Lindum Vale PSP 1202:
Updated Biodiversity Assessment

DRAFT REPORT

Prepared for Victorian Planning Authority

22 June 2018

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- Department of the Environment and Energy for access to the Protected Matters Search Tool of the Australian Government.

Biosis staff involved in this project were:

- Sally Mitchell (mapping)
- Quality Assurance (Katrina Sofo).

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Summary

Biosis Pty Ltd was originally commissioned by the Victorian Planning Authority (VPA - formerly the Metropolitan Planning Authority) to undertake a flora and fauna assessment for land proposed to be included within Precinct Structure Plan 1202, otherwise known as Lindum Vale. The study area, encompassing approximately 145 hectares, is located approximately 9 kilometres north of Craigieburn and 25 kilometres north of Melbourne.

Ecological values

Key ecological values identified within the study area are as follows:

- 16.959 hectares of native vegetation within eight patches (habitat zone (HZ) 1-4) based on the presence of a relatively intact cover of understorey species rather than the presence of canopy trees alone.
- All remnants are identified as Plains Grassy Woodland (EVC 55) which is considered endangered.
- One area (HZ1) is classified as Grassy Eucalypt Woodland of the Victorian Volcanic Plain Community (*Environment Protection and Biodiversity Conservation Act* 1999 (EPBC Act) listed).
- 166 large trees, many of which are hollow bearing.
- Populations of Golden Sun Moth *Synemon plana* (critically endangered in Australia) and Austral Crane's-bill (vulnerable in Victoria).
- Contribution to surrounding ecological values by providing a degree of habitat continuity for more mobile fauna such as birds and bats.

Government legislation and policy

An assessment of the project in relation to key biodiversity legislation and policy is provided and summarised below.

Legislation / policy	Relevant ecological feature on site	Permit / approval required	Notes
EPBC Act	GSM habitat on site.	Referral recommended.	A population of GSM confirmed on site.
FFG Act		Protected Flora Permit not required for private property.	Sections of the site which become public land (i.e. land to be zones for the expansion of Mount Ridley road) would require an FFG permit.
Planning & Environment Act	Areas of indigenous vegetation to be cleared.	Planning permit required, including permission to lop or remove native vegetation.	The need for a permit to clear vegetation approved for clearing by a Native Vegetation Precinct Plan would not require a planning permit.
CaLP Act	11 noxious weeds 1 pest animal	Not Applicable.	Comply with requirements to control/eradicate.

Guidelines for the removal, destruction or lopping of native vegetation (the Guidelines)

Based on the current design, the proposed development will require the removal of 6.807 hectares of native vegetation, including 29 large trees from within location category 2. Therefore the planning permit application will be assessed on the detailed assessment pathway. The strategic biodiversity value score of the native vegetation to be removed is 0.565.

If a permit is granted, the offset requirements would be 2.150 general habitat units.

The general offset must be within the Port Phillip and Westernport Catchment Management Authority (PPWCMA) area or the Hume municipal district, and must have a minimum strategic biodiversity value score of 0.452.

Avoid/minimise statement

The Victorian Planning Authority is reducing their impacts to native vegetation by designing around scattered trees, and large trees in patches, wherever possible. Of the 166 large trees, only 29 are proposed to be removed.

Recommendations

The results of this assessment should be incorporated into the project design, by adding the flora and fauna mapping information into the planning maps and investigating options to retain as much of the mapped vegetation/habitats as possible. To retain this vegetation, the developer should erect 'No-Go' fencing around tree protection zones and patches of native vegetation outside of the impact footprint.

1. Introduction

1.1 Project background

Biosis Pty Ltd was commissioned by the Victorian Planning Authority (VPA) to undertake a biodiversity assessment of land proposed to be included within Precinct Structure Plan (PSP) 1202, otherwise known as Lindum Vale. This area includes two main parcels of land, 1920 and 2040 Mickleham Road, Mickleham, as well as three other small parcels with frontage to Mickleham Road (Figure 1). This land has been included within Melbourne's expanded Urban Growth Boundary (UGB) to be developed for urban subdivision. However this area is not covered by Victoria's Biodiversity Conservation Strategy (BCS - DEPI 2013a).

1.2 Scope of assessment

The objectives of this investigation are to:

- Review databases relating to flora and terrestrial fauna issues for areas within a 5 kilometre radius of the study area, including the Victorian Biodiversity Atlas (VBA), Victorian Flora Information System (FIS), and *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) Protected Matters Search Tool.
- Conduct a field assessment of the flora and fauna values present within the study area.
- Identify and map any patches of native vegetation or scattered trees within the study area as defined by the 2017 Department of Environment, Land, Water and Planning (DELWP) Guidelines for the Removal, Destruction or Lopping of Native Vegetation (the Guidelines).
- Classify these patches of native vegetation into the appropriate ecological vegetation classes (EVCs) and conduct a Vegetation Quality Assessment as prescribed by the relevant DELWP guidelines (i.e. DSE 2004 Vegetation Quality Assessment Manual - guidelines for applying the habitat hectare scoring method - version 1.3).
- Document any rare or threatened flora and fauna species observed or the potential for such species to occur based on the habitat present and records for rare or threatened species identified by the database searches.
- Identify the implications of state and federal biodiversity legislation, the Hume Planning Scheme (including local policies) relevant to the project including the EPBC Act, *Flora and Fauna Guarantee Act 1988* (FFG Act), Hume Planning Scheme and particularly the objectives and decision guidelines of the Environmental Significance Overlay (ESO) schedule 5 (ESO5) and 11 (ESO11).
- Assess the potential impacts of the proposed subdivision in the context of the loss of native vegetation, fauna habitat and broader habitat connectivity and discuss mitigation options relevant to the proposal. Habitat connectivity should be assessed in relation to local networks of native vegetation and habitat, and in particular nearby reserves identified by the BCS.
- Provide DELWP with the relevant information, as specified in the Guidelines, to produce a Native Vegetation Removal Report (NVR).
- Provide a draft report outlining the findings of the investigations, the impact of the proposed development design and the offset prescription identified by DELWP for that impact.
- Provide a final report after receipt of comments on the draft.

