ecology & heritage partners

Final Report

Flora and Fauna Assessment for Precinct 15, Blackshaws Road, Altona North, Victoria

PREPARED FOR:

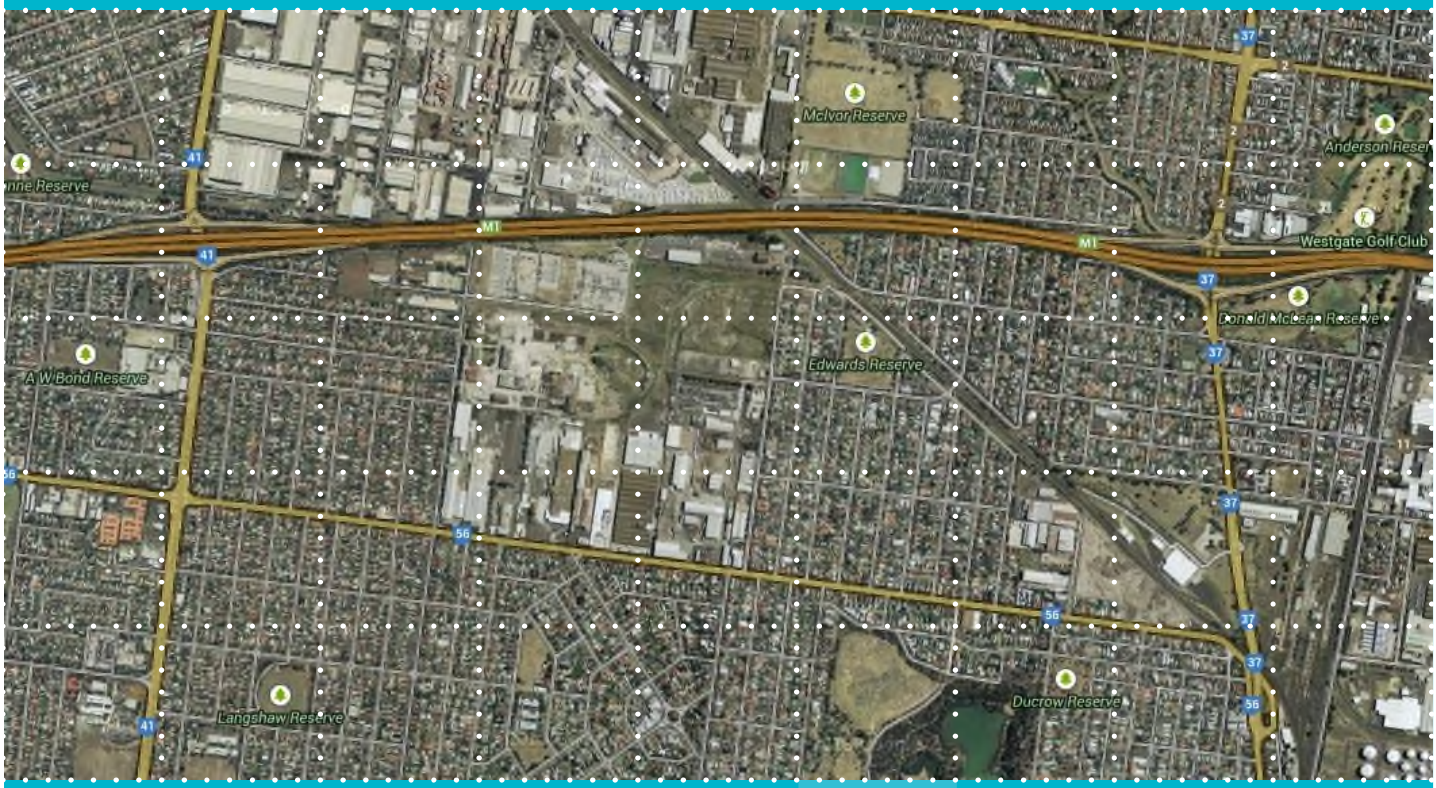
Mirvac

ON BEHALF OF:

Precinct 15 Landowners

DATE

September 2014



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SUMMARY

Introduction

Ecology and Heritage Partners Pty Ltd was commissioned by Mirvac, on behalf of the Precinct 15 Landowners to update a Flora and Fauna Assessment of Precinct 15, Blackshaws Road, Altona North, Victoria. The assessment was required to inform the Land Use Plan, determine the likely extent of any flora and fauna values within the study area and identify any potential constraints associated with the future development of Precinct 15.

Study Area

The area known as Precinct 15 (the study area) is located adjacent to the suburb of Altona North, and covers approximately 67 hectares. It is bound by the Westgate Freeway to the north, New Street to the east, Blackshaws Road to the south and Kyle Road to the west.

The site is characterised by open cleared land and an old quarry site, with dumped refuse and building material spread throughout the area. It was determined through aerial photography and subsequent ground truthing that approximately half the precinct supported existing developed industrial land, including a disused quarry and some partially demolished buildings. Therefore, the area subject to detailed field assessment was limited to the vacant land within Precinct 15. The remaining land was visually assessed from vacant areas within the precinct, though not subject to a detailed field assessment, as these areas were devoid of any ecological value (i.e. buildings, asphalt car park).

Methods

A site assessment was undertaken on 4 February, 2010 to obtain information on terrestrial flora and fauna values within the study area. The site was assessed on foot, with all vascular plants recorded and the overall condition of vegetation noted.

Habitat features including ground cover composition and structure, and the presence of hollows and fallen ground debris was also recorded. The presence of hollows in isolated trees was noted, and any other features likely to be important for fauna.

A site re-visit was undertaken in May 2012, to confirm that flora and fauna values within the study area had not altered considerably from the previous assessment in 2010.

Results

Flora

No indigenous flora species were recorded within the study area during the 2010 assessment. A total of 43 exotic species were recorded during the assessment, including 11 listed noxious weeds. No additional flora species were recorded during the second site assessment in 2012. No significant flora species were recorded during either field assessment, and none are considered likely to occur due to the highly modified condition of the study area.

Fauna

A total of 11 fauna species were recorded within the study area during the 2010 survey, and comprised of two mammals (both introduced) and nine birds (five native and four introduced). Two additional fauna species (locally common native birds) were recorded during the second site assessment in 2012. No fauna species of national, state or regional significance were recorded during either field assessment and none are considered likely to occur, due to the highly modified condition of the study area.

Ecological Significance

The study area is considered to be of low conservation significance due to the absence of remnant vegetation, the highly modified condition of the site and prevalence of exotic weeds throughout open areas.

Legislative and Policy Implications

The study area is highly unlikely to impact on any matters of national environmental significance and an *Environment Protection and Biodiversity Conservation Act 1999* referral to the Commonwealth Environment Minister is not required.

A protected flora licence or permit under FFG Act is not required as the study area does not include public land. A planning permit is not required for the removal of exotic or planted native vegetation.

A Permitted Clearing Assessment was not undertaken, as no remnant native vegetation is present within the study area. There are no biodiversity offset requirements for future development of the study area.

Conclusion

No further flora or fauna surveys are required within the study area due to the highly modified condition of the site and current industrial use. The precinct is surrounded by urban development and is isolated in the context of the local area. In addition, the study area does not support any habitat characteristics for threatened flora and/or fauna species, thus targeted surveys are not warranted prior to future development of the precinct.

A Weed Management Plan should be prepared, and incorporated into a Construction Environmental Management Plan to control noxious weeds within the study area during pre-construction and post-construction within the precinct to minimise their spread to surrounding areas and meet requirements under the CaLP Act.

CONTENTS

1 INTRODUCTION

1.1 Background

Ecology and Heritage Partners Pty Ltd was commissioned by Mirvac on behalf of the Precinct 15 Landowners to update the Flora and Fauna Assessment of Precinct 15, Blackshaws Road, Altona North, Victoria (Ecology Partners 2010; Ecology and Heritage Partners 2012). This update was required to address comments by Hobsons Bay Council due to the release of new native vegetation clearing legislation, the Biodiversity Assessment Guidelines (DEPI 2013).

The assessment was required to inform the Land Use Plan, determine the likely extent of any flora and fauna values within the study area and identify any potential constraints associated with the future development of Precinct 15. Following initiation of the precinct planning of the site in late 2011, a review of the initial assessments (undertaken in 2010 and 2012) was requested to update the results and associated reporting previously undertaken.

1.2 Scope and Objectives

The objectives of the flora and fauna assessment were to:

- Review the relevant flora and fauna databases and available literature;
- Conduct a site assessment to identify flora and fauna values within the study area;
- Identify any significant vegetation communities or populations of indigenous flora and fauna species;
- Provide maps showing any areas of remnant native vegetation and locations of any significant flora and fauna species, and/or fauna habitat (if present);
- Classify any flora and fauna species and vegetation communities identified or considered likely to occur within the study area in accordance with Commonwealth and State legislation;
- Prepare figures detailing ecological values and the mapping of any significant species within the study area (i.e. any significant species recorded during the site assessment);
- Document relevant environmental legislation and policy;
- Document any opportunities and constraints associated with the proposed works; and,
- Advise whether any additional flora and/or fauna surveys are required prior to works commencing (e.g. targeted surveys for significant flora and fauna species).

1.3 Study Area

The area known as Precinct 15 (the study area) is located adjacent to the suburb of Altona North (Figure 1), and covers approximately 67 hectares. It is bound by the Westgate Freeway to the north; New Street to the east; Blackshaws Road to the south; and, Kyle Road to the west. The precinct also includes the small electrical sub-station to the west of the main precinct (Figure 1, Figure 2).

The site is characterised by open cleared land and an old quarry site, with dumped refuse and building material spread throughout the area. It was determined through aerial photography and subsequent ground truthing that approximately half the precinct supported existing developed industrial land, including a disused quarry and some partially demolished buildings. Therefore, the area subject to detailed field assessment was limited to the vacant land within Precinct 15. The remaining land was visually assessed from vacant areas within the precinct, though not subject to a detailed field assessment, as these areas were devoid of any ecological value (i.e. buildings, asphalt car park).

The study area is currently zoned as Industrial 1 Zone (IN1Z), and is partially covered by a Heritage Overlay (HO166). There are no overlays with ecological implications covering the study area (DTPLI 2014). The surrounding area comprises predominantly residential development.

According to the Department of Environment and Primary Industries' (DEPI) Biodiversity Interactive Map (DEPI 2014a) the study area falls within the Victorian Volcanic Plain bioregion. It is also located within the jurisdiction of the Hobsons Bay Council municipality and the Port Phillip and Westernport Catchment Management Authority (DTPLI 2014).

2 METHODS

2.1 Nomenclature

Common and scientific names of vascular plants follow the Victorian Biodiversity Atlas (VBA) (DEPI 2014b) and the Census of Vascular Plants of Victoria (Walsh and Stajsic 2007). Vegetation community names follow DEPI's Ecological Vegetation Classes (EVC) benchmarks (DEPI 2014c). The names of aquatic and terrestrial vertebrate and invertebrate fauna follow the VBA (DEPI 2014b).

2.2 Desktop Assessment

Relevant literature, online-resources and numerous databases were reviewed to provide an assessment of flora and fauna values associated with the study area. The following information sources were reviewed:

- The DEPI Biodiversity Interactive Map (DEPI 2014a) for:
    - modelled data for location risk, remnant vegetation patches, scattered trees and habitat for rare or threatened species;
    - the extent of historic and current EVCs; and,
    - the location of sites of biological significance (BioSites) within the region.
- The 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;
- The Federal Department of 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 Victorian Department of Transport, Planning and Linear Infrastructure Planning Maps Online to ascertain current zoning and environmental overlays (DTPLI 2014);
- Aerial photography of the study area; and,
- Relevant environmental legislation and policies.

2.3 Site Assessment

A site assessment was undertaken on 4 February, 2010 to obtain information on terrestrial flora and fauna values within the study area. The site was assessed on foot, with all vascular plants recorded and the overall condition of vegetation noted. A subsequent site assessment was undertaken in May 2012, to ascertain whether site conditions had varied since the previous assessment and to update the flora and fauna lists as appropriate (Appendices 2 and 3).

Habitat features including ground cover composition and structure, and the presence of hollows and fallen ground debris was also recorded. The presence of hollows in isolated trees was noted, and any other features likely to be important for fauna.

The significance assessment criteria of taxa and vegetation communities are presented in Appendix 1.

2.4 Permitted Clearing Assessment (the Guidelines)

2.4.1 Risk-based Pathway

The planning system manages the impacts on biodiversity from native vegetation removal using a risk-based approach. Two factors – extent risk and location risk – are used to determine the risk associated with an application for a permit to remove native vegetation (Table 1). The extent risk is determined by the extent of native vegetation (in hectares) or the number of scattered trees that are proposed to be removed. The location risk (A, B or C) has been determined for all areas in Victoria and is available on DEPI's Native Vegetation Information Management (NVIM) Tool (DEPI 2014d). The risk-based pathway is determined by combining the extent risk and the location risk of the vegetation to be removed (Table 1). If the risk-based pathway for vegetation differs to that for scattered trees, the higher of the two must be applied.

Table 1. Risk-based pathways for applications to remove native vegetation (DEPI 2013a)

Extent*		Location		
		A	B	C
Native Vegetation	< 0.5 hectares	Low	Low	High
	≥ 0.5 hectares and < 1 hectare	Low	Moderate	High
	≥ 1 hectare	Moderate	High	High
Scattered Trees	< 15 scattered trees	Low	Moderate	High
	≥ 15 scattered trees	Moderate	High	High

* For the purpose of determining the risk-based pathway of an application to remove native vegetation the extent includes any other native vegetation that was permitted to be removed on the same contiguous parcel of land with the same ownership as the native vegetation to be removed, where the removal occurred in the five year period before an application to remove native vegetation is lodged.

2.4.2 Vegetation Assessment

The 'habitat hectare' is a unit of measurement which combines the condition and extent of native vegetation. The methodology for undertaking a habitat hectare assessment is described in the Vegetation Quality Assessment Manual (DSE 2004) and summarised in Table 2. Native vegetation is defined in the Victoria Planning Provisions as 'plants that are indigenous to Victoria, including trees, shrubs, herbs and grasses'. Under the Biodiversity Assessment Guidelines, native vegetation is classified into two categories, remnant patches of native vegetation and scattered trees (Table 2).

For Low Risk-based pathways:

- the extent (in hectares) of native vegetation is determined by a site assessment; and,

- the condition of native vegetation is based on modelled data (although a proponent may commission on-ground assessments), available on DEPI's NVIM Tool (DEPI 2014d).

For Moderate and High Risk-based pathways:

- extent (in hectares) and condition score are calculated based on a detailed habitat hectare assessment conducted by a qualified ecologist.

Table 2. Assessment of remnant native vegetation under Moderate and High Risk-based pathways (DEPI 2013a)

Category	Definition	Extent	Condition
Remnant patch of native vegetation	An area of native vegetation where at least 25 per cent of the total perennial understorey plant cover is native plants. OR An area with three or more native canopy trees where the canopy foliage cover is at least 20 per cent of the area.	Measured in hectares. Based on hectare area of the remnant patch.	Vegetation Quality Assessment Manual (DSE 2004).
Scattered tree	A native canopy tree that does not form part of a patch.	Measured in hectares. Each scattered tree is assigned an extent of 0.071 hectares (30m diameter).	Scattered trees are assigned a default condition score of 0.2.

2.4.3 Avoid and Minimise

Avoid and minimise requirements are summarised in Table 3.

