia farinosa</i>	Mealy Wattle		k		1	2/05/1986			Low	Low	VBA
<i>Acacia glandulicarpa</i>	Hairy-pod Wattle	VU	vu	L	2	24/07/1997			Low	Low	VBA, EPBC
<i>Acacia oswaldii</i>	Umbrella Wattle		vu	L	2	11/01/1957			Low	Low	VBA
<i>Acacia pendula</i>	Weeping Myall		en	L	1	10/10/1990			Low	Low	VBA
<i>Acacia trineura</i>	Three-nerve Wattle		vu		3	8/07/1992			Low	Low	VBA
<i>Acacia victoriae subsp. victoriae</i>	Bramble Wattle		r		1	10/02/1987			Low	Low	VBA
<i>Allocasuarina luehmannii</i>	Buloke		en	L	93	25/01/2012			Known	Known	VBA
<i>Alternanthera sp. 1 (Plains)</i>	Plains Joyweed		k		1	9/06/2011			Moderate	Moderate	VBA
<i>Amphibromus fluitans</i>	River Swamp Wallaby-grass	VU							Low	Low	EPBC
<i>Amyema linophylla subsp. orientalis</i>	Buloke Mistletoe		vu		20	1/10/2011			High	High	VBA
<i>Angianthus brachypappus</i>	Spreading Angianthus		vu		1	19/12/1984			Low	Low	VBA
<i>Aristida calycina var. calycina</i>	Dark Wire-grass		r		6	5/02/2010			Moderate	Moderate	VBA
<i>Asperula wimmerana</i>	Wimmera Woodruff		r		4	24/01/2012			Low	Moderate	VBA
<i>Asterolasia phebaloides</i>	Downy Star-Bush	VU	vu	L	1	18/10/1988			Low	Low	VBA, EPBC
<i>Austrostipa hemipogon</i>	Half-bearded Spear-grass		r		1	11/04/2011			Moderate	Moderate	VBA
<i>Austrostipa mundula</i>	Neat Spear-grass		r		1	29/11/1996			Low	Low	VBA
<i>Austrostipa puberula</i>	Fine-hairy Spear-grass		r		12	17/12/1998			Low	Low	VBA
<i>Brachyscome chrysoglossa</i>	Yellow-tongue Daisy		vu	L	6	31/10/2013			Moderate	Moderate	VBA
<i>Caladenia lowanensis</i>	Wimmera Spider-orchid	EN	en	L	2	1/09/1997			Low	Low	VBA
<i>Caladenia tensa</i>	Rigid Spider-orchid	EN	vu		5	5/10/2010			Low	Low	VBA, EPBC
<i>Caladenia xanthochila</i>	Yellow-lip Spider-orchid	EN	en	L	6	5/10/2010			Low	Low	VBA, EPBC
<i>Callitriche umbonata</i>	Winged Water-starwort		r	X	4	3/11/2010			Low	Moderate	VBA
<i>Calochilus therophilus</i>	Slender Beard-orchid		k		1	20/12/1992			Low	Low	VBA
<i>Calotis anthemoides</i>	Cut-leaf Burr-daisy		L		4	12/12/1996			Moderate	Moderate	VBA
<i>Cardamine lineariloba</i>	Western Bitter-cress		vu		2	2/09/1995			Low	Low	VBA
<i>Cardamine moirensis</i>	Riverina Bitter-cress		r		3	2/09/1995			Low	Low	VBA
<i>Centipeda nidiformis</i>	Cotton Sneezeweed		r		2	14/09/1902			Moderate	Moderate	VBA
<i>Choretrum spicatum subsp. continentale</i>	Spiked Sour-bush		r		1	13/11/2002			Low	Low	VBA
<i>Comesperma polygaloides</i>	Small Milkwort		vu	L	9	31/10/2013			Low	Low	VBA

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<i>Convolvulus angustissimus subsp. omnigracilis</i>	Slender Bindweed		k		5	22/12/2011			Moderate	Moderate	VBA
<i>Daviesia pectinata</i>	Thorny Bitter-pea		r		3	10/10/1974			Low	Low	VBA
<i>Dianella sp. aff. longifolia (Riverina)</i>	Pale Flax-lily		vu		4	22/12/2011			Moderate	Moderate	VBA
<i>Digitaria ammophila</i>	Silky Umbrella-grass		vu		1	13/03/1904			Low	Low	VBA
<i>Diuris palustris</i>	Swamp Diuris		vu	L	1	01/01/1893			Low	Low	VBA