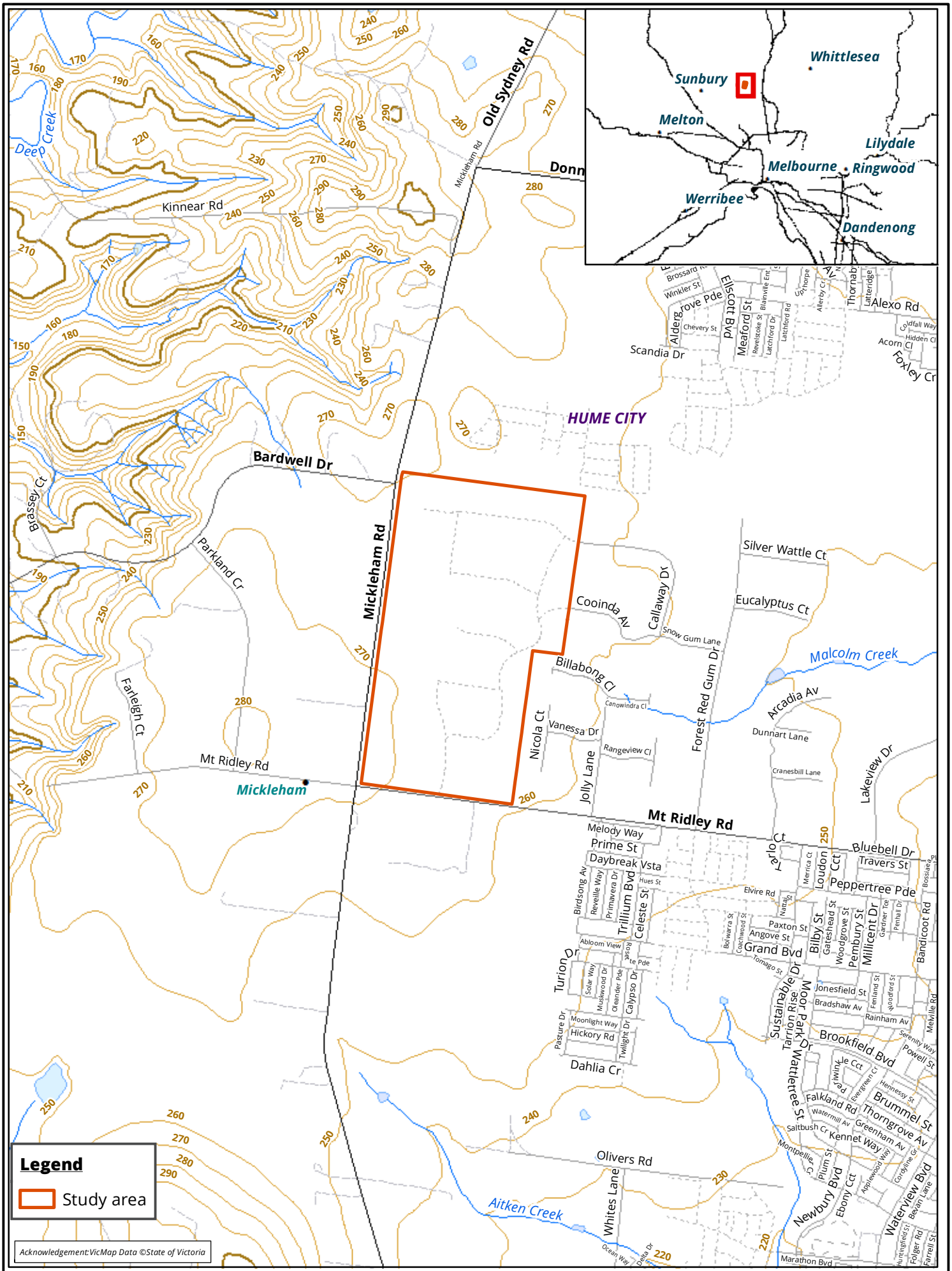

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Figure 1: Location of the study area - Mickleham Road, Mickleham Victoria

Matter: 27694,
Date: 22 May 2018,
Checked by: SGM, Drawn by: SKM, Last edited by: smitchell
Location:P:\27600s\27694\Mapping\27694_F1_Locality.mxd

0 0.25 0.5 0.75 1
Kilometers
Scale 1:25,000 @ A4, GDA 1994 MGA Zone 55

N

1.3 Location of the study area

The roughly 145 hectare site is approximately 9 kilometres north of Craigieburn and 25 kilometres north of Melbourne (Figure 1). It is bounded to the west by Mickleham Road, to the south by Mount Ridley Road, to the north by high tension power-lines on private property and to the east by private rural residential lots. It is currently zoned Green-Wedge A Zone and is also covered in part by ESO5 and ESO11.