Table 3. Avoid, minimise and offset requirements

Risk-based Pathway	Avoid	Minimise	Offset
Low	X	X	✓
Moderate	X	✓	✓
High	✓*	✓	✓

*Where native vegetation makes a significant contribution to Victoria's biodiversity

2.4.4 Offset

When the removal of native vegetation has a significant impact on habitat for a rare or threatened species[1], the offset must compensate for the removal of that species' habitat. Offsets are divided into two categories: General and Specific. General offsets are based on the contribution a site makes to biodiversity overall, while Specific offsets consider the contribution a site makes to the persistence of rare or threatened species.

General offsets require an offset multiplier (Risk Factor) of 1.5 with restrictions on location (same Catchment Management Authority boundary or municipal district) and biodiversity value (strategic biodiversity score at least 80% that of the vegetation to be removed). A Specific offset requires an offset multiplier of 2, with no

[1] Only species listed as 'critically endangered', 'endangered', 'vulnerable' or 'rare' on DEPI's advisory lists (DSE 2005; DSE 2013) for flora and fauna are considered a rare or threatened species.

location or biodiversity value restrictions, and must support habitat for each rare or threatened species for which an offset is required (currently designated by DEPI).

2.5 Assessment Qualifications and Limitations

The site assessments were undertaken outside the time which is considered optimal for botanical assessments. Nevertheless, due to the previous land use practices, the vegetation within the study area is highly modified and only a few additional flora species may have been recorded within the study area had surveys been undertaken in optimal conditions.

Terrestrial flora and fauna data collected during the field surveys, and information obtained from relevant sources (e.g. biological databases) were reviewed and considered sufficient to provide an accurate assessment of the ecological values within the study area, to determine the likelihood of significant taxa and communities occurring with the study area, and to broadly determine the potential impacts of the proposed development.

3 RESULTS

3.1 Ecological Vegetation Classes

DEPI modelled (pre-1750) EVC mapping for the region shows that the study area would have predominantly contained Plains Grassland (EVC 132) and Plains Grassland/Plains Grassy Woodland Mosaic (EVC 897) (DEPI 2014a). Extant DEPI mapping shows that no EVCs have been mapped within the study area (DEPI 2014a). No EVCs were identified on the site during the site assessment (Figure 2).

3.1.1 Vegetation Condition

No remnant native vegetation was recorded within the study area during the assessment. The study area comprised highly modified, exotic dominated vegetation. Species recorded included Wild Oat *Avena fatua*, Galenia *Galenia pubescens*, Onion Grass *Romulea rosea*, Flatweed *Hypochoeris radicata*, Ribwort *Plantago lanceolata*, Mallow of Nice *Malva nicaeensis*, Toowoomba Canary-grass *Phalaris aquatica*, Caterpillar Grass *Paspalum distichum,* Twiggy Turnip *Brassica fruticulosa*, Bearded Oat *Avena barbata*, Soft Brome *Bromus hordeaceus*, Hare's Foot Clover *Trifolium arvense*, Black Nightshade *Solanum nigrum*, Willow *Salix* sp., Cape Wattle *Paraserianthes lophantha*, Common Sow Thistle *Sonchus oleraceus* and Bristly Ox-Tongue *Helminthotheca echioides*.

A number of noxious weeds were also present including African Boxthorn *Lycium ferocissimum*, Serrated Tussock *Nassella trichotoma*, Chilean Needle-grass *Nassella neesiana*, Fennel *Foeniculum vulgare*, Horehound *Marrubium vulgare,* Artichoke Thistle *Cynara cardunculus*, Spear Thistle *Cirsium vulgare*, Bathurst Burr *Xanthium spinosum*, Apple of Sodom *Solanum linnaeanum* and Prickly Pear *Opuntia stricta*.

A small area of planted native trees (non-indigenous species) was also present, which included Spotted Gum *Eucalyptus maculata*. Site conditions at the time of the updated assessment (May 2012) demonstrated little change in the flora values of the site, with no additional species recorded.

3.2 Flora

No indigenous flora species were recorded within the study area during the assessment. Forty-three exotic species were recorded during the assessment, including 11 listed noxious weeds (Appendix 2.1).

3.3 Significant Flora Species

No nationally significant flora species were recorded during the current assessment. Significant flora species that have been recorded within a 10 kilometre radius of the study area or their habitats as potentially occurring as derived from respective Commonwealth and State databases are listed in Appendix 2.2.

3.3.1 National

Twelve nationally listed flora species had previously been recorded within 10 km of the study area at the time of the 2012 assessment, as documented on the FIS (Viridans 2013a) and VBA (DEPI 2014b) (Appendix 2.2; Figure 3). An additional two nationally threatened species, not previously documented within the local

area, also had habitat as potentially occurring within the vicinity of the study area at the time of the 2012 assessment (DoE 2014).

Due to the highly modified condition of the area assessed it is highly unlikely that any of these species occur within the study area.

3.3.2 State

Forty-four state significant flora species have previously been previously recorded within 10 km of the study area (Appendix 2.2; Figure 3). None of these species are considered likely to occur due to the highly modified condition of the study area.

3.4 Fauna

A total of 13 fauna species were recorded within the study area, and comprised of two mammals (both introduced) and eleven birds (six native and five introduced) (Appendix 3.1). Native species recorded within the study area included Rainbow Lorikeet *Trichoglossus haematodus,* Australian Magpie *Cracticus tibicen* and Australian Magpie-lark *Grallina cyanoleuca*. Introduced species such as Common Blackbird *Turdus merula*, European Skylark *Alauda arvensis,* European Rabbit *Oryctolagus cuniculus* and European Red Fox *Vulpes vulpes* were also present.

Site conditions at the time of the updated assessment (May 2012) demonstrated little change in the fauna habitat values of the study area, with only two additional species recorded, one of which was a group of Rainbow Lorikeets seen flying over the study area (Appendix 3.1).

3.5 Significant Fauna

No national or state significant fauna species were recorded within the study area during the current assessment. A consolidated list of the significant fauna, their conservation status, and likelihood of occurrence is provided in Appendix 3.2.

3.5.1 National

Twenty-five nationally significant fauna species have previously been recorded on the VFD (Viridans 2013b) and VBA (DEPI 2014b), within 10 km of the study area (Appendix 3.2; Figure 4). Whilst an additional fourteen species, not previously recorded in the local area have been predicted to occur, or have habitat predicted to occur within the local area through the Protected Matters Search Tool (DoE 2014). Previous records include Golden Sun Moth *Synemon plana,* which has been recorded adjacent to the eastern boundary of the study area in 2007 (Figure 4). However, the study area does not support suitable habitat for the species. In addition, none of the remaining species previously recorded, or predicted to occur in the local area (10 km radius; Appendix 3.2) are considered likely to occur due to the highly modified condition of the study area and lack of suitable habitat.

3.5.2 State

A total of 49 state significant fauna species have previously been previously recorded within 10 km of the study area VFD (Viridans 2013b) and VBA (DEPI 2014b). None of these species are considered likely to occur due to the highly modified condition of the study area.

3.6 Fauna Habitats

The study area currently supports modified habitat for common native and exotic fauna species (mainly birds). Fauna habitat quality is low for the entire study area due to the highly modified condition of the site and prevalence of exotic weed species.

Planted Native and Exotic Trees

A small number of planted native trees are present within the study area. Planted vegetation provides a foraging resource for birds, and also provides nesting sites and vantage points for raptors (i.e. Brown Falcon).

Exotic Vegetation

Exotic vegetation dominates the site, and few native species are known to use this habitat, principally birds adapted to modified habitats such as Australian Magpie and Australian Magpie-lark. Brown Falcon would search for prey items (i.e. rabbits) over this habitat. Introduced species (Common Blackbird, European Skylark, European Rabbit and European Red Fox) were also present in this habitat.

3.7 Significant communities

No EPBC Act-listed, or FFG Act-listed ecological communities were recorded within the study area during the assessment.

3.8 Ecological Significance of the Study Area

The significance assessment criteria are presented in Appendix 1.2. The study area is considered to be of negligible conservation significance due to the absence of remnant vegetation, the highly modified condition of the site and prevalence of exotic weeds throughout open areas.

4 PERMITTED CLEARING ASSESSMENT

4.1 Risk-based Pathway

No scattered trees or patches of native vegetation, as defined by the Guidelines (DEPI 2013), were identified within the study area. Therefore, no permitted clearing assessment is warranted.

4.2 Offset Targets

As no native vegetation is present within the study area, there will be no requirement to secure offsets for any development within the study area.

5 POTENTIAL IMPACTS

5.1 Potential Impacts

The study area comprises highly modified, exotic dominated vegetation resulting from past land use activities (i.e. industrial use and development, land clearing).

Potential direct impacts of the proposed development of this site include:

- Loss of planted native (non-indigenous) trees currently used by native fauna species; and,
- Increase of noxious weeds within the study area and surrounds.

5.2 Mitigation Measures

Development of the study area represents opportunities to improve the ecological value of the study area. Measures to mitigate the impacts of the proposed development, and opportunities to improve the ecological values of the study area include:

- Improving habitat for local, indigenous fauna throughout the study area using areas set aside for open space;
- Retain and incorporate any large, non-indigenous trees within areas of open space;
- Any minor losses of planted native vegetation as part of the proposed works could be offset by planting native vegetation within the study area following construction; and
- Prepare a Weed Management Plan, detailing methods to control weeds during pre and post-construction, and to prevent the introduction of new weeds, or further spread of exiting weeds within the study area.

6 LEGISLATIVE AND POLICY IMPLICATIONS

This section identifies biodiversity policy and legislation relevant to the proposed development, principally:

- *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) (Commonwealth);
- *Flora and Fauna Guarantee Act 1988* (FFG Act) (Victoria);
- *Planning and Environment Act 1987* (Victoria);
    - Local Planning Schemes;
    - Victoria's Native Vegetation Permitted Clearing Regulations.
- *Wildlife Act 1975* and Wildlife Regulations 2002 (Victoria); and,
- *Catchment and Land Protection Act 1994* (CALP Act) (Victoria).

6.1 Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)

The EPBC Act establishes a Commonwealth process for the assessment of proposed actions (i.e. project, development, undertaking, activity, or series of activities) that are likely to have a significant impact on matters of national environmental significance (NES), or on Commonwealth land. An action, unless otherwise exempt, requires approval from the Commonwealth Environment Minister if it is considered likely to have an impact on any of the following matters of NES:

- World Heritage properties;
- National heritage places;
- Ramsar wetlands of international significance;
- Threatened species and ecological communities;
- Migratory and marine species;
- Commonwealth marine area;
- Nuclear actions (including uranium mining);
- Great Barrier Reef Marine Park; or,
- Water resources impacted by coal seam gas or mining development.

6.1.1 Ramsar wetlands of international significance

No wetlands of international significance occurring either in the vicinity, or in the catchment of the study area were identified by EPBC Act Protected Matters Search Tool (DoE 2014).

6.1.2 Threatened species and ecological communities

Flora: No species listed under the EPBC Act were recorded during the present assessment. However, 14 species and/or their species habitat are predicted to occur within a 10 kilometre radius of the study area (DoE 2014) or they have been identified from the FIS or VBA (Viridans 2013a; DEPI 2014b). Given the modified condition of the vegetation, it is considered unlikely for any of these species to occur within the study area (Appendix 2.2).

Fauna: No fauna species listed under the EPBC Act were recorded during the present assessment. Twenty-five species listed under the EPBC Act have previously been recorded within 10 km of the study area (Viridans 2013b; DEPI 2014b) and an additional fourteen species have habitat that either occurs or is predicted to occur within 10 km of the study area (DoE 2014). Given the modified condition of the vegetation, it is considered unlikely that any of these species to occur within the study area (Appendix 3.2).

Communities: No ecological communities listed under the EPBC Act were recorded during the present assessment, and none are considered likely to occur on the site.

6.1.3 Migratory and marine species

Several migratory and marine species have been recorded from the local area (Viridans 2013b; DEPI 2014b). However, there is no important wetland or marine habitats within the study area, and therefore the study area is unlikely to support an ecologically significant population of any migratory and/or marine species.

6.1.4 Implications

Given the highly modified nature of vegetation and habitat within the site, future development of the study area is unlikely to impact on any matters of NES. Therefore, an EPBC Act referral to the Commonwealth Environment Minister is not required.

6.2 Flora and Fauna Guarantee Act 1988 (Victoria)

The FFG Act is the primary Victorian legislation providing for the conservation of threatened species and ecological communities, and for the management of processes that are threatening to Victoria's native flora and fauna. The FFG Act contains protection procedures such as the listing of threatened species and/or communities, and the preparation of action statements to protect the long-term viability of these values.

Proponents are required to apply for an FFG Act Permit to 'take' listed and/or protected[2] flora species, listed vegetation communities and listed fish species in areas of public land (i.e. within road reserves, drainage

[2] In addition to 'listed' flora species, the FFG Act identifies 'protected' flora species. This includes any of the Asteraceae (Daisies), all orchids, ferns (excluding *Pteridium esculentum*) and Acacia species (excluding *Acacia dealbata*, *Acacia decurrens*, *Acacia implexa*, *Acacia melanoxylon* and *Acacia paradoxa*), as well as any taxa that may be a component of a listed ecological community. A species may be both listed and protected.

lines and public reserves). An FFG Act permit is generally not required for removal of species or communities on private land, or for the removal of habitat for a listed terrestrial fauna species.

Flora: Twenty-six flora species listed as threatened under the FFG Act have been recorded within a 10 kilometre radius of the study area (Appendix 2.2). It is unlikely that any of these species occur within the study area due to the highly modified nature of the study area.

Fauna: Fifty-five fauna species listed as threatened under the FFG Act have previously been recorded within a 10 km of the study area (Appendix 3.2).

Communities: No remnant native vegetation is present within the study area.

6.2.1 Implications

The study area is privately owned and unlikely to support flora and fauna species and vegetation communities are listed as either threatened or as 'protected flora' under the FFG Act. Accordingly, an FFG Act permit is not required for the proposed development of the study area.

6.3 Planning and Environment Act 1987 (Victoria)

The *Planning and Environment Act 1987* outlines the legislative framework for planning in Victoria and for the development and administration of planning schemes. All planning schemes contain native vegetation provisions at Clause 52.17 which require a planning permit from the relevant local Council to remove, destroy or lop native vegetation on a site of more than 0.4 hectares, unless an exemption under clause 52.17-7 of the Victorian Planning Schemes applies (Appendix 1.5.3) or a subdivision is proposed with lots less than 0.4 hectares[3]. Local planning schemes may contain other provisions in relation to the removal of native vegetation (Section 6.3.1).

Where the clearing of native vegetation is permitted, the quantity and type of vegetation to be offset is determined using methodology specified in the Guidelines (DEPI 2013).

6.3.1 Local Planning Schemes

The study area is located within the Hobsons Bay City Council municipality. The following zoning and overlays apply (DTPLI 2014):

- Industrial 1 Zone (IN1Z); and,
- Heritage Overlay (HO166).

6.3.1.1 Implications

The current proposal does not require a permit to remove, destroy or lop vegetation as no native vegetation or scattered indigenous flora species exist within the study area.

[3] In accordance with the Victorian Civil and Administrative Tribunal's (VCAT) decision Villawood v Greater Bendigo CC (2005) VCAT 2703 (20 December 2005) all native vegetation is considered lost where proposed lots are less than 0.4 hectares in area and must be offset at the time of subdivision.