<i>Dodonaea procumbens</i>	Trailing Hop-bush	VU	vu	#	1	3/10/2008			Low	Low	VBA, EPBC
<i>Duma horrida subsp. horrida</i>	Spiny Lignum		r		3	5/11/1996			Low	Moderate	VBA
<i>Eleocharis macbarronii</i>	Grey Spike-sedge		k		1	3/11/2010			Low	Moderate	VBA
<i>Eleocharis pallens</i>	Pale Spike-sedge		k		6	10/06/2011			Low	Moderate	VBA
<i>Eremophila gibbifolia</i>	Coccid Emu-bush		r		1	22/09/1860			Low	Low	VBA
<i>Eriochlamys squamata</i>	Scaly Mantle		vu		8	11/03/2010			Low	Low	VBA
<i>Eucalyptus camaldulensis</i>	River Red-gum		X		47	14/03/2012			Moderate	Known	VBA
<i>Eucalyptus froggattii</i>	Kamarooka Mallee		r	L	1	18/09/1946			Low	Low	VBA
<i>Eucalyptus X oxypoma</i>	Deniliquin Box		r		1	11/07/1985			Low	Low	VBA
<i>Euphrasia collina subsp. muelleri</i>	Purple Eyebright	EN	en	L	1	05/10/1892			Low	Low	VBA
<i>Glossostigma drummondii</i>	Desert Mud-mat		k		1	1/03/1987			Low	Low	VBA
<i>Goodenia lunata</i>	Stiff Goodenia		vu		5	20/03/1904			Moderate	Moderate	VBA
<i>Gratiola pumilo</i>	Dwarf Brooklime		r		2	20/11/1991			Low	Low	VBA
<i>Grevillea rosmarinifolia</i>	Rosemary Grevillea		P	#	6	1/03/1987			Low	Low	VBA
<i>Isolepis australiensis</i>	Inland Club-sedge		k		1	21/11/1991			Low	Low	VBA
<i>Isolepis congrua</i>	Slender Club-sedge		vu	L	1	3/11/2010			Low	Moderate	VBA
<i>Lachnagrostis punicea subsp. punicea</i>	Purple Blown-grass		r		1	19/11/1991			Low	Low	VBA
<i>Leionema microphyllum</i>	Spreading Leionema		ex		1	1/01/1957			Low	Low	VBA
<i>Lepidium pseudohyssopifolium</i>	Native Peppergrass		k		1	01/01/1770			Low	Low	VBA
<i>Leptorhynchus waitzia</i>	Button Immortelle		vu		2	5/10/2005			Low	Low	VBA
<i>Leucopogon virgatus var. brevifolius</i>	Common Beard-heath		r		1	1/10/1948			Low	Low	VBA
<i>Maireana aphylla</i>	Leafless Bluebush		k		2	16/03/2010			Moderate	Moderate	VBA
<i>Melaleuca armillaris subsp. armillaris</i>	Giant Honey-myrtle		r	#	1	28/05/1990			Low	Low	VBA
<i>Melaleuca halmaturorum</i>	Salt Paperbark		vu	L	3	1/03/1987			Low	Low	VBA
<i>Microseris scapigera s.s.</i>	Plains Yam-daisy		vu		1	29/09/2008			Low	Low	VBA
<i>Nymphoides crenata</i>	Wavy Marshwort		vu	L	4	4/01/1964			Low	Low	VBA
<i>Olearia passerinoides</i>	Slender Daisy-bush		P		1	5/05/1904			Low	Low	VBA
<i>Olearia passerinoides subsp. passerinoides</i>	Slender Daisy-bush		r		1	26/06/1904			Low	Low	VBA
<i>Pelargonium littorale</i>	Coast Stork's-bill		k		1	1/03/1987			Low	Low	VBA
<i>Phebalium stenophyllum</i>	Narrow-leaf Phebalium		r		2	1/03/1987			Low	Low	VBA
<i>Philothea angustifolia subsp. montana</i>	Narrow-leaf Wax-flower		vu		1	18/10/1988			Low	Low	VBA
<i>Picris squarrosa</i>	Squat Picris		r		1	6/11/1901			Low	Low	VBA
<i>Pimelea flava subsp. dichotoma</i>	Diosma Rice-flower		r		3	5/10/2005			Low	Low	VBA
<i>Pimelea spinescens subsp. pubiflora</i>	Wimmera Rice-flower	CR	en	L	1	1/03/1987			Low	Low	VBA, EPBC