The study area is within the:

- Victorian Volcanic Plain Bioregion
- Yarra River Basin (Malcolm and Merri Creek catchments)
- Management area of Melbourne Water and the Port Phillip and Westernport Catchment Management Authority (CMA)
- City of Hume.

2. Methods

2.1 Database review

In order to provide a context for the study area, information about flora and fauna from within 5 kilometres of the study area (the 'local area') was obtained from relevant biodiversity databases. Records from the following databases were collated and reviewed:

- Victorian Biodiversity Atlas 'VBA_FAUNA25, FAUNA100 & FAUNA Restricted' August 2015 © The State of Victoria
- DELWP NatureKit mapping tool
- Protected Matters Search Tool of the Australian Government Department of the Environment and Energy (DoEE) for matters protected by the EPBC Act.

Other sources of biodiversity information were examined including:

- DELWP Native Vegetation Information Management (NVIM) system

The following reports were also reviewed:

- Biosis Research 2009. Survey of the Golden Sun Moth at Lindum Vale, Mickleham, Victoria. Report for MAB Corporation. Authors Venosta, M. Biosis Research, Melbourne. Project No. 7564.
- Biosis Research 2010. Targeted Striped Legless Lizard survey – Lindum Vale Property, Mickleham. Report for MAB Corporation. Authors Venosta, M. Gilmore, D. and Garvey, N. Biosis Research, Melbourne. Project No. 7559.
- Biosis Research 2012. 'Lindum Vale' Property, 1920 and 2040 Mickleham Road, Mickleham, Victoria: Flora and fauna assessment. Report for MAB Corporation. Authors Mueck, S. and Gilmore, D. Biosis Research, Melbourne. Project No. 13869.
- Biosis 2013. Systematic search for Matted Flax-lily in areas of native vegetation at "Lindum Vale" 1920 and 2040 Mickleham Road, Mickleham. Report for MAB Corporation. Author Mueck, S. Biosis Research, Melbourne. Project No. 16178.
- Biosis 2014. Tree Assessment and Arboricultural Report: Lindum Vale, Mickleham. Report for MAB Corporation. Authors Callow, D. Biosis, Melbourne. Project No. 17916.
- Biosis 2015. Lindum Vale: Golden Sun Moth survey and habitat assessment. Report for MAB Corporation. Author: Venosta, M. and Mueck, S. Biosis Pty Ltd, Melbourne. Project no. 19308.

2.2 Definitions of significance

The significance of a species or ecological community is determined by its listing status under Commonwealth or State legislation / policy (Table 1).

Table 1 Criteria for determining significance of species & ecological communities.

Significance	
National	Listed as critically endangered, endangered or vulnerable under the EPBC Act
State	Listed as critically endangered, endangered or vulnerable in Victoria on a DELWP Advisory List (DSE 2009; DSE 2013; DEPI 2014a) Listed as threatened under the FFG Act

Lists of significant species generated from the databases are provided in Appendix 1 (flora) and Appendix 2 (fauna) and the species have been assessed to determine their likelihood of occurrence based on the process outlined below.

2.3 Determining likelihood of occurrence of significant species

Likelihood of occurrence indicates the potential for a species or ecological community to occur regularly within the study area. It is based on expert opinion, information in relevant biodiversity databases and reports, and an assessment of the habitats on site. Likelihood of occurrence is ranked as negligible, low, medium, high or recorded. The rationale for the rank assigned is provided for each species in Appendix 3 (flora) and Appendix 4 (fauna).Those species for which there is little or no suitable habitat within the study area are assigned a likelihood of low or negligible and are not considered further.

Only those species listed under the EPBC Act or listed as threatened under the FFG Act (hereafter referred to as 'listed species') are assessed to determine their likelihood of occurrence. The habitat value for species listed on the DELWP Advisory Lists is calculated by the Habitat Importance Modelling produced by DELWP (DELWP 2017). Where DELWP Advisory List species are recorded in the study area this is noted in Appendices 1 and 2.

Species which have at least medium likelihood of occurrence are given further consideration in this report. The need for targeted survey for these species is also considered.

2.4 Site investigation

2.4.1 Flora assessment

The flora assessment was undertaken on 5 March 2015 and a list of flora species was collected. This list has been submitted to DELWP for incorporation into the Victorian Biodiversity Atlas. Planted species have not been recorded unless they are naturalised.

Native vegetation is defined in the Victoria Planning Provisions as 'plants that are indigenous to Victoria, including trees, shrubs, herbs and grasses' (Clause 72).

The Guidelines classify native vegetation into two categories (DELWP 2017):

- A **patch** of native vegetation (measured in hectares) is either:
  - An area of native vegetation, with or without trees, where at least 25 percent of the total perennial understorey cover is native plants.

- An area with three or more native canopy trees where the drip line (i.e. the outermost boundary of a tree canopy) of each tree touches the drip line of at least one other tree, forming a continuous canopy.
- Any mapped wetland included in the *Current wetlands map,* available in DELWP systems and tools.

Patch vegetation is classified into ecological vegetation classes (EVCs). An EVC contains one or more floristic (plant) communities, and represents a grouping of broadly similar environments. Definitions of EVCs and benchmarks (condition against which vegetation quality at the site can be compared) are determined by DELWP.

- A **scattered tree** is defined as a native canopy tree that does not form part of a patch of native vegetation.