6.3.2 The Guidelines

In December 2013 the Victorian Government integrated the 'Permitted clearing of native vegetation - Biodiversity assessment guidelines' (the Guidelines) (DEPI 2013a) into the Victorian Planning Provisions, replacing the *Victoria's Native Vegetation Management – A Framework for Action* (The Framework) (NRE 2002). The primary objective of the regulations is "no net loss in the contribution made by native vegetation to Victoria's biodiversity". The State Planning Policy Framework and the decision guidelines at Clause 52.17 (Native Vegetation) of Particular Provisions and Clause 12.01 require Planning and Responsible Authorities to have regard for the Biodiversity Assessment Guidelines.

In addition, a permit must be referred to DEPI if vegetation removal meets one or more of the below thresholds (Table 4).

Table 4. Permit to remove native vegetation – application referral triggers (Clause 66, Referral and Notice Provisions)

Native Vegetation	• Remove, destroy or lop native vegetation where the area to be cleared is 0.5 hectares or more
	• Remove, destroy or lop native vegetation which is to be considered under the High Risk-based pathway
Other Circumstances	• Remove, destroy or lop native vegetation if a property vegetation plan applies to the site
	• Remove, destroy or lop native vegetation on Crown land which is occupied or managed by the responsible authority (DEPI)

6.3.2.1 Implications

No native vegetation, as defined by the Guidelines, was identified within the study area. Therefore, no permitted clearing assessment is warranted.

6.4 Wildlife Act 1975 and Wildlife Regulations 2002 (Victoria)

The *Wildlife Act 1975* (and associated Wildlife Regulations 2002) is the primary legislation in Victoria providing for protection and management of wildlife. The Act requires people engaged in wildlife research (e.g. fauna surveys, salvage and translocation activities) to obtain a permit under the Act to ensure that these activities are undertaken in a manner consistent with the appropriate controls.

The *Wildlife Act 1975* has the following objectives:

- To establish procedures for the promotion of protection and conservation of wildlife, the prevention of species extinctions, and the sustainable use and access to wildlife; and,
- To prohibit and regulate the conduct of those involved in wildlife related activities.

6.4.1 Implications

Authorisation for habitat removal may be obtained under the *Wildlife Act 1975* through a licence granted under the *Forests Act 1958*, or under any other Act such as the *Planning and Environment Act 1987*. Any persons engaged to remove, salvage, hold or relocate native fauna during construction must hold a current Management Authorisation under the *Wildlife Act 1975*.

If fauna habitat, such as trees, is being removed, a zoologist is generally required to be present during removal to salvage any native wildlife.

6.5 Catchment and Land Protection Act 1994 (Victoria)

The *Catchment and Land Protection Act 1994* (CaLP Act) contains provisions relating to catchment planning, land management, noxious weeds and pest animals. The Act also provides a legislative framework for the management of private and public land and sets out the responsibilities of land managers, stating that they must take all reasonable steps to:

- Avoid causing or contributing to land degradation which causes or may cause damage to land of another land owner;
- Protect water resources;
- Conserve soil;
- Eradicate regionally prohibited weeds;
- Prevent the growth and spread of regionally controlled weeds; and,
- Prevent the spread of, and as far as possible eradicate, established pest animals.

6.5.1 Implications

Eight weeds listed as noxious under the CaLP Act were recorded during the assessment (Spear Thistle *Cirsium vulgare*, Fennel *Foeniculum vulgare*, African Boxthorn *Lycium ferocissimum*, Chilean Needle-grass *Nassella neesiana*, Serrated Tussock *Nassella trichotoma*, Prickly Pear *Opuntia stricta*, Sweet Briar *Rosa rubiginosa*, Apple of Sodom *Solanum linnaeanum*) (Appendix 2.1). Landowners are responsible for the control of any infestation of noxious weeds and pest fauna species. To meet CaLP Act requirements listed noxious weeds should be appropriately controlled throughout the study area to minimise their spread and impact on ecological values. A Weed Management Plan should be prepared and incorporated into a Construction Environmental Management Plan. A pest fauna eradication plan may also be required.

6.6 Hobsons Bay City Council – Local Law 48 (2)

Local Law 48 (2) states:

> *A person must not without a permit destroy or remove any tree that has a trunk diameter greater than 45 centimetres measured 1.5 metres above ground level.*

6.6.1 Implications

The approval of a Planning Permit will cover any obligations under Local Law 48 (2).

7 CONCLUSION

The study area is considered to be of low conservation significance due to the absence of remnant vegetation, the highly modified condition of the site and prevalence of exotic weeds throughout open areas. The development of the study area will not impact on any matters of national environmental significance and an EPBC Act referral to the Commonwealth Environment Minister is not required. A protected flora licence or permit under FFG Act is not required as the study area does not include public land. A planning permit is not required for the removal of exotic or planted native vegetation.

A Permitted Clearing assessment was not undertaken, as no remnant native vegetation is present within the study area. No further flora or fauna surveys are required within the study area, due to the highly modified condition of the site and current industrial use.

Any tree that has a trunk diameter of 45 centimetres measured at 1.5 metres above ground level will require a permit for removal. However, where possible, these trees should be retained within open space areas of the precinct to increase public amenity, and provide habitat connectivity for local fauna.

The precinct is surrounded by urban development and is isolated in the context of the local area. In addition, the study area does not support any habitat characteristics for threatened flora and/or fauna species, thus targeted surveys are not warranted prior to future development of the precinct.

A Weed Management Plan should be prepared, and incorporated into a Construction Environmental Management Plan to control noxious weeds within the study area during pre-construction and post-construction within the precinct to minimise their spread to surrounding areas and meet requirements under the CaLP Act.

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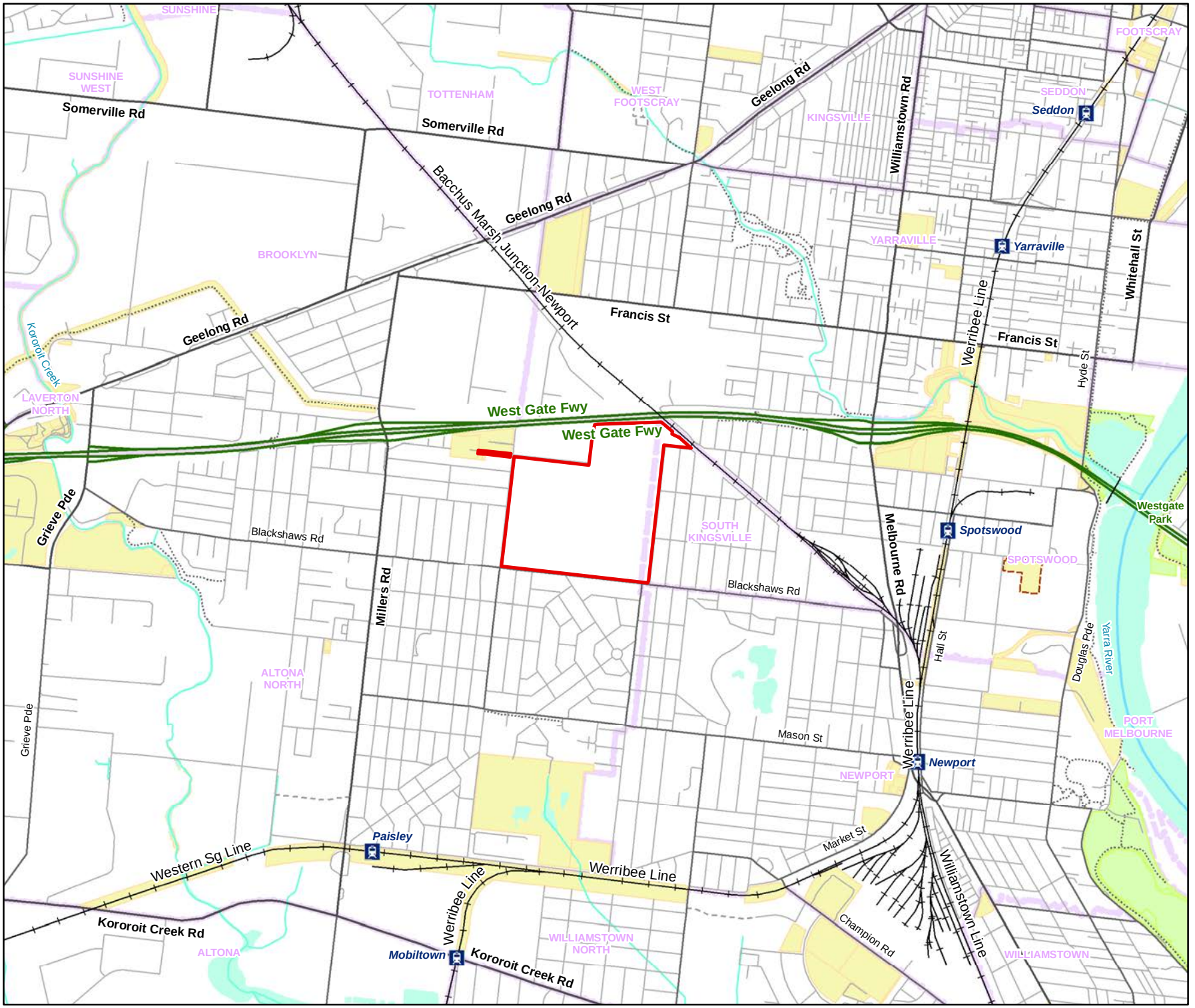
FIGURES



Legend

- Study Area
- Freeway
- Major Road
- Collector Road
- Minor Road
- Proposed Road
- Walking Track
- Minor Watercourse
- Major Watercourse
- Permanent Waterbody
- Land Subject to Inundation
- Wetland/Swamp
- Parks and Reserves
- Crown Land
- Localities

Figure 1

Location of the study area

Precint 15-Blackshaws Road, Altona North

N

0 300 600

Metres

ecology & heritage partners

Study Area

Area Assessed

N

0 50 100 200

Metres

Figure 2
Study Area

ecologypartners

EP Map #: 1899 Figure 1
Issue Date: 09/03/2010

P:\1800\1899\Mapping\MXDs\1899_Fig02_SiteLayout_09Mar10.mxd

- Arching Flax-lily
- Basalt Podolepis
- Brown Beetle-grass
- Coast Fescue
- Coast Hollyhock
- Coast Saltwort
- Creeping Rush
- Cup Wattle
- Grey Mangrove
- Hairy Tails
- Marsh Saltbush
- Matted Flax-lily
- Pale Swamp Everlasting
- Pale-flower Crane's-bill
- Prickly Arrowgrass
- Rye Beetle-grass
- Salt Lawrencia
- Sand Brome
- Small Burr-grass
- Small Milkwort
- Spiny Rice-flower
- Sunshine Diuris
- Tasman Grass-wrack
- Tough Scurf-pea
- Yellow Burr-daisy
- Study Area

Figure 3

Previously documented significant flora within 5km of the study area

Precinct 15-Blackshaws Road, Altona North

0 0.75 1.5

Kilometres

N

ecology & heritage partners

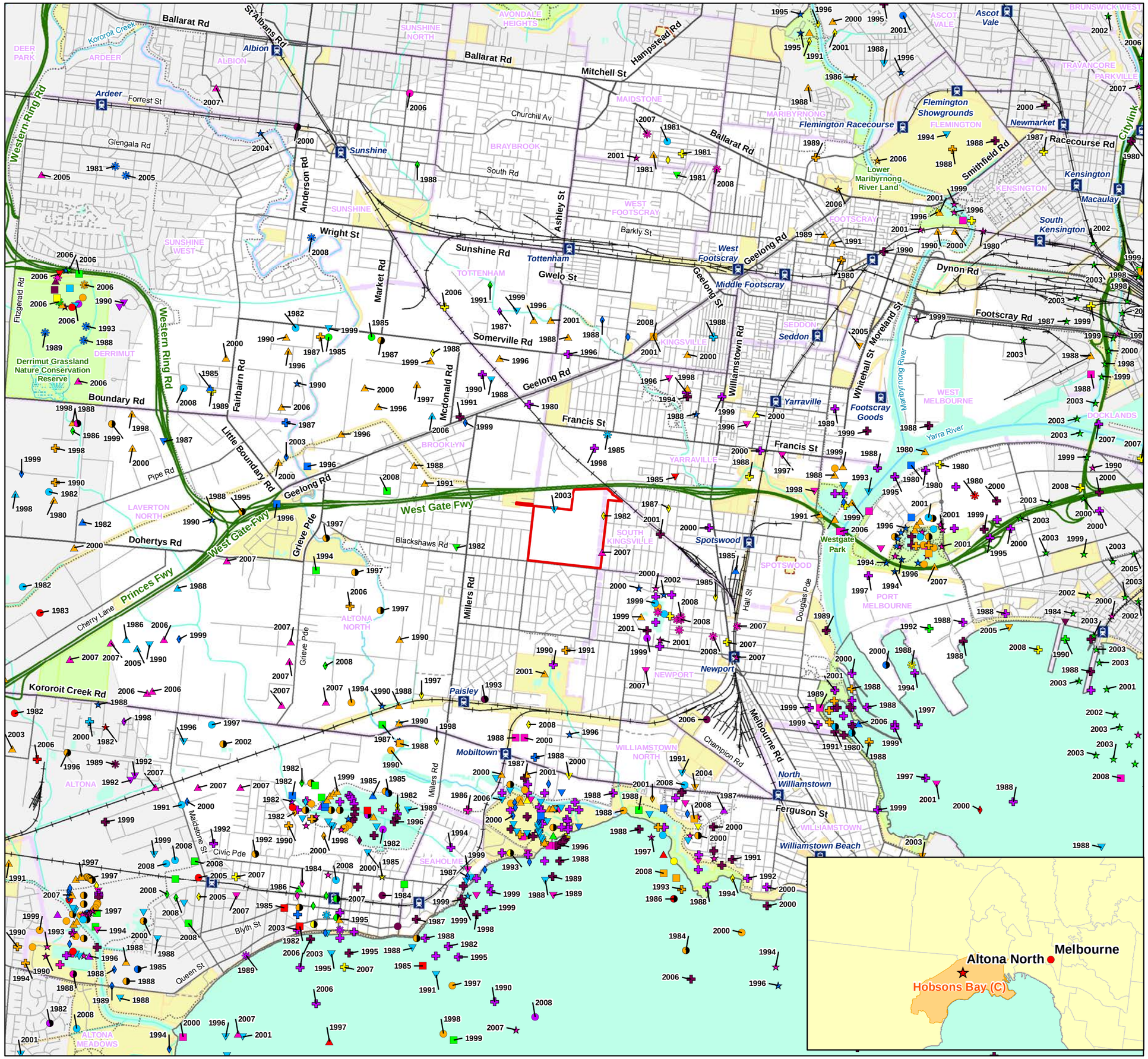


Figure 4

Previously documented significant fauna within 5km of the study area

Precinct 15-Blackshaws Road, Altona North

N

0 0.75 1.5

Kilometres

ecology & heritage partners

APPENDICES

APPENDIX 1

Appendix 1.1 – Rare or Threatened Categories for Listed Victorian Taxa

Table A1.1. Rare or Threatened categories for listed Victorian taxa.