<i>Pimelea spinescens subsp. spinescens</i>	Spiny Rice-flower	CR	en	L	1	01/01/1894			Low	Low	VBA, EPBC
<i>Podolepis aristata subsp. affinis</i>	Grey Podolepis		r		1	03/10/1892			Low	Low	VBA

Scientific Name	Common Name	EPBC	VIC Adv	FFG	VBA		Birdlife Australia		Likelihood of Regular Occurrence		Search
					Count of Records	Last Record	Count of Sightings	Last Record	Project Area	Greater Project area	
<i>Prasophyllum suaveolens</i>	Fragrant Leek-orchid	EN	en	L	1	17/09/1995			Low	Low	VBA, EPBC
<i>Pterostylis aciculiformis</i>	Slender Ruddyhood		k		2	30/06/2011			Low	Low	VBA
<i>Pterostylis cheraphila</i>	Floodplain Rustyhood	VU	vu	L	10	30/06/2011			Low	Low	VBA, EPBC
<i>Pterostylis despectans</i>	Lowly Greenhood	EN	en	L	2	27/10/2016			Low	Low	VBA
<i>Ptilotus erubescens</i>	Hairy Tails		vu	L	7	22/12/2011			Moderate	Moderate	VBA
<i>Pultenaea daltonii</i>	Hoary Bush-pea		r		1	15/12/1998			Low	Low	VBA
<i>Ranunculus pumilio var. politus</i>	Ferny Small-flower Buttercup		k		1	29/09/2008			Low	Low	VBA
<i>Ranunculus sessiliflorus var. pilulifer</i>	Annual Buttercup		k		1	5/11/1996			Moderate	Moderate	VBA
<i>Ranunculus undosus</i>	Swamp Buttercup		vu		2	15/09/1990			Low	Moderate	VBA
<i>Sclerolaena divaricata</i>	Tangled Copperburr		k		2	5/10/2005			Low	Low	VBA
<i>Sclerolaena napiformis</i>	Turnip Copperburr	EN	en	L	9	30/06/2011			Moderate	Moderate	VBA, EPBC
<i>Senecio macrocarpus</i>	Large-headed Fireweed	VU	en	L	1	18/09/1860			Moderate	Moderate	VBA
<i>Stellaria multiflora subsp. collaris</i>	Slender Starwort		k		1	29/09/2008			Low	Low	VBA
<i>Swainsona behriana</i>	Southern Swainson-pea		r		7	5/10/2005			Moderate	Moderate	VBA
<i>Swainsona murrayana</i>	Slender Darling-pea	VU	en	L	3	30/06/2011			Low	Low	VBA, EPBC
<i>Swainsona sericea</i>	Silky Swainson-pea		vu	L	6	8/10/2013			Low	Low	VBA
<i>Swainsona swainsonioides</i>	Downy Swainson-pea		en	L	19	30/06/2011			Low	Low	VBA
<i>Thelymitra azurea</i>	Azure Sun-orchid		vu		1	1/10/1948			Low	Low	VBA
<i>Thelymitra epipactoides</i>	Metallic Sun-orchid	En	e	L					Low	Low	EPBC
<i>Thelymitra luteocilium</i>	Fringed Sun-orchid		r		3	5/10/2010			Low	Low	VBA
<i>Thelymitra X macmillanii</i>	Crimson Sun-orchid		vu		1	18/09/1993			Low	Low	VBA
<i>Triglochin trichophora</i>	Torpedo Arrowgrass		en		2	13/10/1986			Low	Low	VBA
<i>Vittadinia condyloides</i>	Club-hair New Holland Daisy		r		3	30/06/2005			Low	Low	VBA
<i>Vittadinia cuneata var. hirsuta</i>	Fuzzy New Holland Daisy		r		1	12/10/1986			Low	Low	VBA
<i>Vittadinia cuneata var. morrisii</i>	Fuzzy New Holland Daisy		r		11	22/12/2011			Low	Low	VBA
<i>Vittadinia megacephala</i>	Giant New Holland Daisy		vu		1	5/11/1996			Low	Low	VBA
<i>Vittadinia pterochaeta</i>	Winged New Holland Daisy		vu		3	17/12/1998			Low	Low	VBA
<i>Wurmbea dioica subsp. lacunaria</i>	Swamp Early Nancy		k		1	3/11/2010			Low	Low	VBA
<i>Zieria veronicea subsp. veronicea</i>	Pink Zieria		r		1	1/03/1987			Low	Low	VBA