A canopy tree is a mature tree that is greater than three metres in height and is normally found in the upper layer of a vegetation type. Ecological vegetation class descriptions provide a list of the typical canopy species. A scattered tree is defined as either small or large, and is determined using the large tree benchmark for the relevant EVC. The extent of a small scattered tree is the area of a circle with a 10 metre radius (i.e. 0.031 hectares), while the extent of a large scattered tree is a circle with a 15 metre radius (i.e. 0.070 hectares). A condition score is applied to each scattered tree based on information provided by DELWP's NVIM.

A Vegetation Quality Assessment was undertaken for all patches of native vegetation identified in the study area. This assessment is consistent with DELWP's Habitat hectare method (DSE 2004) and the Guidelines (DELWP 2017). For the purposes of this assessment the limit of the resolution for the Habitat hectare assessment process is taken to be 0.001 Habitat hectares (Hha). That is, if native vegetation is present with sufficient cover but its condition and extent would not result in the identification of at least 0.001 Habitat hectares then that vegetation will not be mapped or assessed as a separate habitat zone.

Where relevant, notes were made on specific issues such as noxious weed infestations, evidence of management works, current grazing impacts and the regeneration capacity of the vegetation.

Species nomenclature for flora follows the Victorian Biodiversity Atlas (VBA).

2.4.2 Fauna assessment

The study area was investigated in 2009, 2010, 2012 and 2015 to determine its values for fauna. These were determined primarily on the basis of the types and qualities of habitat(s) present. All species of fauna observed during the assessment were noted and active searching for fauna was undertaken.

Targeted surveys have been undertaken for Striped Legless Lizard *Delma impar* and Golden Sun Moth *Synemon plana* (Biosis Research 2009 & 2010 and Biosis 2015).

2.4.3 Permits

Biosis undertakes flora and fauna assessments under the following permits and approvals:

- Research Permit/Management Authorisation and Permit to Take Protected Flora & Protected Fish issued by DELWP under the *Wildlife Act 1975, Flora and Fauna Guarantee Act 1988* and *National Parks Act 1975* (Permit number 10007569).
- Permit to catch and release fish issued by The Department of Economic Development, Jobs, Transport and Resources under the *Fisheries Act 1995* (Personal File number 136041).
- Approvals 07.15 and 10.15 from the Wildlife and Small Institutions Animal Ethics Committee.

- Scientific Procedures Fieldwork Licence from the Wildlife and Small Institutions Animal Ethics Committee (Licence number 20020).

2.5 Qualifications

Ecological surveys provide a sampling of flora and fauna at a given time and season. There are a number of reasons why not all species will be detected at a site during survey, such as low abundance, patchy distribution, species dormancy, seasonal conditions, and migration and breeding behaviours. In many cases these factors do not present a significant limitation to assessing the overall biodiversity values of a site.

The current flora and fauna assessment was conducted in summer, which is not an optimal time for survey. However, where relevant, data has been included from previous surveys conducted by Biosis within the study area. As a result there are no seasonal or other external factors which limit the results of this assessment.

Native Vegetation Removal Reports are prepared through DELWP's NVIM system or requested through DELWP's Native Vegetation Transitional Guidance team. Biosis supplied the relevant site-based spatial information as inputs to the VPA who then liaised with and supplied the data to DELWP. This report is reliant on DELWP's output reports for all assessment pathway applications. Biosis makes every effort to ensure site and spatial information entered into the NVIM, or supplied to DELWP, is an accurate reflection of proposed native vegetation removal. The Native Vegetation Removal Report can be viewed in Appendix 4.

2.6 Legislation and policy

The implications for the project were assessed in relation to key biodiversity legislation and policy including:

- Matters listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), associated policy statements, significant impacts guidelines, listing advice and key threatening processes
- Threatened taxa, communities and threatening processes listed under Section 10 of the *Flora & Fauna Guarantee Act 1988* (FFG Act); associated action statements and listing advice
- Guidelines for the removal, destruction or lopping of native vegetation (DELWP 2017)
- Native Vegetation Management Plans prepared by Catchment Management Authorities
- *Planning and Environment Act 1987* – specifically Clauses 12.01-2, 52.17 and 66.02 and Overlays in the Hume Planning Scheme
- Noxious weeds and pest animals lists under the *Catchment and Land Protection Act 1994* (CaLP Act)
- *Fisheries Act 1995*
- *Water Act 1989*
- *Environment Protection Act 1971*: State Environmental Protection Policy (Waters of Victoria) 2003.

2.7 Mapping

Mapping was conducted using hand-held (uncorrected) GPS units (WGS84) and aerial photo interpretation. The accuracy of this mapping is therefore subject to the accuracy of the GPS units (generally ± 5 metres) and dependent on the limitations of aerial photo rectification and registration.

Mapping has been produced using a Geographic Information System (GIS). Electronic GIS files which contain our flora and fauna spatial data are available to incorporate into design concept plans. However this mapping may not be sufficiently precise for detailed design purposes.

3. Results

Species recorded during the flora and fauna assessment are listed in Appendix 1 (flora) and Appendix 2 (fauna). Unless of particular note, these species are not discussed further.

Those species recorded or predicted to occur in the local area is also provided in those appendices, along with an assessment of the likelihood of the species occurring within the study area.

3.1 Vegetation and fauna habitat

The majority of the study area has been highly modified due to the prolonged use of the site for grazing domestic stock and cropping. Most of the study area has been significantly degraded and supports predominantly introduced vegetation that is of limited value for native fauna.