Rare or Threatened Categories
Conservation Status in Australia (Based on the EPBC Act 1999)
EX - Extinct: Extinct is when there is no reasonable doubt that the last individual of the species has died.
CR - Critically Endangered: A species is critically endangered when it is facing an extremely high risk of extinction in the wild in the immediate future.
EN - Endangered: A species is endangered when it is not critically endangered but is facing a very high risk of extinction in the wild in the near future.
VU - Vulnerable: A species is vulnerable when it is not critically endangered or endangered but is facing a high risk of extinction in the wild in the medium-term future.
R* - Rare: A species is rare but overall is not currently considered critically endangered, endangered or vulnerable.
K* - Poorly Known: A species is suspected, but not definitely known, to belong to any of the categories extinct, critically endangered, endangered, vulnerable or rare.
Conservation Status in Victoria (Based on DSE 2005, DSE 2009, DSE 2013)
x - Presumed Extinct in Victoria: not recorded from Victoria during the past 50 years despite field searches specifically for the plant, or, alternatively, intensive field searches (since 1950) at all previously known sites have failed to record the plant.
e - Endangered in Victoria: at risk of disappearing from the wild state if present land use and other causal factors continue to operate.
v - Vulnerable in Victoria: not presently endangered but likely to become so soon due to continued depletion; occurring mainly on sites likely to experience changes in land-use which would threaten the survival of the plant in the wild; or, taxa whose total population is so small that the likelihood of recovery from disturbance, including localised natural events such as drought, fire or landslip, is doubtful.
r - Rare in Victoria: rare but not considered otherwise threatened - there are relatively few known populations or the taxon is restricted to a relatively small area.
k - Poorly Known in Victoria: poorly known and suspected, but not definitely known, to belong to one of the above categories (x, e, v or r) within Victoria. At present, accurate distribution information is inadequate.

Appendix 1.2 – Defining Ecological Significance

Table A1.2. Criteria for defining Ecological Significance ratings for significant flora, fauna and communities.

National Significance
Flora: National conservation status is based on the EPBC Act list of taxa considered threatened in Australia (i.e. extinct, critically endangered, endangered, vulnerable).
Fauna: National conservation status is based on the EPBC Act list of taxa considered threatened in Australia (i.e. Extinct, Critically Endangered, Endangered, Vulnerable). Fauna listed as Extinct, Critically Endangered, Endangered, Vulnerable, or Rare under National Action Plans for terrestrial taxon prepared for DoE: threatened marsupials and monotremes (Maxwell et al. 1996), rodents (Lee 1995), bats (Duncan et al. 1999), birds (Garnett and Crowley 2000), reptiles (Cogger et al. 1993), amphibians (Tyler 1997) and butterflies (Sands and New 2002).
Communities: Vegetation communities considered critically endangered, endangered or vulnerable under the EPBC Act and considering vegetation condition.
State Significance
Flora: Threatened taxa listed under the provisions of the FFG Act. Flora listed in the State Government's Advisory List of Rare or Threatened Plants in Victoria (DSE 2005).
Fauna: Threatened taxon listed under Schedule 2 of the FFG Act. Fauna listed as Extinct, Critically Endangered, Endangered and Vulnerable on the State Government's Advisory List of Threatened Vertebrate Fauna in Victoria (DSE 2013). Listed as Lower Risk (Near Threatened, Conservation Dependent or Least concern) or Data Deficient under National Action Plans for terrestrial species prepared for the DoE: threatened marsupials and monotremes (Maxwell et al. 1996), rodents (Lee 1995), bats (Duncan et al. 1999), birds (Garnett and Crowley 2000), reptiles (Cogger et al. 1993), amphibians (Tyler 1997) and butterflies (Sands and New 2002).
Communities: Ecological communities listed as threatened under the FFG Act. EVC listed as threatened (i.e. endangered, vulnerable) or rare in a Native Vegetation Plan for a particular bioregion (DSE 2013c) and considering vegetation condition.
Regional Significance
Fauna: Fauna with a disjunct distribution, or a small number of documented recorded or naturally rare in the particular Bioregion in which the study area is located. A particular taxon that is has an unusual ecological or biogeographical occurrence or listed as Lower Risk – Near Threatened, Data Deficient or Insufficiently Known on the State Government's Advisory List of Threatened Vertebrate Fauna in Victoria (DSE 2013).
Communities: EVC listed as depleted or least concern in a Native Vegetation Plan for a particular bioregion (DSE 2013c) and considering vegetation condition. EVC considered rare by the author for a particular bioregion.
Local Significance
Local significance is defined as flora, fauna and ecological communities indigenous to a particular area, which are not considered rare or threatened on a national, state or regional level.

Appendix 1.3 – Defining Site Significance

Table A1.3. Criteria for defining Site Significance ratings.

National Significance
A site is of National significance if: • It regularly supports, or has a high probability of regularly supporting individuals of a taxon listed as 'Critically Endangered' or 'Endangered' under the EPBC Act and/or under National Action Plans for terrestrial taxon prepared for the DoE. • It regularly supports, or has a high probability of supporting, an 'important population' as defined under the EPBC Act of one or more nationally 'vulnerable' flora and fauna taxon. • It is known to support, or has a high probability of supporting taxon listed as 'Vulnerable' under National Action Plans. • It is known to regularly support a large proportion (i.e. greater than 1%) of a population of a taxon listed as 'Conservation Dependent' under the EPBC Act and/or listed as Rare or Lower Risk (near threatened, conservation dependent or least concern) under National Action Plans. • It contains an area, or part thereof designated as 'critical habitat' under the EPBC Act, or if the site is listed under the Register of National Estate compiled by the Australian Heritage Commission. • It is a site which forms part of, or is connected to a larger area(s) of remnant native vegetation or habitat of national conservation significance such as most National Park, and/or a Ramsar Wetland(s).
State Significance
A site is of State significance if: • It occasionally (i.e. every 1 to 5 years) supports, or has suitable habitat to support taxon listed as 'Critically Endangered' or 'Endangered' under the EPBC Act and/or under National Action Plans. • It regularly supports, or has a high probability of regularly supporting (i.e. high habitat quality) taxon listed as 'Vulnerable', 'Near threatened', 'Data Deficient' or 'Insufficiently Known' in Victoria (DSE 2005, 2013), or species listed as 'Data Deficient' or 'Insufficiently Known' under National Action Plans. • It contains an area, or part thereof designated as 'critical habitat' under the FFG Act. • It supports, or likely to support a high proportion of any Victorian flora and fauna taxa. • It contains high quality, intact vegetation/habitat supporting a high species richness and diversity in a particular bioregion. • It is a site which forms part of, or connected to a larger area(s) of remnant native vegetation or habitat of state conservation significance such as most State Parks and/or Flora and Fauna Reserves.
Regional Significance
A site is of Regional significance if: • It regularly supports, or has a high probability of regularly supporting regionally significant fauna as defined in Table 1.2. • Is contains a large population (i.e. greater than 1% or 5%) of flora considered rare in any regional native vegetation plan for a particular bioregion. • It supports a fauna population with a disjunct distribution, or a particular taxon that has an unusual ecological or biogeographical occurrence. • It is a site which forms part of, or is connected to a larger area(s) of remnant native vegetation or habitat of regional conservation significance such as most Regional Parks and/or Flora and Fauna Reserves.
Local Significance
Most sites are considered to be of at least local significant for conservation, and in general a site of local significance can be defined as: • An area which supports indigenous flora species and/or a remnant EVC, and habitats used by locally significant fauna species. • An area which currently acts, or has the potential to act as a wildlife corridor linking other areas of higher conservation significance and facilitating fauna movement throughout the landscape.

Appendix 1.4 – Vegetation Condition and Habitat Quality

Table A1.4.1 Defining Vegetation Condition ratings.

Criteria for defining Vegetation Condition
High Quality: Vegetation dominated by a diversity of indigenous species, with defined structures (where appropriate), such as canopy layer, shrub layer, and ground cover, with little or few introduced species present.
Moderate Quality: Vegetation dominated by a diversity of indigenous species, but is lacking some structures, such as canopy layer, shrub layer or ground cover, and/or there is a greater level of introduced flora species present.
Low Quality: Vegetation dominated by introduced species, but supports low levels of indigenous species present, in the canopy, shrub layer or ground cover.

Table A1.4.2 Defining Habitat Quality.

Criteria for defining Habitat Quality
High Quality: • High degree of intactness (i.e. floristically and structurally diverse), containing several important habitat features such as ground debris (logs, rocks, vegetation), mature hollow-bearing trees, and a dense understorey component. • High species richness and diversity (i.e. represented by a large number of species from a range of fauna groups). • High level of foraging and breeding activity, with the site regularly used by native fauna for refuge and cover. • Habitat that has experienced, or is experiencing low levels of disturbance and/or threatening processes (i.e. weed invasion, introduced animals, soil erosion, salinity). • High contribution to a wildlife corridor, and/or connected to a larger area(s) of high quality habitat. • Provides known, or likely habitat for one or more rare or threatened species listed under the EPBC Act, FFG Act, or species considered rare or threatened according to DSE 2005; 2009 or 2013.
Moderate Quality: • Moderate degree of intactness, containing one or more important habitat features such as ground debris (logs, rocks, vegetation), mature hollow-bearing trees, and a dense understorey component. • Moderate species richness and diversity - represented by a moderate number of species from a range of fauna groups. • Moderate levels of foraging and breeding activity, with the site used by native fauna for refuge and cover. • Habitat that has experienced, or is experiencing moderate levels of disturbance and/or threatening processes. • Moderate contribution to a wildlife corridor, or is connected to area(s) of moderate quality habitat. • Provides potential habitat for a small number of threatened species listed under the EPBC Act, FFG Act, or species considered rare or threatened according to DSE 2005; 2009 or 2013.
Low Quality: • Low degree of intactness, containing few important habitat features such as ground debris (logs, rocks, vegetation), mature hollow-bearing trees, and a dense understorey component. • Low species richness and diversity (i.e. represented by a small number of species from a range of fauna groups). • Low levels of foraging and breeding activity, with the site used by native fauna for refuge and cover. • Habitat that has experienced, or is experiencing high levels of disturbance and/or threatening processes. • Unlikely to form part of a wildlife corridor, and is not connected to another area(s) of habitat. • Unlikely to provide habitat for rare or threatened species listed under the EPBC Act, FFG Act, or considered rare or threatened according to DSE 2005; 2009 or 2013.

Appendix 1.5 – Offsets and Exemptions

Table A1.5.1. Calculation of Biodiversity Equivalence Scores and General or Specific Offsets (DEPI 2013a)

Pathway	Biodiversity Assessment Tools	Information Source
Low Risk-based pathway	Condition Score	Modelled data, NVIM Tool (DEPI 2014d)
	Habitat Hectares	= Condition Score x Extent (ha)
	Strategic Biodiversity Score	Modelled data, NVIM Tool (DEPI 2014d)
	General Biodiversity Equivalence Score	= Habitat Hectares x Strategic Biodiversity Score
Moderate or High Risk-based pathway	Condition Score	Habitat hectare assessment
	Habitat Hectares	= Condition Score x Extent (ha)
	Strategic Biodiversity Score and Habitat Importance Score	Modelled data, determined by DEPI
	Specific Biodiversity Equivalence Score **(A)**	= Habitat Hectares x Habitat Importance Score
	Sum of Specific Biodiversity Equivalence Scores of remaining habitat **(B)**	Data gathered during the site assessment is provided to DEPI for analysis and a resulting assessment offset report is provided by the Department.
	Specific Offset Threshold **(C)**	
	General/Specific Threshold Test: If **A ÷ B > C** a **Specific** offset is required If **A ÷ B < C** a **General** offset required	

Table A1.5.2. Summary of offset requirements (DEPI 2013a)

Risk –based Pathway	Offset Type	Offset Amount (Risk adjusted biodiversity equivalence score)	Offset Attributes		
			Habitat for Species	Vicinity	Strategic Biodiversity Score
Low Risk	General offset	1.5 times the general biodiversity equivalence score of the native vegetation to be removed.	No restrictions	In the same Catchment Management Authority or Local Government Area boundary as the native vegetation to be removed.	At least 80 per cent of the strategic biodiversity score of the native vegetation to be removed.
Moderate or High Risk	General offset	1.5 times the general biodiversity equivalence score of the native vegetation to be removed.	No restrictions	In the same Catchment Management Authority or Local Government Area boundary as the native vegetation to be removed.	At least 80 per cent of the strategic biodiversity score of the native vegetation to be removed.
Moderate or High Risk	Specific offset	For each species impacted, 2 times the specific biodiversity equivalence score of the native vegetation to be removed.	Likely habitat for each rare or threatened species that a specific offset is required for, according to the specific-general offset test.	No restrictions	No restrictions

Table A1.5.3. Permit exemptions (from *Victorian Planning Provisions* Clause 52.17 -7)

No permit is required to remove, destroy or lop native vegetation to the minimum extent necessary if any of the following apply:	
Property size	A permit is not required for removal of native vegetation if the native vegetation is on land which, together with all contiguous land in one ownership, has an area of less than 0.4 hectares. This exemption does not apply to native vegetation within a road reservation, or where a subdivision is proposed with lots less than 0.4 hectares[4].
Lopping or pruning	Generally, minor lopping or pruning of up to a third of the foliage (not including the trunk) that does not affect the continued health of the tree does not require a permit or attract an offset requirement.
Regrowth	A permit is not generally not required for removal of native vegetation that is For regrowth which has naturally established or regenerated on land lawfully cleared of naturally established native vegetation and is: a) Less than 10 years old; or, b) Bracken (*Pteridium esculentum*); or, c) Less than ten years old at the time of a Property Vegetation Plan being signed by the Secretary of the Department of Sustainability and Environment (as constituted under Part 2 of the *Conservation, Forest and Lands Act 1987*), and is shown on that Plan as being 'certified regrowth', and is on land that is to be used or maintained for cultivation or pasture during the term of that Plan; or, d) Within the boundary of a timber production plantation, as indicated on a Plantation Development Notice or other documented record, and has established after the plantation. This exemption does not apply to land on which native vegetation has been cleared or otherwise destroyed or damaged as a result of flood, fire or other natural disaster.
Weeds	A permit is not required for removal of native vegetation to enable the removal or destruction of a weed listed in the schedule to the clause. The maximum extent of native vegetation removed, destroyed or lopped under this exemption on contiguous land in the same ownership in a five year period must not exceed any of the following: a) 1 hectare of native vegetation which does not include a tree; or, b) 15 native trees if each tree has a DBH of less than 20.
Planted vegetation	The removal of planted trees does not require a permit or attract an offset requirement, except if public funding was provided to assist in planting or managing the native vegetation and the terms of the funding did not anticipate removal or harvesting of the vegetation.
Other	Numerous additional exemptions apply to works relating to approvals granted prior to 15 September 2008, fencing, mowing, stone exploration / extraction, utility maintenance, crown land, emergency works, works in Farming Zone and Rural Activity Zone, fire protection, geothermal energy exploration, grazing, greenhouse gas sequestration, harvesting timber, mineral exploration / extraction, pest animal burrow removal, road safety, stock movement on roads and surveying. See Clause 52.17 -6 for details.

[4] In accordance with the Victorian Civil and Administrative Tribunal's (VCAT) decision Villawood v Greater Bendigo CC (2005) VCAT 2703 (20 December 2005) all native vegetation is considered lost where proposed lots are less than 0.4 hectares in area and must be offset at the time of subdivision.

APPENDIX 2 - FLORA

Appendix 2.1 – Flora Results

Table A2.1. Flora recorded within the study area.