Notwithstanding the above, the study area supports a range of ecological features including areas (patches) of native vegetation, scattered trees, constructed dams and dry stone walls. These features are described further in Table 2 and mapped in Figure 2.

The study area is predominantly flat, with a slight gradient to a small rise in the north. There is a drainage line that runs through the study area.

Photos are provided in Appendix 3.

Table 2 Summary of vegetation and habitat types within the study area.

Vegetation or habitat type	Description	Location	Significant values
Plains Grassy Woodland EVC 55	Supports an open canopy of River Red-gum *Eucalyptus camaldulensis* and occasionally Grey Box *Eucalyptus microcarpa* (Plates 1, 4 & 6). Typically there would be an open shrub layer of various wattles but with the exception of HZ 3 near the western boundary of the site, shrubs are largely absent from the study area due to long-term cattle grazing. In some cases Tree Violet *Melicytus dentatus* survives along dry stone walls. The ground layer supports grasses such as Common Wheat-grass *Anthosachne scabra,* Slender Wallaby-grass *Rytidosperma racemosum*, Brown-back Wallaby grass *Rytidosperma duttonianum* and Common Tussock-grass *Poa labillardierei*. In more degraded areas, herbs usually found within this EVC are poorly represented because of grazing pressure. The intact areas of the EVC support a range of herbs including Grassland Wood-sorrel *Oxalis perennans*, Slender Dock *Rumex brownii*, Kidney-weed *Dichondra repens*, Blue Devil *Eryngium ovinum* and Slender Speedwell *Veronica gracilis*. Degraded remnants have a high cover of weeds such as Brown-top Bent *Agrostis capillaris*, Spear Thistle *Cirsium vulgare* and introduced annual grasses. Relatively intact zones are represented by HZ 1, 2 and 3 while more degraded zones are represented by HZ 4 - 8.	Throughout the study area	Includes some areas of potential habitat for Matted Flax lily *Dianella amoena*, Golden Sun Moth *Synemon plana* and Striped Legless Lizard *Delma impar.*
Scattered trees	Scattered remnant trees (Plates 2, 3 & 8) provide a foraging resource for mobile fauna species. The majority of these scattered trees contain hollows. Note that the definition of a scattered tree only requires a canopy species to be "mature" and greater than 3 m tall. Dead trees greater than 3m tall and with a diameter at breast height (DBH) can also be classified as a scattered tree. Some trees previously identified as scattered large old trees which were burnt in the 2013 wildfire which impacted this region. Where these trees have coppiced and include material, alive or dead, which exceeds 3 m in height those individuals are still classified as scattered trees.	Throughout the study area.	Eucalypts in these areas offer potential foraging habitat for Swift Parrot *lathamus discolour.*
Predominantly introduced vegetation	The majority of the study area supports degraded paddocks that have been cleared, are subject to cropping and pasture improvement and are otherwise used for grazing domestic stock. Native vegetation in these areas consists of scattered grasses and herbs. Many paddocks are heavily infested with introduced species such as annual grasses, Cocksfoot Da*ctylis glomerata*, Toowoomba Canary-grass *Phalaris aquatica* and	Majority of the study area.	Areas of grassland infested with, or dominated by Chilean Needle-grass are potential habitat for Golden Sun Moth. Tussock-forming grasses, such as Serrated Tussock are potential habitat for Striped

Vegetation or habitat type	Description	Location	Significant values
	Brown-top Bent and also support scattered infestations of noxious weeds such as Spear Thistle, African Box-thorn *Lycium ferocissimum*, Serrated Tussock *Nassella trichotoma* and Chilean Needle-grass *Nassella neesiana*.		Legless Lizard. Flowering eucalypts that are not indigenous to the local area offer possible foraging habitat for Swift Parrot and Grey-headed Flying-fox *Pteropus poliocephalus.*
Rocky outcrops and dry stone walls	Natural rock outcrops on escarpments and agricultural dry stone walls. Latter are often now in disrepair (Plate 3).	Dry stone walls scattered throughout.	Surface rocks associated with natural outcrops and intact or remnant dry stone walls provide potential microhabitat for species such as Fat-tailed Dunnart *Sminthopsis crassicaudata* and Striped Legless Lizard.
Farm dams	The dams within the study area are in a degraded state owing to the absence of woody vegetation, trampling by livestock and nitrification. Nonetheless, the dams do provide habitat for waterbirds and amphibian species.	Small dams are in various locations across entire study area.	Dams are generally of low habitat value for significant fauna. All will be used occasionally by significant waterbirds but none offer important or limiting resources to any such. Edges of dams provide potential habitat for River Swamp Wallaby-grass *Amphibromus fluitans* despite their heavily degraded condition.
Planted vegetation	Planted vegetation most commonly occurs in gardens in the vicinity of houses. These generally contain few habitat values as most indigenous fauna species in the area are adapted to open grassland environments. However, these gardens may support a range of common native and introduced bird species, particularly when in flower.	Houses along Mickleham Road.	These gardens may support a range of common native and introduced bird species, particularly when in flower.

3.2 Landscape context

The study area is on the north eastern margin of the Victorian Volcanic Plain bioregion in close proximity to a boundary with the Central Victorian Uplands. No permanent creeks traverse the property. It is less than 2 kilometres from the Mount Ridley Grasslands Nature Conservation Reserve and is connected to the reserve by other areas of agricultural land, much of which is zoned for future residential development. The site is not included in any Biosite (DSE 2005). However, Biosite 5195 is about 1 kilometre to the east on the southern side of Mount Ridley Road.

Patches of trees within the study area contribute to a broader area of open woodland which is relatively unusual within the local landscape. These trees can serve as stepping stones for more mobile species such as birds and bats and provide some level of habitat continuity for other reserves in the local area such as the reserve system proposed under the BCS (DEPI 2013a). However the "on ground" continuity of grassland and woodland habitat between this site and other local reserves such as Mount Ridley Woodland to the north (BCS Conservation Area 26), Mount Ridley Nature Conservation Reserve to the east, BCS Conservation Area 29 to the south and other remnant native vegetation to the west, has already been or is planned to be compromised. Existing barriers include Mount Ridley Road, Mickleham Road, various roads and associated fences and housing to the east of the site and proposed housing currently under construction to the north. Regardless of the configuration of development within Lindum Vale, any retained remnants of native vegetation within this PSP will only maintain habitat continuity as stepping stone habitat for more mobile species.

3.3 Significant species and ecological communities

3.3.1 EPBC Act and FFG Act listed species

Lists of EPBC Act and FFG Act listed species recorded or predicted to occur within 5 kilometres of the study area or from the relevant catchment (aquatic species) are provided in Appendices 1 and 2. An assessment of the likelihood of these species occurring in the study area and an indication of where within the site (i.e. which habitats or features of relevance to the species) is included. A summary of those species recorded or with a medium or higher likelihood of occurring in the study area is provided in Table 3.

Table 3 Summary of EPBC and FFG Act listed species most likely to occur in the study area.

Species name	Listing status	Area of value within the study area
River Swamp Wallaby-grass Amphibromus fluitans	Vulnerable under the EPBC Act	May occur within seasonally wet areas of the site or along the edges of constructed dams
Austral Crane's-bill *Geranium solanderi*	Vulnerable in Victoria (DELWP Advisory list)	Recorded during the previous assessment. Recorded within the road reserve for Mount Ridley Road with a few individuals occurring within 2-3 m north of the road reserve within HZ 1 and 2.
Golden Sun Moth *Synemon plana*	Critically endangered under EPBC Act, listed under FFG Act	The majority of the site supports an open grasslands structure and larval food plants that is favoured by Golden Sun Moth; the location records of this species are provided in Figure 2.

3.3.2 DELWP advisory list of rare and threatened species

To support decision making under the Guidelines, DELWP has produced maps for Victoria showing the modelled extent of habitat for most listed rare or threatened species. These maps are called 'habitat importance maps' and they assign a 'habitat importance score' to a location based on the importance of that location in the landscape as habitat for a particular rare or threatened species, in relation to other suitable habitat for that species (DELWP 2017).

Under the Guidelines, these maps form the basis for determining the impact of potential native vegetation removal on rare and threatened species. The maps only apply where a proposal to remove native vegetation is considered on detailed assessment pathway. The habitat importance scores are used to calculate the type and extent of biodiversity offsets required for native vegetation removal that impacts on individual rare or threatened species habitat.

A summary of those species for which habitat is modelled in the study area is provided in Table 4. These data were provided by DELWP Native Vegetation Support team and a full output report from DELWP is provided in Appendix 4. Four of these species, Black Falcon *Falco subniger*, Brown Toadlet *Pseudophryne bibronii*, Golden Sun Moth and Austral Crane's-bill have database records within the local area (refer relevant Appendix for species records). Two of the species, Golden Sun Moth and Austral Crane's-bill have been recorded within the study area.

Determination of the requirement for a specific offset based on the extent of impact to one or more rare or threatened species is addressed in Section 5.

Table 4 Summary of rare or threatened species' habitats modelled in the study area.

Species number	Species scientific name	Species common name	Recorded on site during Biosis assessment?
10238	*Falco subniger*	Black Falcon	No
10498	*Calamanthus pyrrhopygius*	Chestnut-rumped Heathwren	No
10598	*Grantiella picta*	Painted Honeyeater	No
12283	*Varanus varius*	Lace Monitor	No
13117	*Pseudophryne bibronii*	Brown Toadlet	No
15021	*Synemon plana*	Golden Sun Moth	Yes
501456	*Glycine latrobeana*	Clover Glycine	No
504655	*Coronidium gunianum*	Pale Swamp Everlasting	No
505337	*Geranium solanderi*	Austral Crane's-bill	Yes

3.3.3 Significant ecological communities

Areas of Plains Grassy Woodland (EVC 55) within the study area represent the remnants of a vegetation community considered endangered within the Victorian Volcanic Plain bioregion. This vegetation also corresponds to remnants of Western Basalt Plains (River Red Gum) Grassy Woodland Floristic Community 55-04 which is listed under the FFG Act.

Habitat Zone 1 (Figure 2) also satisfies the definition of Grassy Eucalypt Woodland of the Victorian Volcanic Plain Community which is listed as critically endangered under the EPBC Act.