Scientific Name	Common Name
Acetosella vulgaris	Sheep Sorrel
Agrostis capillaris	Brown-top Bent
Aira spp.	Hair-grass
Arctotheca calendula	Cape Weed
Avena barbata	Bearded Oat
Briza minor	Lesser Quaking-grass
Briza maxima	Large Quaking-grass
Brassica fruticulosa	Twiggy Turnip
Bromus diandrus	Great Brome
Bromus hordeaceus	Soft Brome
* *Cirsium vulgare*	Spear Thistle
#^ *Corymbia maculata*	Spotted Gum
Cynara cardunculus	Artichoke Thistle
Cynodon dactylon	Couch
Dactylis glomerata	Cocksfoot
Ehrharta longifolia	Annual Veldt Grass
^*Eucalyptus spp.*	Eucalypt species
Eucalyptus maculata	Spotted Gum
* *Foeniculum vulgare*	Fennel
Helminthotheca echioides	Bristly Ox-tongue
Holcus lanatus	Yorkshire Fog
Hordeum sp.	Barley-grass
Hypochoeris radicata	Flatweed
Leontodon taraxacoides subsp. *taraxacoides*	Hairy Hawkbit
Lolium perenne	Perennial Rye-grass
* *Lycium ferocissimum*	African Boxthorn
Marrubium vulgare	Horehound
Medicago polymorpha	Burr Medic
Modiola caroliniana	Red-flower Mallow

Scientific Name	Common Name
W Nassella neesiana*	Chilean Needle-grass
W Nassella trichotoma*	Serrated Tussock
** Opuntia stricta*	Prickly Pear
Paraserianthes lophantha	Cape Wattle
Paspalum distichum	Caterpillar Grass
Phalaris aquatica	Toowoomba Canary-grass
Pinus radiata	Monterey Pine
Romulea rosea	Onion Grass
Rumex sp.	Dock
** Rosa rubiginosa*	Sweet Briar
Salix sp.	Willow
** Solanum linnaeanum*	Apple of Sodom
Solanum nigrum	Black Nightshade
Sonchus oleraceus	Common Sow-thistle
Sporobolus africanus	Rat-tail Grass
Trifolium arvense	Hare's Foot Clover
Trifolium subterraneum	Subterranean Clover
Vulpia bromoides	Squirrel-tail Fescue

Notes:

W **-** Listed as a Weed of National Significance (WONS)

* - Listed as a noxious weed under the Catchment and Land Protection (CaLP) Act 1994
# - The species is native to Victoria but is growing outside of its natural range.
^ - Planted native vegetation (Shelter Belts)

Appendix 2.2 – Significant Flora Species

Table A2.2 Significant flora recorded within 10 kilometres of the study area

Key:

X	Extinct
e	Endangered
v	Vulnerable
r	Rare
k	Poorly Known
L	Listed
EX	Extinct
CR	Critically endangered
EN	Endangered
VU	Vulnerable
K	Poorly Known (Briggs and Leigh 1996)
#	Records identified from EPBC Act Protected Matters Search Tool.
*	Records identified from the FIS

EPBC	Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)
FFG	Flora and Fauna Guarantee Act 1988 (FFG Act)
DSE	Advisory List of Threatened Flora in Victoria (DSE 2005)
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.

Scientific Name	Common Name	Last Documented Record	Total # Documented Records	EPBC	FFG	DEPI	Likely Occurrence within Study Area
NATIONAL SIGNIFICANCE							
#*Amphibromus fluitans*	River Swamp Wallaby-grass	1991	2	VU	X	-	5
#*Carex tasmanica*	Curly Sedge	-	-	VU	L	v	5
Dianella amoena	Matted Flax-lily	2001	24	EN	L	e	5
#*Diuris basaltica*	Small Golden Moths	1996	10	EN	L	v	5
#*Diuris fragrantissima*	Sunshine Diuris	2006	23	EN	L	e	5
#*Glycine latrobeana*	Clover Glycine	2006	4	VU	L	v	5
Lepidium aschersonii	Spiny Peppercress	1883	2	VU	L	e	5
Lepidium hyssopifolium	Basalt Peppercress	1850	2	EN	L	e	5
#*Pimelea spinescens* subsp. *spinescens*	Spiny Rice-flower	2008	48	CR	L	e	5
#*Prasophyllum frenchii*	Marron Leek-orchid	-	-	EN	L	e	5
Prasophyllum suaveolens	Fragrant Leek-orchid	1962	13	EN	L	e	5
#*Rutidosis leptorhynchoides*	Button Wrinklewort	2006	12	EN	L	e	5
#*Senecio macrocarpus*	Large-headed Fireweed	1902	2	VU	L	e	5
Thesium australe	Austral Toad-flax	1906	2	VU	L	v	5
STATE SIGNIFICANCE							
Acacia cupularis	Cup Wattle	2002	2	-	-	r	5
Allocasuarina luehmannii	Buloke	1981	1	-	L	-	5
Amphibromus pithogastrus	Plump Swamp Wallaby-grass	1991	1	-	L	e	5
Asplenium obtusatum subsp. *northlandicum*	Shore Spleenwort	1996	1	-	-	v	5
Atriplex paludosa subsp. paludosa	Marsh Saltbush	1996	11	-	-	r	5
Austrofestuca littoralis	Coast Fescue	1987	1	-	-	r	5
Avicennia marina subsp. *australasica*	Grey Mangrove	2001	14	-	-	r	5

Scientific Name	Common Name	Last Documented Record	Total # Documented Records	EPBC	FFG	DEPI	Likely Occurrence within Study Area
Bromus arenarius	Sand Brome	1984	1	-	-	r	5
Calotis lappulacea	Yellow Burr-daisy	1985	1	-	-	r	5
Cladium procerum	Leafy Twig-sedge	1853	1	-	-	r	5
Comesperma polygaloides	Small Milkwort	2002	22	-	L	v	5
Corymbia maculata	Spotted Gum	2006	3	-	-	v	5
Cullen parvum	Small Scurf-pea	2004	1	-	L	e	5
Cullen tenax	Tough Scurf-pea	1996	10	-	L	e	5
Dianella sp. aff. *longifolia* (Benambra)	Arching Flax-lily	2006	6	-	-	v	5
Diuris behrii	Golden Cowslips	1900	1	-	-	v	5
Diuris palustris	Swamp Diuris	1934	7	-	L	v	5
Diuris X *fastidiosa*	Proud Diuris	1926	1	-	-	e	5
Eucalyptus leucoxylon subsp. *megalocarpa*	Large-fruit Yellow-gum	1996	1	-	L	e	5
Euphrasia scabra	Rough Eyebright	1850	1	-	L	e	5
Geranium solanderi var. *solanderi* s.s.	Austral Crane's-bill	2005	1	-	-	v	5
Geranium sp. 3	Pale-flower Crane's-bill	2006	6	-	-	r	5
Helichrysum aff. *rutidolepis* (Lowland Swamps)	Pale Swamp Everlasting	2008	16	-	-	v	5
Heterozostera tasmanica	Tasman Grass-wrack	2007	7	-	-	r	5
Juncus revolutus	Creeping Rush	1996	15	-	-	r	5
Lawrencia spicata	Salt Lawrencia	2007	10	-	-	r	5
Leptochloa fusca subsp. *fusca*	Brown Beetle-grass	1987	2	-	-	r	5
Leptorhynchos elongatus	Lanky Buttons	1852	1	-	-	e	5
Malva preissiana s.s. (white-flowered coastal form)	Coast Hollyhock	2007	1	-	-	v	5

Scientific Name	Common Name	Last Documented Record	Total # Documented Records	EPBC	FFG	DEPI	Likely Occurrence within Study Area
Melaleuca armillaris subsp. *armillaris*	Giant Honey-myrtle	2007	4	-	-	r	5
Nicotiana suaveolens	Austral Tobacco	1770	1	-	-	r	5
Pimelea spinescens	Spiny Rice-flower	2006	40	-	L	e	5
Podolepis sp. 1	Basalt Podolepis	2006	4	-	-	e	5
Pterostylis pedoglossa	Prawn Greenhood	1932	1	-	-	v	5
Pterostylis truncata	Brittle Greenhood	1928	2	-	L	e	5
Ptilotus erubescens	Hairy Tails	1987	1	-	L	-	5
Salsola tragus subsp. pontica	Coast Saltwort	1987	5	-	-	r	5
Senecio campylocarpus	Floodplain Fireweed	1905	1	-	-	r	5
Senecio cunninghamii var. *cunninghamii*	Branching Groundsel	1770	1	-	-	r	5
Thelymitra gregaria	Basalt Sun-orchid	1929	1	-	L	e	5
Tragus australianus	Small Burr-grass	1992	1	-	-	r	5
Triglochin minutissima	Tiny Arrowgrass	1942	1	-	-	r	5
Triglochin mucronata	Prickly Arrowgrass	1987	4	-	-	r	5
Tripogon loliiformis	Rye Beetle-grass	2006	26	-	-	r	5

Data source: Victorian Biodiversity Atlas (DEPI 2014b); Flora Information System (Viridans 2013a); Protected Matters Search Tool (DoE 2014).

Taxonomic order: Alphabetical.

APPENDIX 3 - FAUNA

Appendix 3.1 – Fauna Results

Table A3.1. Fauna recorded within the study area, and previously recorded within 10 kilometres of the study area.

Key:

H	Heard	Mi	Migratory
S	Seen	Ma	Marine
I	Incidental (feathers, bones, scats etc)	*	Introduced species
T	Trapped / handheld		

Common name	Scientific name	Last documented record	Total # of documented records	Hollow use	Mi/ Ma	Present survey
	MAMMALS					
Platypus	*Ornithorhynchus anatinus*	2006	10	-	-	-
Short-beaked Echidna	*Tachyglossus aculeatus*	2008	13	-	-	-
Eastern Quoll	*Dasyurus viverrinus*	1901	1	-	-	-
Fat-tailed Dunnart	*Sminthopsis crassicaudata*	2006	14	-	-	-
Koala	*Phascolarctos cinereus*	2006	7	-	-	-
Long-nosed Bandicoot	*Perameles nasuta*	1963	1	-	-	-
Common Brushtail Possum	*Trichosurus vulpecula*	2008	169	Total	-	-
Sugar Glider	*Petaurus breviceps*	2006	1	Total	-	-
Common Ringtail Possum	*Pseudocheirus peregrinus*	2008	54	Partial	-	-
Feathertail Glider	*Acrobates pygmaeus*	1964	1	Total	-	-
Eastern Grey Kangaroo	*Macropus giganteus*	2006	2	-	-	-
Black Wallaby	*Wallabia bicolor*	2008	9	-	-	-

Common name	Scientific name	Last documented record	Total # of documented records	Hollow use	Mi/ Ma	Present survey
Grey-headed Flying-fox	*Pteropus poliocephalus*	2006	775	-	-	-
Yellow-bellied Sheathtail Bat	*Saccolaimus flaviventris*	2000	3	Total	-	-
White-striped Freetail Bat	*Tadarida australis*	2006	20	Total	-	-
Gould's Wattled Bat	*Chalinolobus gouldii*	2006	17	Total	-	-
Chocolate Wattled Bat	*Chalinolobus morio*	2006	1	Total	-	-
Common Bent-wing Bat	*Miniopterus schreibersii GROUP*	1988	3	-	-	-
Southern Myotis	*Myotis macropus*	2006	1	Partial	-	-
Lesser Long-eared Bat	*Nyctophilus geoffroyi*	2006	5	Total	-	-
Large Forest Bat	*Vespadelus darlingtoni*	2006	1	Total	-	-
Southern Forest Bat	*Vespadelus regulus*	2006	1	Total	-	-
Little Forest Bat	*Vespadelus vulturnus*	2006	5	Total	-	-
Water Rat	*Hydromys chrysogaster*	2007	25	-	-	-
Eastern water rat	*Hydromys chryogaster*	2008	1	-	-	-
House Mouse*	*Mus musculus*	2006	69	-	-	-
Brown Rat*	*Rattus norvegicus*	2005	16	-	-	-
Black Rat*	*Rattus rattus*	2006	28	-	-	-
Dingo & Dog (feral)*	*Canis lupus*	1999	5	-	-	-
Red Fox*	*fam. Canidae gen. Vulpes*	2008	87	-	-	S
Cat*	*Felis catus*	2006	19	-	-	-
New Zealand Fur Seal	*Arctocephalus forsteri*	1992	2	-	Ma	-
Subantarctic Fur Seal	*Arctocephalus tropicalis*	1989	2	-	Ma	-
Australian Fur Seal	*Arctocephalus pusillus*	1995	9	-	Ma	-
Leopard Seal	*Hydrurga leptonyx*	1984	3	-	Ma	-

Common name	Scientific name	Last documented record	Total # of documented records	Hollow use	Mi/ Ma	Present survey
Southern Elephant Seal	*Mirounga leonina*	2001	5	-	Ma	-
Crabeater Seal	*Lobodon carcinophagus*	1974	4	-	Ma	-
European Rabbit*	*Oryctolagus cuniculus*	2008	104	-	-	S
European Hare*	*Lepus europeaus*	2007	31	-	-	-
Common Dolphin	*Delphinus delphis*	1980	4	-	-	-
Bottlenose Dolphin	*Tursiops truncatus*	2003	17	-	-	-
Sperm Whale	*Physeter macrocephalus*	1839	2	-	Mi	-
Southern Right Whale	*Eubalaena australis*	1988	3	-	Mi/Ma	-
Humpback Whale	*Megaptera novaeangliae*	2005	6	-	Mi	-
BIRDS						
Stubble Quail	*Coturnix pectoralis*	2008	34	-	Ma	-
Brown Quail	*Coturnix ypsilophora australis*	2008	36	-	-	-
Chukar Partridge*	*Alectoris chukar*	2008	2	-	-	-
Magpie Goose	*Anseranas semipalmata*	2000	3	-	Ma	-
Musk Duck	*Biziura lobata*	2007	67	-	Ma	-
Freckled Duck	*Stictonetta naevosa*	2006	8	-	-	-
Cape Barren Goose	*Cereopsis novaehollandiae*	2006	4	-	Ma	-
Black Swan	*Cygnus atratus*	2008	675	-	-	-
Australian Shelduck	*Tadorna tadornoides*	2007	154	Total	-	-
Australian Wood Duck	*Chenonetta jubata*	2007	97	Total	-	-
Pink-eared Duck	*Malacorhynchus membranaceus*	2007	41	Partial	-	-
Australasian Shoveler	*Anas rhynchotis*	2008	93	-	-	-
Grey Teal	*Anas gracilis*	2008	386	Total	-	-

Common name	Scientific name	Last documented record	Total # of documented records	Hollow use	Mi/ Ma	Present survey
Chestnut Teal	*Anas castanea*	2007	577	Total	-	-
Northern Mallard*	*Anas platyrhynchos*	2004	127	-	-	-
Pacific Black Duck	*Anas superciliosa*	2008	828	-	-	-
Hardhead	*Aythya australis*	2008	228	-	-	-
Blue-billed Duck	*Oxyura australis*	2008	30	-	-	-
Australasian Grebe	*Tachybaptus novaehollandiae*	2008	313	-	-	-
Hoary-headed Grebe	*Poliocephalus poliocephalus*	2008	354	-	-	-
Great Crested Grebe	*Podiceps cristatus*	2006	38	-	-	-
Rock Dove*	*Columba livia*	2008	593	-	-	S[#]
Barbary Dove	*Streptopelia risoria*	2008	10	-	-	-
Spotted Turtle-Dove*	*Streptopelia chinensis*	2008	673	-	-	-
Common Bronzewing	*Phaps chalcoptera*	2006	5	-	-	-
Peaceful Dove	*Geopelia striata*	1980	1	-	-	-
Tawny Frogmouth	*Podargus strigoides*	2008	38	-	-	-
Australian Owlet-nightjar	*Aegotheles cristatus*	2006	1	Total	-	-
White-throated Needletail	*Hirundapus caudacutus*	2008	24	-	Mi/Ma	-
Fork-tailed Swift	*Apus pacificus*	2007	9	-	Mi/Ma	-
White-faced Storm-Petrel	*Pelagodroma marina*	2007	4	-	Ma	-
Shy Albatross	*Thalassarche cauta*	1956	2	-	Mi/Ma	-
Southern Giant-Petrel	*Macronectes giganteus*	1980	1	-	Mi/Ma	-
Southern Fulmar	*Fulmarus glacialoides*	1975	1	-	Ma	-
Gang-gang Cockatoo	*Callocephalon fimbriatum*	1981	1	-	-	-
Cape Petrel	*Daption capense*	1980	1	-	Ma	-