3.4 Other ecological values

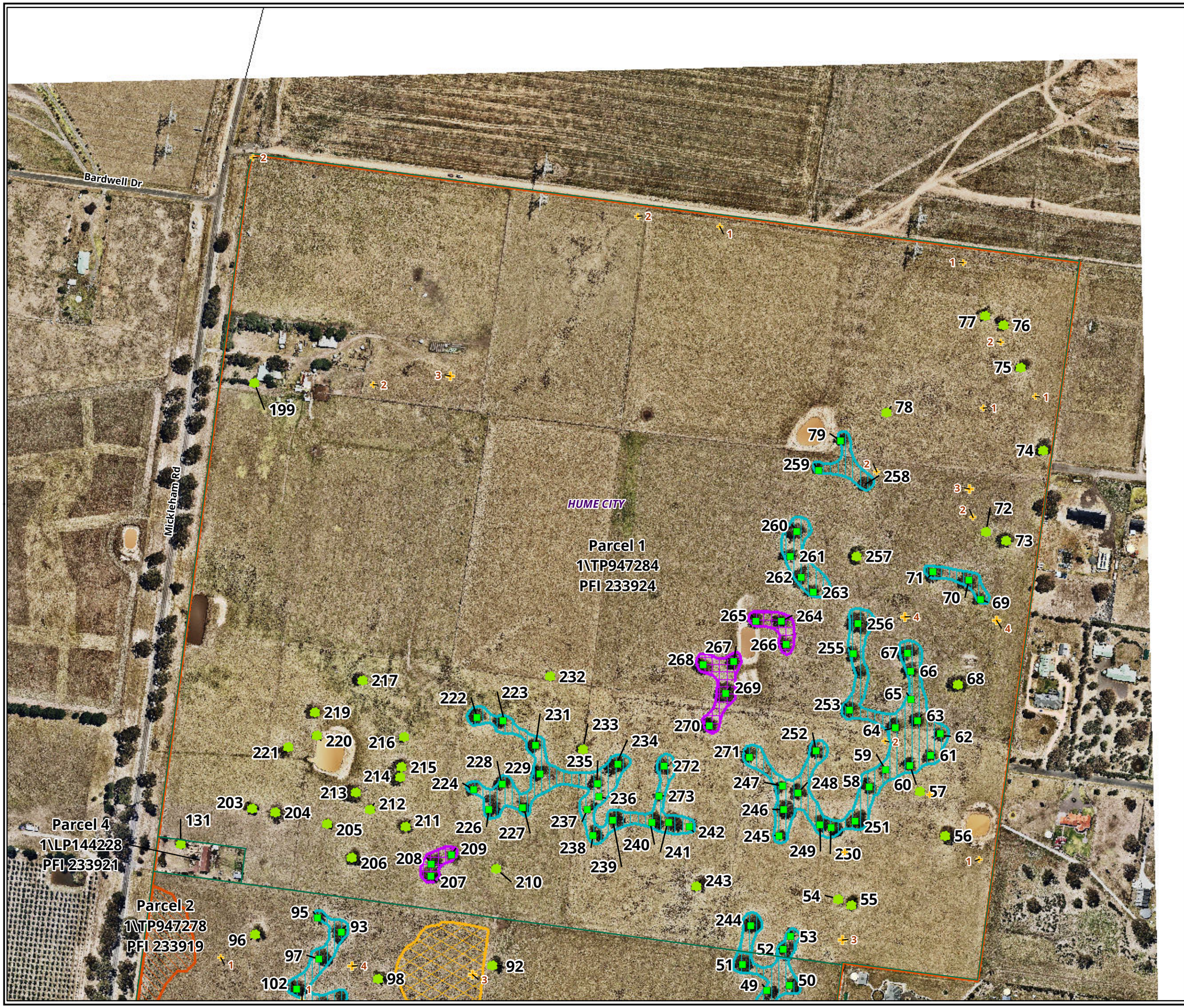
The study area is not included as part of a Biosite (DSE 2005).

The study area provides isolated areas of Plains Grassy Woodland between two reserves identified by the BCS. The remnant native vegetation within the study area therefore provides some level of habitat connectivity between these reserves for more mobile species such as birds and bats.

3.5 Further survey recommendations

The study area has been subjected to a number of targeted assessments by Biosis including surveys for Golden Sun Moth in 2009 and 2014, surveys for Striped Legless Lizard (Biosis Research 2010, Biosis 2015) and targeted survey for Matted Flax-lily (Biosis 2013). Of these targeted surveys, only Golden Sun Moth was confirmed as present within the study area.

These surveys are considered adequate to cover all the relevant significant species likely to require formal assessment under the EPBC Act, and no further surveys are recommended.



Legend

- Study area
- Plains Grassy Woodland EVC
- Zone code
  - HZ3
  - HZ4
  - HZ5
  - HZ6
- 2015 Significant trees
  - Tree in patch
  - Scattered Tree
- Golden Sun Moth 2015 (No. seen)
  - 1 - 2
  - 3 - 4