Common name	Scientific name	Last documented record	Total # of documented records	Hollow use	Mi/ Ma	Present survey
Antarctic Prion	*Pachyptila desolata*	1979	1	-	Ma	-
Slender-billed Prion	*Pachyptila belcheri*	1980	1	-	Ma	-
Fairy Prion	*Pachyptila turtur*	2000	3	-	Ma	-
Short-tailed Shearwater	*Puffinus tenuirostris*	2000	8	-	Mi/Ma	-
Fluttering Shearwater	*Puffinus gavia*	2008	7	-	Ma	-
Hutton's Shearwater	*Puffinus huttoni*	2008	1	-	Ma	-
Kerguelen Petrel	*Lugensa brevirostris*	1984	1	-	Ma	-
Common Diving-Petrel	*Pelecanoides urinatrix*	1980	1	-	Ma	-
Little Penguin	*Eudyptula minor*	2008	27	-	-	-
Australasian Gannet	*Morus serrator*	2008	44	-	Ma	-
Brown Booby	*Sula leucogaster*	1965	1	-	Mi/Ma	-
Darter	*Anhinga novaehollandiae*	2008	68	-	-	-
Little Pied Cormorant	*Microcarbo melanoleucos*	2008	631	-	-	-
Great Cormorant	*Phalacrocorax carbo*	2008	251	-	-	-
Little Black Cormorant	*Phalacrocorax sulcirostris*	2008	479	-	-	-
Pied Cormorant	*Phalacrocorax varius*	2006	212	-	-	-
Black-faced Cormorant	*Phalacrocorax fuscescens*	2008	8	-	Ma	-
Australian Pelican	*Pelecanus conspicillatus*	2008	348	-	Ma	-
Australasian Bittern	*Botaurus poiciloptilus*	2006	17	-	-	-
Little Bittern	*Ixobrychus minutus dubius*	1980	5	-	-	-
White-necked Heron	*Ardea pacifica*	2008	62	-	-	-
Eastern Great Egret	*Ardea modesta*	2007	197	-	Mi/Ma	-
Intermediate Egret	*Ardea intermedia*	2001	13	-	Ma	-

Common name	Scientific name	Last documented record	Total # of documented records	Hollow use	Mi/ Ma	Present survey
Cattle Egret	*Ardea ibis*	2007	32	-	Mi/Ma	-
White-faced Heron	*Egretta novaehollandiae*	2007	518	-	-	-
Little Egret	*Egretta garzetta nigripes*	2007	117	-	Ma	-
Nankeen Night Heron	*Nycticorax caledonicus hillii*	2008	146	-	Ma	-
Glossy Ibis	*Plegadis falcinellus*	2007	14	-	Mi/Ma	-
Australian White Ibis	*Threskiornis molucca*	2008	455	-	Ma	-
Straw-necked Ibis	*Threskiornis spinicollis*	2008	116	-	Ma	-
Royal Spoonbill	*Platalea regia*	2008	141	-	-	-
Yellow-billed Spoonbill	*Platalea flavipes*	2008	67	-	-	-
Black-shouldered Kite	*Elanus axillaris*	2008	194	-	-	-
White-bellied Sea-Eagle	*Haliaeetus leucogaster*	2008	2	-	Mi/Ma	-
Whistling Kite	*Haliastur sphenurus*	2007	33	-	Ma	-
Black Kite	*Milvus migrans*	2006	3	-	-	-
Brown Goshawk	*Accipiter fasciatus*	2008	109	-	Ma	-
Collared Sparrowhawk	*Accipiter cirrhocephalus*	2008	18	-	-	-
Grey Goshawk	*Accipiter novaehollandiae novaehollandiae*	2006	4	-	-	-
Spotted Harrier	*Circus assimilis*	2006	14	-	-	-
Swamp Harrier	*Circus approximans*	2007	65	-	Ma	-
Wedge-tailed Eagle	*Aquila audax*	2007	14	-	-	-
Little Eagle	*Hieraaetus morphnoides*	2008	43	-	-	-
Nankeen Kestrel	*Falco cenchroides*	2008	182	Partial	Ma	-
Brown Falcon	*Falco berigora*	2008	154	-	-	S
Australian Hobby	*Falco longipennis*	2008	113	-	-	-

Common name	Scientific name	Last documented record	Total # of documented records	Hollow use	Mi/ Ma	Present survey
Black Falcon	*Falco subniger*	2008	22	-	-	-
Peregrine Falcon	*Falco peregrinus*	2008	45	Partial	-	-
Brolga	*Grus rubicunda*	2006	1	-	-	-
Purple Swamphen	*Porphyrio porphyrio*	2008	265	-	-	-
Lewin's Rail	*Lewinia pectoralis pectoralis*	2008	37	-	Mi	-
Buff-banded Rail	*Gallirallus philippensis*	2008	27	-	-	-
Baillon's Crake	*Porzana pusilla palustris*	2008	33	-	Ma	-
Australian Spotted Crake	*Porzana fluminea*	2008	46	-	-	-
Major Mitchell's Cockatoo	*Lophocroa leadbeateri*	1979	1	Total	-	-
Spotless Crake	*Porzana tabuensis*	2008	36	-	Ma	-
Black-tailed Native-hen	*Gallinula ventralis*	2008	17	-	-	-
Dusky Moorhen	*Gallinula tenebrosa*	2008	604	-	-	-
Eurasian Coot	*Fulica atra*	2008	529	-	-	-
Bush Stone-curlew	*Burhinus grallarius*	1882	1	-	-	-
Pied Oystercatcher	*Haematopus longirostris*	2008	94	-	-	-
Sooty Oystercatcher	*Haematopus fuliginosus*	2008	28	-	Ma	-
Red-necked Avocet	*Recurvirostra novaehollandiae*	2006	73	-	Ma	-
Banded Stilt	*Cladorhynchus leucocephalus*	2008	37	-	-	-
Pacific Golden Plover	*Pluvialis fulva*	2007	12	-	Mi/Ma	-
Grey Plover	*Pluvialis squatarola*	1992	7	-	Mi/Ma	-
Red-capped Plover	*Charadrius ruficapillus*	2008	153	-	Ma	-
Double-banded Plover	*Charadrius bicinctus*	2008	30	-	Mi/Ma	-
Lesser Sand Plover	*Charadrius mongolus*	1992	6	-	Mi/Ma	-

Common name	Scientific name	Last documented record	Total # of documented records	Hollow use	Mi/ Ma	Present survey
Greater Sand Plover	*Charadrius leschenaultii*	1975	2	-	Mi/Ma	-
Oriental Plover	*Charadrius veredus*	1950	1	-	Mi/Ma	-
Black-fronted Dotterel	*Elseyornis melanops*	2008	94	-	-	-
Hooded Plover	*Thinornis rubricollis rubricollis*	1949	1	-	Ma	-
Red-kneed Dotterel	*Erythrogonys cinctus*	2008	25	-	-	-
Banded Lapwing	*Vanellus tricolor*	2008	27	-	-	-
Masked Lapwing	*Vanellus miles*	2008	467	-	-	-
Plains-wanderer	*Pedionomus torquatus*	2006	13	-	-	-
Australian Painted Snipe	*Rostratula benghalensis australis*	1985	6	-	Mi/Ma	-
Latham's Snipe	*Gallinago hardwickii*	2008	29	-	Mi/Ma	-
Black-tailed Godwit	*fam. Scolopacidae gen. Limosa*	1986	7	-	Mi/Ma	-
Bar-tailed Godwit	*Limosa lapponica*	2008	18	-	Mi/Ma	-
Little Curlew	*Numenius minutus*	1950	1	-	-	-
Whimbrel	*Numenius phaeopus*	1986	3	-	Mi/Ma	-
Eastern Curlew	*Numenius madagascariensis*	2008	10	-	Mi/Ma	-
Terek Sandpiper	*Xenus cinereus*	1997	6	-	Mi/Ma	-
Common Sandpiper	*Actitis hypoleucos*	2008	31	-	Mi/Ma	-
Grey-tailed Tattler	*Tringa brevipes*	2006	5	-	Mi/Ma	-
Common Greenshank	*Tringa nebularia*	2008	148	-	Mi/Ma	-
Marsh Sandpiper	*Tringa stagnatilis*	2008	57	-	Mi/Ma	-
Wood Sandpiper	*Tringa glareola*	1994	11	-	Mi/Ma	-
Ruddy Turnstone	*Arenaria interpres*	2006	7	-	Mi/Ma	-
Great Knot	*Calidris tenuirostris*	1982	6	-	Mi/Ma	-

Common name	Scientific name	Last documented record	Total # of documented records	Hollow use	Mi/ Ma	Present survey
Red Knot	*Calidris canutus*	2000	8	-	Mi/Ma	-
Sanderling	*Calidris alba*	2000	9	-	Mi/Ma	-
Red-necked Stint	*Calidris ruficollis*	2008	120	-	Mi/Ma	-
Long-toed Stint	*Calidris subminuta*	1986	6	-	Mi/Ma	-
Pectoral Sandpiper	*Calidris melanotos*	2006	15	-	Mi/Ma	-
Sharp-tailed Sandpiper	*Calidris acuminata*	2008	114	-	Mi/Ma	-
Curlew Sandpiper	*Calidris ferruginea*	2008	84	-	Mi/Ma	-
Stilt Sandpiper	*Calidris himantopus*	2008	292	-	-	-
Buff-breasted Sandpiper	*Tryngites subruficollis*	1962	3	-	Mi/Ma	-
Broad-billed Sandpiper	*Limicola falcinellus*	1986	4	-	Mi/Ma	-
Ruff	*Philomachus pugnax*	2000	6	-	Mi/Ma	-
Wilson's Phalarope	*Steganopus tricolor*	1950	1	-	Ma	-
Red-necked Phalarope	*Phalaropus lobatus*	1992	3	-	Mi/Ma	-
Painted Button-quail	*Turnix varia*	2006	1	-	-	-
Red-chested Button-quail	*Turnix pyrrhothorax*	2006	1	-	-	-
Welcome Swallow	*Petrochelidon neoxena*	2008	648	Partial	-	-
Great Skua	*Stercorarius skua*	1989	2	-	-	-
Pomarine Jaeger	*Stercorarius pomarinus*	2007	4	-	Mi/Ma	-
Arctic Jaeger	*Stercorarius parasiticus*	2008	16	-	Mi/Ma	-
Little Tern	*Sternula albifrons sinensis*	2003	16	-	Mi/Ma	-
Fairy Tern	*Sternula nereis nereis*	1996	10	-	Ma	-
Gull-billed Tern	*Gelochelidon nilotica macrotarsa*	2008	2	-	Ma	-
Caspian Tern	*Hydroprogne caspia*	2008	27	-	Mi/Ma	-

Common name	Scientific name	Last documented record	Total # of documented records	Hollow use	Mi/ Ma	Present survey
Whiskered Tern	*Chlidonias hybridus javanicus*	2007	89	-	Ma	-
White-winged Black Tern	*Chlidonias leucopterus*	2007	16	-	Mi/Ma	-
White-fronted Tern	*Sterna striata*	1989	5	-	Ma	-
Common Tern	*Sterna hirundo*	2008	81	-	Mi/Ma	-
Arctic Tern	*Sterna paradisaea*	1989	2	-	Ma	-
Pacific Gull	*Larus pacificus pacificus*	2007	270	-	Ma	-
Kelp Gull	*Larus dominicanus*	1962	3	-	Ma	-
Silver Gull	*Chroicocephalus novaehollandiae*	2008	1067	-	Ma	-
Yellow-tailed Black-Cockatoo	*Calyptorhynchus funereus*	2008	4	Total	-	-
Galah	*Eolophus roseicapilla*	2008	223	Total	-	-
Long-billed Corella	*Cacatua tenuirostris*	2008	10	Total	-	-
Little Corella	*Cacatua sanguinea*	2008	5	Total	-	-
Sulphur-crested Cockatoo	*Cacatua galerita*	2008	172	Total	-	-
Cockatiel	*Nymphicus hollandicus*	2007	4	Total	-	-
Rainbow Lorikeet	*Trichoglossus haematodus*	2008	234	Total	-	S[#]
Scaly-breasted Lorikeet	*Trichoglossus chlorolepidotus*	2008	3	Total	-	-
Musk Lorikeet	*Glossopsitta concinna*	2008	115	-	-	-
Little Lorikeet	*Glossopsitta pusilla*	2008	42	-	-	-
Purple-crowned Lorikeet	*Glossopsitta porphyrocephala*	2007	42	Total	-	-
Crimson Rosella	*Platycercus elegans*	2008	31	Total	-	-
Eastern Rosella	*Platycercus eximius*	2008	88	Total	-	-
Pale-headed Rosella	*Platycercus adscitus*	1993	3	Total	-	-
Western Rosella	*Platycercus icterotis*	2005	1	Total	-	-

Common name	Scientific name	Last documented record	Total # of documented records	Hollow use	Mi/ Ma	Present survey
Australian Ringneck	*Barnardius zonarius zonarius*	2008	4	-	-	-
Swift Parrot	*Lathamus discolor*	2008	23	Total	Ma	-
Red-rumped Parrot	*Psephotus haematonotus*	2008	79	-	-	-
Budgerigar	*Melopsittacus undulatus*	1998	3	Partial	-	-
Blue-winged Parrot	*Neophema chrysostoma*	2008	18	Partial	-	-
Orange-bellied Parrot	*Neophema chrysogaster*	2004	9	-	Mi/Ma	-
Eastern Koel	*Eudynamys orientalis*	2007	2	-	-	-
Horsfield's Bronze-Cuckoo	*Chrysococcyx basalis*	2008	78	-	Ma	-
Black-eared Cuckoo	*Chrysococcyx osculans*	2006	2	-	Ma	-
Shining Bronze-Cuckoo	*Chrysococcyx lucidus*	2008	10	-	Ma	-
Pallid Cuckoo	*Cuculus pallidus*	2008	32	-	Ma	-
Fan-tailed Cuckoo	*Cacomantis flabelliformis*	2008	20	-	-	-
Brush Cuckoo	*Cacomantis variolosus*	2000	1	-	-	-
Powerful Owl	*Ninox strenua*	2008	29	Total	-	-
Barking Owl	*Ninox connivens connivens*	2001	1	Total	-	-
Southern Boobook	*Ninox novaeseelandiae*	2008	26	Total	Ma	-
Masked Owl	*Tyto novaehollandiae novaehollandiae*	2006	1	Total	-	-
Pacific Barn Owl	*Tyto javanica*	2007	22	Partial	-	-
Azure Kingfisher	*Alcedo azurea*	2008	2	-	-	-
Laughing Kookaburra	*Dacelo novaeguineae*	2008	41	Total	-	-
Red-backed Kingfisher	*Todiramphus pyrropygia pyrropygia*	1991	4	Partial	-	-
Sacred Kingfisher	*Todiramphus sanctus*	2008	56	Partial	Ma	-
Rainbow Bee-eater	*Merops ornatus*	2006	13	-	Mi/Ma	-

Common name	Scientific name	Last documented record	Total # of documented records	Hollow use	Mi/ Ma	Present survey
Dollarbird	*Eurystomus orientalis*	2006	2	Total	Ma	-
White-throated Treecreeper	*Cormobates leucophaeus*	2006	2	Total	-	-
Brown Treecreeper (south-eastern ssp.)	*Climacteris picumnus victoriae*	1905	1	Total	-	-
Satin Bowerbird	*Ptilonorhynchus violaceus*	1931	1	-	-	-
Superb Fairy-wren	*Malurus cyaneus*	2008	407	-	-	-
White-browed Scrubwren	*Sericornis frontalis*	2008	192	-	-	-
Speckled Warbler	*Chthonicola sagittatus*	2006	1	-	-	-
Weebill	*Smicrornis brevirostris*	2006	4	-	-	-
White-throated Gerygone	*Gerygone olivacea*	1979	1	-	-	-
Striated Thornbill	*Acanthiza lineata*	2006	8	-	-	-
Yellow Thornbill	*Acanthiza nana*	2007	23	-	-	-
Yellow-rumped Thornbill	*Acanthiza chrysorrhoa*	2007	171	-	-	-
Buff-rumped Thornbill	*Acanthiza reguloides*	2006	2	-	-	-
Brown Thornbill	*Acanthiza pusilla*	2008	87	-	-	-
Southern Whiteface	*Aphelocephala leucopsis*	2006	2	-	-	-
Spotted Pardalote	*Pardalotus punctatus*	2008	58	-	-	-
Striated Pardalote	*Pardalotus striatus*	2008	30	Partial	-	-
Eastern Spinebill	*Acanthorhynchus tenuirostris*	2008	56	-	-	-
Yellow-faced Honeyeater	*Lichenostomus chrysops*	2008	6	-	-	-
Singing Honeyeater	*Lichenostomus virescens*	2008	23	-	-	-
White-eared Honeyeater	*Lichenostomus leucotis*	1976	1	-	-	-
Yellow-tufted Honeyeater	*Lichenostomus melanops*	2007	6	-	-	-
Fuscous Honeyeater	*Lichenostomus fuscus*	2007	4	-	-	-

Common name	Scientific name	Last documented record	Total # of documented records	Hollow use	Mi/ Ma	Present survey
White-plumed Honeyeater	*Lichenostomus penicillatus*	2008	685	-	-	-
White-fronted Honeyeater	*Phylidonyris albifrons*	2007	2	-	-	-
Spiny-cheeked Honeyeater	*Acanthagenys rufogularis*	2008	43	-	-	-
Bell Miner	*Manorina melanophrys*	2007	50	-	-	-
Noisy Miner	*Manorina melanocephala*	2008	46	-	-	-
Sooty Shearwater	*Puffinus grisea*	1950	1	-	Mi/Ma	-
Little Wattlebird	*Anthochaera chrysoptera*	2008	242	-	-	-
Red Wattlebird	*Anthochaera carunculata*	2008	583	-	-	S
White-fronted Chat	*Epthianura albifrons*	2007	140	-	-	-
Black Honeyeater	*Sugamel niger*	2006	1	-	-	-
Tawny-crowned Honeyeater	*Phylidonyris melanops*	1985	6	-	-	-
Crescent Honeyeater	*Phylidonyris pyrrhoptera*	2006	2	-	-	-
New Holland Honeyeater	*Phylidonyris novaehollandiae*	2008	151	-	-	-
Black-chinned Honeyeater	*Melithripterus gularis gularis*	2006	2	-	-	-
Brown-headed Honeyeater	*Melithreptus brevirostris*	2006	6	-	-	-
White-naped Honeyeater	*Melithreptus lunatus*	2008	18	-	-	-
Varied Sittella	*Daphoenositta chrysoptera*	2006	2	-	-	-
Black-faced Cuckoo-shrike	*Coracina novaehollandiae*	2008	117	-	Ma	-
White-winged Triller	*Lalage sueurii*	2008	8	-	-	-
Crested Shrike-tit	*Falcunculus frontatus*	2006	10	-	-	-
Golden Whistler	*Pachycephala pectoralis*	2008	25	-	-	-
Rufous Whistler	*Pachycephala rufiventris*	2006	14	-	-	-
Grey Shrike-thrush	*Colluricincla harmonica*	2008	28	Partial	-	-

Common name	Scientific name	Last documented record	Total # of documented records	Hollow use	Mi/ Ma	Present survey
Crested Pigeon	*Ocyphaps lophotes*	2008	83	-	-	-
Olive-backed Oriole	*Oriolus sagittatus*	2006	1	-	-	-
Masked Woodswallow	*Artamus personatus*	2006	2	-	-	-
White-browed Woodswallow	*Artamus superciliosus*	2006	4	-	-	-
Dusky Woodswallow	*Artamus cyanopterus*	2006	22	Partial	-	-
Grey Butcherbird	*Cracticus torquatus*	2008	50	-	-	-
Australian Magpie	*Gymnorhina tibicen*	2008	520	-	-	S
Pied Currawong	*Strepera graculina*	2008	10	-	-	-
Grey Currawong	*Strepera versicolor*	2006	6	-	-	-
Rufous Fantail	*Rhipidura rufifrons*	2008	24	-	Mi/Ma	-
Grey Fantail	*Rhipidura albiscarpa*	2008	227	-	-	-
Willie Wagtail	*Rhipidura leucophrys*	2008	651	-	-	S
Australian Raven	*Corvus coronoides*	2006	99	-	-	-
Little Raven	*Corvus mellori*	2008	564	-	Ma	-
Leaden Flycatcher	*Myiagra rubecula*	1983	1	-	-	-
Satin Flycatcher	*Myiagra cyanoleuca*	1985	3	-	Mi/Ma	-
Restless Flycatcher	*Myiagra inquieta*	2006	6	-	-	-
Magpie-lark	*Grallina cyanoleuca*	2008	697	-	-	S
White-winged Chough	*Corcorax melanorhamphos*	2006	1	-	-	-
Jacky Winter	*Microeca fascinans*	2006	11	-	-	-
Scarlet Robin	*Petroica boodang*	2008	13	-	-	-
Red-capped Robin	*Petroica goodenovii*	2007	4	-	-	-
Flame Robin	*Petroica phoenicea*	2008	87	-	-	-

Common name	Scientific name	Last documented record	Total # of documented records	Hollow use	Mi/ Ma	Present survey
Rose Robin	*Petroica rosea*	2008	7	-	-	-
Pink Robin	*Petroica rodinogaster*	1982	1	-	-	-
Hooded Robin	*Melanodryas cucullata cucullata*	2006	1	-	-	-
Eastern Yellow Robin	*Eopsaltria australis*	2006	5	-	-	-
Horsfield's Bushlark	*Mirafra javanica*	2008	24	-	-	-
European Skylark*	*Alauda arvensis*	2008	245	-	-	S
Golden-headed Cisticola	*Cisticola exilis*	2007	181	-	-	-
Clamorous Reed Warbler	*Acrocephalus stentoreus*	2008	160	-	Mi/Ma	-
Little Grassbird	*Megalurus gramineus*	2008	123	-	-	-
Rufous Songlark	*Cincloramphus mathewsi*	1988	6	-	-	-
Brown Songlark	*Cincloramphus cruralis*	2007	31	-	-	-
Silvereye	*Zosterops lateralis*	2008	306	-	Ma	-
White-backed Swallow	*Cheramoeca leucosternus*	2006	1	-	-	-
Fairy Martin	*Petrochelidon ariel*	2008	26	Partial	-	-
Tree Martin	*Petrochelidon nigricans*	2006	24	Total	Ma	-
Red-whiskered Bulbul*	*Pycnonotus jocosus*	2000	8	-	-	-
Bassian Thrush	*Zoothera lunulata*	2007	5	-	-	-
Common Blackbird*	*Turdus merula*	2008	656	-	-	S
Song Thrush*	*Turdus philomelos*	2008	228	-	-	-
Common Starling*	*Sturnus vulgaris*	2008	809	Partial	-	S
Common Myna*	*Acridotheres tristis*	2008	776	-	-	-
Mistletoebird	*Dicaeum hirundinaceum*	2008	27	-	-	-
Zebra Finch	*Taeniopygia guttata*	2006	4	-	-	-

Common name	Scientific name	Last documented record	Total # of documented records	Hollow use	Mi/ Ma	Present survey
Red-browed Finch	*Neochmia temporalis*	2006	58	-	-	-
Diamond Firetail	*Stagonopleura guttata*	2006	1	-	-	-
House Sparrow*	*Passer domesticus*	2008	779	-	-	S
Eurasian Tree Sparrow*	*Passer montanus*	2008	193	-	-	-
Australasian Pipit	*Anthus novaeseelandiae*	2008	153	-	Ma	-
European Greenfinch*	*Carduelis chloris*	2008	257	-	-	-
European Goldfinch*	*fam. Fringillidae gen. Carduelis*	2008	313	-	-	-
Domestic Goose*	*fam. Anatidae gen. Anser*	2004	12	-	-	-
Crested Tern	*Thalasseus bergii*	2008	213	-	-	-
	REPTILES					
Long neck tortoise	*Chelodina longicollis*	2009	8	-	-	-
Murray Short-necked Turtle	*Emydura macquarii*	2008	1	-	-	-
Marbled Gecko	*Christinus marmoratus*	2006	18	Partial	-	-
Striped Legless Lizard	*Delma impar*	2008	110	-	-	-
Tree Dragon	*Amphibolurus muricatus*	2006	2	Partial	-	-
Grassland Earless Dragon	*Tympanocryptis pinguicolla*	2006	5	-	-	-
Large Striped Skink	*Ctenotus robustus*	2006	10	-	-	-
Cunningham's Skink	*Egernia cunninghami*	2006	9	-	-	-
Black Rock Skink	*Egernia saxatilis intermedia*	2006	1	Partial	-	-
White's Skink	*Liopholis whitii*	1994	11	-	-	-
Southern Water Skink	*Eulamprus tympanum tympanum*	2006	4	-	-	-
Garden Skink	*Lampropholis guichenoti*	2006	13	-	-	-
Bougainville's Skink	*Lerista bougainvillii*	2006	3	-	-	-

Common name	Scientific name	Last documented record	Total # of documented records	Hollow use	Mi/ Ma	Present survey
Tussock Skink	*Pseudemoia pagenstecheri*	2008	25	-	-	-
Weasel Skink	*Saproscincus mustelinus*	1988	1	-	-	-
Eastern Three-lined Skink	*Bassiana duperreyi*	2006	4	-	-	-
Metallic Skink	*Niveoscincus metallicus*	1988	1	-	-	-
Blotched Blue-tongued Lizard	*Tiliqua nigrolutea*	1994	2	-	-	-
Common Blue-tongued Lizard	*Tiliqua scincoides*	2008	97	-	-	-
Stumpy-tailed Lizard	*Tiliqua rugosa*	2006	1	-	-	-
White-lipped Snake	*Drysdalia coronoides*	1994	7	-	-	-
Tiger Snake	*Notechis scutatus*	2006	64	-	-	-
Red-bellied Black Snake	*Pseudechis porphyriacus*	1997	1	-	-	-
Eastern Brown Snake	*Pseudonaja textilis*	2006	11	-	-	-
Little Whip Snake	*Suta flagellum*	2006	96	-	-	-
AMPHIBIANS						
Common Froglet	*Crinia signifera*	2007	105	-	-	-
Southern Bullfrog (ssp. unknown)	*Limnodynastes dumerilii*	2006	21	-	-	-
Striped Marsh Frog	*Limnodynastes peronii*	1993	2	-	-	-
Spotted Marsh Frog (race unknown)	*Limnodynastes tasmaniensis*	2006	159	-	-	-
Common Spadefoot Toad	*Neobatrachus sudelli*	2006	14	-	-	-
Brown Toadlet	*Pseudophryne bibronii*	1871	1	-	-	-
Southern Brown Tree Frog	*Litoria ewingii*	2006	80	-	-	-
Growling Grass Frog	*Litoria raniformis*	2006	61	-	-	-
Whistling Tree Frog	*Litoria verreauxii verreauxii*	2006	2	-	-	-
FISH						

Common name	Scientific name	Last documented record	Total # of documented records	Hollow use	Mi/ Ma	Present survey
Pouched Lamprey	*Geotria australis*	1947	3	-	-	-
Short-headed Lamprey	*Mordacia mordax*	1989	11	-	-	-
Grey Nurse Shark	*Carcharias taurus*	1970	1	-	-	-
Short-finned Eel	*Anguilla australis*	2009	61	-	-	-
Australian Anchovy	*Engraulis australis*	2000	2	-	-	-
Sandy Sprat	*Hyperlophus vittatus*	1991	2	-	-	-
Common Galaxias	*Galaxias maculatus*	2009	84	-	-	-
Mountain Galaxias	*Galaxias olidus*	1982	2	-	-	-
Spotted Galaxias	*Galaxias truttaceus*	1996	5	-	-	-
Australian Mudfish	*Neochanna cleaveri*	2008	1	-	-	-
Australian Grayling	*Prototroctes maraena*	1982	4	-	-	-
Australian Smelt	*Retropinna semoni*	2009	16	-	-	-
Chinook Salmon*	*Oncorhynchus tshawytscha*	1982	2	-	-	-
Brown Trout*	*Salmo trutta*	2002	6	-	-	-
Yellow-eye Mullet	*Aldrichetta forsteri*	2008	9	-	-	-
Flat-tailed Mullet	*Liza argentea*	1991	1	-	-	-
Sea Mullet	*Mugil cephalus*	1991	2	-	-	-
Smallmouthed Hardyhead	*Atherinosoma microstoma*	2006	15	-	-	-
Goldfish*	*Carassius auratus*	2009	28	-	-	-
Gambusia*	*Gambusia holbrooki*	2009	35	-	-	-
Carp*	*Cyprinus carpio*	2009	12	-	-	-
Oriental Weatherloach*	*Misgurnus anguillicaudatus*	2009	8	-	-	-
Roach*	*Rutilus rutilus*	1989	4	-	-	-

Common name	Scientific name	Last documented record	Total # of documented records	Hollow use	Mi/ Ma	Present survey
Southern Pygmy Leatherjacket	*Brachaluteres jacksonianus*	2004	2	-	-	-
Southern Sand Flathead	*Platycephalus bassensis*	1991	2	-	-	-
Yellowfin Goby*	*Acanthogobius flavimanus*	1991	6	-	-	-
Black Bream	*Acanthopagrus butcheri*	2005	20	-	-	-
Tamar River Goby	*Afurcagobius tamarensis*	2008	13	-	-	-
Bridled Goby	*Arenigobius bifrenatus*	2008	8	-	-	-
Mulloway	*Argyrosomus hololepidotus*	1991	3	-	-	-
Eastern Australian Salmon	*Arripis trutta*	1991	1	-	-	-
Silver Perch	*fam. Percichthyidae gen. Bidyanus*	1992	6	-	-	-
Dusky Morwong	*Dactylophora nigricans*	2005	5	-	-	-
Long-finned Goby	*Favonigobius lateralis*	1983	1	-	-	-
River Blackfish	*Gadopsis marmoratus*	1880	3	-	-	-
Glass Goby	*Gobiopterus semivestitus*	1995	5	-	-	-
Bluenose Cod (Trout Cod)	*Maccullochella macquariensis*	2002	3	-	-	-
Murray Cod	*Maccullochella peelii peelii*	1873	1	-	-	-
Golden Perch	*Macquaria ambigua*	2002	1	-	-	-
Macquarie Perch	*Macquaria australasica*	1970	3	-	-	-
Estuary Perch	*Macquaria colonorum*	2009	2	-	-	-
Southern Pygmy Perch	*Nannoperca australis*	1934	1	-	-	-
Yarra Pygmy Perch	*Nannoperca obscura*	1872	2	-	-	-
Redfin*	*Perca fluviatilis*	2009	9	-	-	-
Flat-headed Gudgeon	*Philypnodon grandiceps*	2009	57	-	-	-
Silver Trevally	*Pseudocaranx dentex*	1991	2	-	-	-

Common name	Scientific name	Last documented record	Total # of documented records	Hollow use	Mi/ Ma	Present survey
Blue-spotted Goby	*Pseudogobius olorum*	2004	17	-	-	-
Large-mouthed Goby	*Redigobius macrostoma*	1995	1	-	-	-
Tupong	*Pseudaphritis urvillii*	2008	22	-	-	-
Lagoon Goby	*Tasmanogobius lasti*	1972	1	-	-	-
Tench*	*fam. Cyprinidae gen. Tinca*	2009	13	-	-	-
Greenback Flounder	*Rhombosolea tapirina*	1991	5	-	-	-
Toothbrush Leatherjacket	*Acanthaluteres vittiger*	2005	4	-	-	-
Smooth Toadfish	*Tetractenos glaber*	2003	2	-	-	-
Tasmanian Blenny	*Parablennius tasmanianus*	2003	3	-	-	-
Spotshoulder Weedfish	*Heteroclinus perspicillatus*	2005	5	-	-	-
MUSSELS & CRUSTACEANS						
Common Freshwater Shrimp	Paratya australiensis	2009	31	-	-	-
Yabby	Cherax destructor	2009	12	-	-	-
-	Amarinus lacustris	2000	1	-	-	-
INVERTEBRATES						
Golden Sun Moth	Synemon plana	2007	27	-	-	-
Yellow Sedge-skipper	Hesperilla flavescens flavescens	1988	177	-	-	-

Appendix 3.2 – Significant Fauna Species

Table A3.2. Significant fauna within 10 kilometres of the study area.

Habitat characteristics of significant fauna species previously recorded within 10 kilometres of the study area, or that may potentially occur within the study area were assessed to determine their likelihood of occurrence. The likelihood of occurrence rankings for each of the threatened species are:

1	High Likelihood	• Known resident in the study area based on site observations, database records, or expert advice; and/or, • Recent records (i.e. within five years) of the species in the local area (DEPI 2011); and/or, • The study area contains the species' preferred habitat.
2	Moderate Likelihood	• The species is likely to visit the study area regularly (i.e. at least seasonally); and/or, • Previous records of the species in the local area (DEPI 2011); and/or, • The study area contains some characteristics of the species' preferred habitat.
3	Low Likelihood	• The species is likely to visit the study area occasionally or opportunistically whilst en route to more suitable sites; and/or, • There are only limited or historical records of the species in the local area (i.e. more than 20 years old); and/or, • The study area contains few or no characteristics of the species' preferred habitat.
4	Unlikely	• No previous records of the species in the local area; and/or, • The species may fly over the study area when moving between areas of more suitable habitat; and/or, • Out of the species' range; and/or, • No suitable habitat present.

Common name	Scientific name	Last documented record	Total # of documented records	EPBC	DEPI	FFG	NAP	Likely use of study area
NATIONAL SIGNIFICANCE								
# Spot-tailed Quoll	*Dasyurus maculatus*	-	-	EN	EN	L	VU	4
# Brush-tailed Rock-wallaby	*Petrogale penicillata*	-	-	VU	CR	L	VU	4
# New Holland Mouse	*Pseudomys novaehollandiae*	-	-	VU	VU	L	-	4
#Grey-headed Flying-fox	*Pteropus poliocephalus*	2006	775	VU	VU	L	VU	4
Subantarctic Fur Seal	*Arctocephalus tropicalis*	1989	2	VU	-	-	-	4
Southern Elephant Seal	*Mirounga leonina*	2001	5	VU	-	-	-	4
#Southern Right Whale	*Eubalaena australis*	1988	3	EN	CR	L	-	4
#Humpback Whale	*Megaptera novaeangliae*	2005	6	VU	VU	L	-	4
# Black-browed Albatross	*Thalassarche melanophris*	-	-	VU	VU	-	NT	4
# Buller's Albatross	*Diomedea bulleri*	-	-	VU		L	VU	4

Common name	Scientific name	Last documented record	Total # of documented records	EPBC	DEPI	FFG	NAP	Likely use of study area
# Northern Royal Albatross	*Diomedea sanfordi*	-	-	-	-	-	EN	4
# Salvin's Albatross	*Thalassarche salvini*	-	-	-	-	-	VU	4
# Wandering Albatross	*Diomedea exulans*	-	-	VU	EN	L	VU	4
#Shy Albatross	*Thalassarche cauta*	1956	2	VU	VU	L	VU	4
# Northern Giant-Petrel	*Macronectes halli*	-	-	VU	NT	L	-	4
#Southern Giant-Petrel	*Macronectes giganteus*	1980	1	EN	VU	L	VU	4
Fairy Prion	*Pachyptila turtur*	2000	3	VU	VU	-	-	4
#Australasian Bittern	*Botaurus poiciloptilus*	2006	17	EN	EN	L	VU	4
Hooded Plover	*Thinornis rubricollis rubricollis*	1949	1	-	VU	L	VU	4
Plains-wanderer	*Pedionomus torquatus*	2006	13	VU	CR	L	EN	4
#Australian Painted Snipe	*Rostratula benghalensis australis*	1985	6	VU	CR	L	VU	4
#Fairy Tern	*Sternula nereis nereis*	1996	10	VU	EN	L	-	4
# Regent Honeyeater	*Anthochaera phrygia*	-	-	EN	CR	L	EN	4
#Swift Parrot	*Lathamus discolor*	2008	23	EN	EN	L	EN	3
#Orange-bellied Parrot	*Neophema chrysogaster*	2004	9	CR	CR	L	CR	4
# Malleefowl	*Leipoa ocellata*	-	-	VU	EN	L	VU	4
#Striped Legless Lizard	*Delma impar*	2008	110	VU	EN	L	VU	4
#Grassland Earless Dragon	*Tympanocryptis pinguicolla*	2006	5	EN	CR	L	VU	4
# Leathery Turtle	*Dermochelys coriacea*	-	-	VU	CR	L	VU	4
# Loggerhead Turtle	*Caretta caretta*	-	-	EN	-	-	VU	4
#Growling Grass Frog	*Litoria raniformis*	2006	61	VU	EN	L	VU	4
Grey Nurse Shark	*Carcharias taurus*	1970	1	CR	DD	L	EN	4
#Australian Grayling	*Prototroctes maraena*	1982	4	VU	VU	L	VU	4

Common name	Scientific name	Last documented record	Total # of documented records	EPBC	DEPI	FFG	NAP	Likely use of study area
# Dwarf Galaxias	*Galaxiella pusilla*	-	-	VU	VU	L	VU	4
Bluenose Cod (Trout Cod)	*Maccullochella macquariensis*	2002	3	EN	CR	L	EN	4
Murray Cod	*Maccullochella peelii peelii*	1873	1	VU	EN	L	-	4
Macquarie Perch	*Macquaria australasica*	1970	3	EN	EN	L	DD	4
#Yarra Pygmy Perch	*Nannoperca obscura*	1872	2	VU	NT	L	VU	4
#Golden Sun Moth	*Synemon plana*	2007	27	CR	CR	L	-	3
			STATE SIGNIFICANCE					
Grey Goshawk	*Accipiter novaehollandiae novaehollandiae*	2006	4	-	VU	L	-	4
Yellow-bellied Sheathtail Bat	*Saccolaimus flaviventris*	2000	3	-	-	L	LC	4
Common Bent-wing Bat	*Miniopterus schreibersii GROUP*	1988	3	-	-	L	CD	4
Southern Myotis	*Myotis macropus*	2006	1	-	NT	-	NT	4
New Zealand Fur Seal	*Arctocephalus forsteri*	1992	2	-	VU	-	-	4
Magpie Goose	*Anseranas semipalmata*	2000	3	-	NT	L	-	4
Musk Duck	*Biziura lobata*	2007	67	-	VU	-	-	4
Freckled Duck	*Stictonetta naevosa*	2006	8	-	EN	L	-	4
Australasian Shoveler	*Anas rhynchotis*	2008	93	-	VU	-	-	4
Hardhead	*Aythya australis*	2008	228	-	VU	-	-	4
Blue-billed Duck	*Oxyura australis*	2008	30	-	EN	L	-	4
White-faced Storm-Petrel	*Pelagodroma marina*	2007	4	-	VU	-	-	4
Little Bittern	*Ixobrychus minutus dubius*	1980	5	-	EN	L	-	4
Eastern Great Egret	*Ardea modesta*	2007	197	-	VU	L	-	4
Intermediate Egret	*Ardea intermedia*	2001	13	-	CR	L	-	4

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Little Egret	*Egretta garzetta nigripes*	2007	117	-	EN	L	-	4
Royal Spoonbill	*Platalea regia*	2008	141	-	VU	-	-	4
White-bellied Sea-Eagle	*Haliaeetus leucogaster*	2008	2	-	VU	L	-	4
Black Falcon	*Falco subniger*	2008	22	-	VU	-	-	4
Brolga	*Grus rubicunda*	2006	1	-	VU	L	-	4
Lewin's Rail	*Lewinia pectoralis pectoralis*	2008	37	-	VU	L	NT	4
Baillon's Crake	*Porzana pusilla palustris*	2008	33	-	VU	L	-	4
Major Mitchell's Cockatoo	*Lophocroa leadbeateri*	1979	1	-	VU	L	-	4
Bush Stone-curlew	*Burhinus grallarius*	1882	1	-	EN	L	NT	4
Lesser Sand Plover	*Charadrius mongolus*	1992	6	-	VU	-	-	4
Greater Sand Plover	*Charadrius leschenaultii*	1975	2	-	VU	-	-	4
Black-tailed Godwit	*fam. Scolopacidae gen. Limosa*	1986	7	-	VU	-	-	4
Whimbrel	*Numenius phaeopus*	1986	3	-	VU	-	-	4
Terek Sandpiper	*Xenus cinereus*	1997	6	-	EN	L	-	4
Common Sandpiper	*Actitis hypoleucos*	2008	31	-	VU	-	-	4
Grey-tailed Tattler	*Tringa brevipes*	2006	5	-	CR	L	-	4
Wood Sandpiper	*Tringa glareola*	1994	11	-	VU	-	-	4
Great Knot	*Calidris tenuirostris*	1982	6	-	EN	L	-	4
Red-chested Button-quail	*Turnix pyrrhothorax*	2006	1	-	VU	L	-	4
Little Tern	*Sternula albifrons sinensis*	2003	16	-	VU	L	-	4
Gull-billed Tern	*Gelochelidon nilotica macrotarsa*	2008	2	-	EN	L	-	4
Caspian Tern	*Hydroprogne caspia*	2008	27	-	NT	L	-	4
Powerful Owl	*Ninox strenua*	2008	29	-	VU	L	-	4

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Barking Owl	*Ninox connivens connivens*	2001	1	-	EN	L	NT	4
Masked Owl	*Tyto novaehollandiae novaehollandiae*	2006	1	-	EN	L	NT	4
Brown Treecreeper (south-eastern ssp.)	*Climacteris picumnus victoriae*	1905	1	-	NT	-	NT	4
Speckled Warbler	*Chthonicola sagittatus*	2006	1	-	VU	L	NT	4
Hooded Robin	*Melanodryas cucullata cucullata*	2006	1	-	NT	L	NT	4
Diamond Firetail	*Stagonopleura guttata*	2006	1	-	VU	L	NT	4
Brown Toadlet	*Pseudophryne bibronii*	1871	1	-	EN	L	DD	4
Australian Mudfish	*Neochanna cleaveri*	2008	1	-	CR	L	-	4
Silver Perch	*fam. Percichthyidae gen. Bidyanus*	1992	6	-	CR	L	-	4
Golden Perch	*Macquaria ambigua*	2002	1	-	VU	-	-	4
Yellow Sedge-skipper	*Hesperilla flavescens flavescens*	1988	177	-	VU	L	LC	4
REGIONAL SIGNIFICANCE								
Fat-tailed Dunnart	*Sminthopsis crassicaudata*	2006	14	-	NT	-	-	4
Brown Quail	*Coturnix ypsilophora australis*	2008	36	-	NT	-	-	4
Cape Barren Goose	*Cereopsis novaehollandiae*	2006	4	-	NT	-	-	4
Common Diving-Petrel	*Pelecanoides urinatrix*	1980	1	-	NT	-	-	4
Pied Cormorant	*Phalacrocorax varius*	2006	212	-	NT	-	-	4
Black-faced Cormorant	*Phalacrocorax fuscescens*	2008	8	-	NT	-	-	4
Nankeen Night Heron	*Nycticorax caledonicus hillii*	2008	146	-	NT	-	-	4
Glossy Ibis	*Plegadis falcinellus*	2007	14	-	NT	-	-	4
Spotted Harrier	*Circus assimilis*	2006	14	-	NT	-	-	4

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Sooty Oystercatcher	*Haematopus fuliginosus*	2008	28	-	NT	-	-	4
Pacific Golden Plover	*Pluvialis fulva*	2007	12	-	NT	-	-	4
Grey Plover	*Pluvialis squatarola*	1992	7	-	NT	-	-	4
Latham's Snipe	*Gallinago hardwickii*	2008	29	-	NT	-	-	4
Eastern Curlew	*Numenius madagascariensis*	2008	10	-	NT	-	-	4
Red Knot	*Calidris canutus*	2000	8	-	NT	-	-	4
Sanderling	*Calidris alba*	2000	9	-	NT	-	-	4
Long-toed Stint	*Calidris subminuta*	1986	6	-	NT	-	-	4
Pectoral Sandpiper	*Calidris melanotos*	2006	15	-	NT	-	-	4
Whiskered Tern	*Chlidonias hybridus javanicus*	2007	89	-	NT	-	-	4
White-winged Black Tern	*Chlidonias leucopterus*	2007	16	-	NT	-	-	3
White-fronted Tern	*Sterna striata*	1989	5	-	NT	-	-	4
Pacific Gull	*Larus pacificus pacificus*	2007	270	-	NT	-	-	4
Black-eared Cuckoo	*Chrysococcyx osculans*	2006	2	-	NT	-	-	3
Azure Kingfisher	*Alcedo azurea*	2008	2	-	NT	-	-	4
Red-backed Kingfisher	*Todiramphus pyrropygia pyrropygia*	1991	4	-	NT	-	-	4
Black-chinned Honeyeater	*Melithripterus gularis gularis*	2006	2	-	NT	-	-	4
River Blackfish	*Gadopsis marmoratus*	1880	3	-	DD	-	-	4