Figure 2.1: Ecological features of the study area

0 40 80 120 160 200

Metres

Scale: 1:4,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

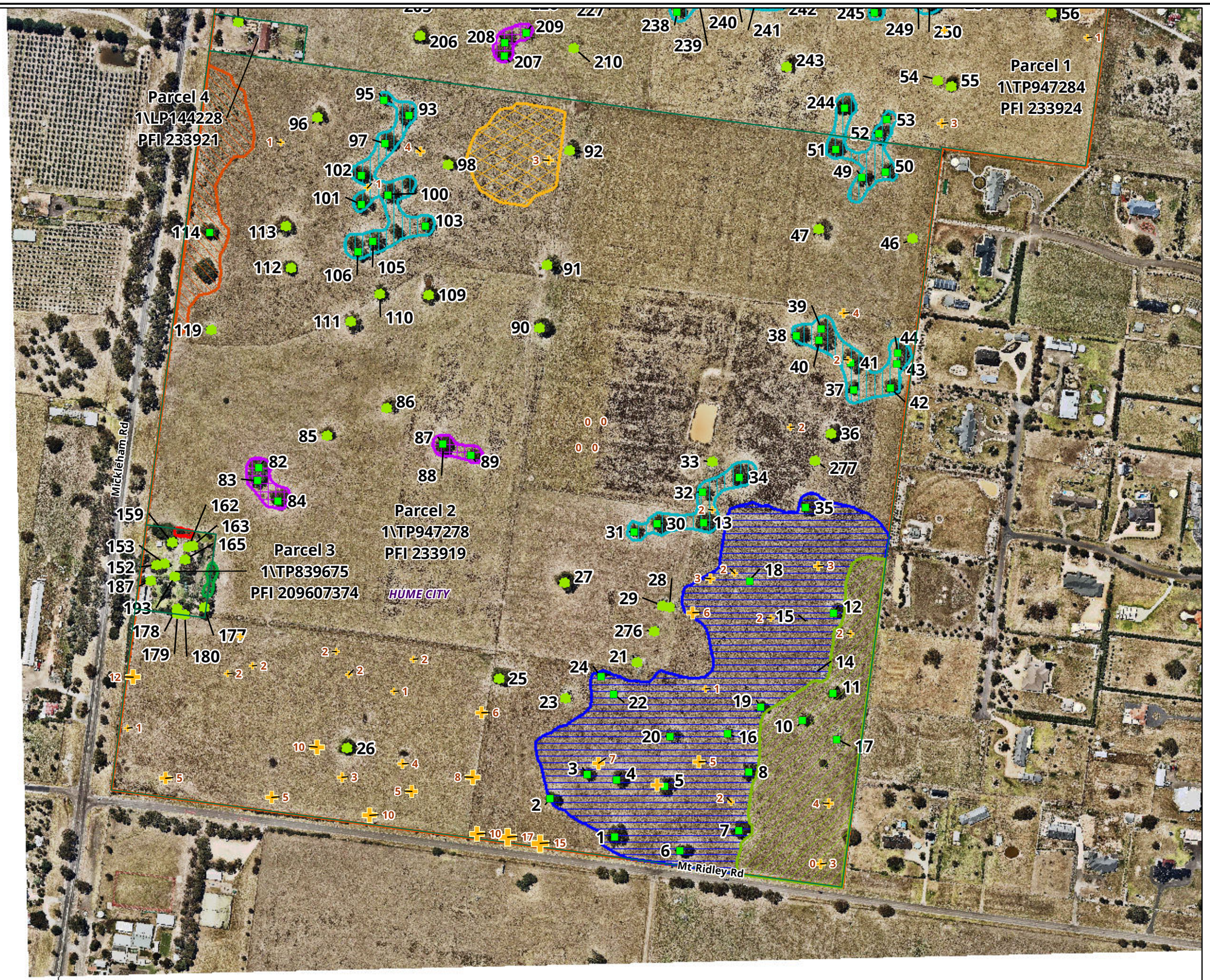
N

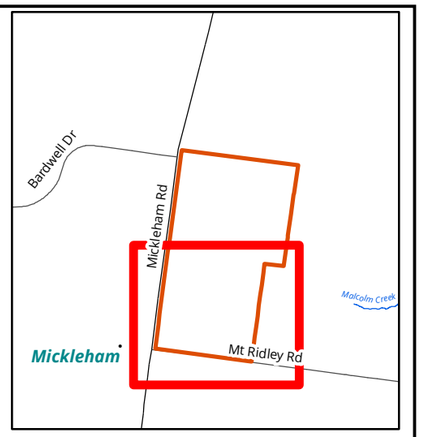
biosis

Biosis Pty Ltd

Albury, Ballarat, Melbourne, Newcastle
Sydney, Wangaratta & Wollongong

Matter: 27694,
Date: 22 June 2018,
Checked by: SGM, Drawn by: SKM, Last edited by: smitchell
Location:P:\27600s\27694\Mapping
27694_F2_EcoFeatures





Legend

- Study area
- Plains Grassy Woodland EVC
- Zone code
  - HZ1
  - HZ2
  - HZ3
  - HZ4
  - HZ5
  - HZ6
  - HZ7
  - HZ8
- 2015 Significant trees
  - Tree in patch
  - Scattered Tree
- Golden Sun Moth 2015 (No. seen)
  - 1 - 2
  - 3 - 4
  - 5 - 7
  - 8 - 12
  - 13 - 17

Figure 2.2: Ecological features of the study area

0 40 80 120 160 200

Metres
Scale: 1:4,000 @ A3
Coordinate System: GDA 1994 MGA Zone 55

N

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Biosis Pty Ltd

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Sydney, Wangaratta & Wollongong

Matter: 27694,
Date: 22 June 2018,
Checked by: SGM, Drawn by: SKM, Last edited by: smitchell
Location:P:\27600s\27694\Mapping
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4. Biodiversity legislation and government policy

This section provides an assessment of the project in relation to key biodiversity legislation and government policy. This section does not describe the legislation and policy in detail. Where available, links to further information are provided.

4.1 Commonwealth

4.1.1 Environment Protection and Biodiversity Conservation Act 1999

The EPBC Act applies to developments and associated activities that have the potential to significantly impact on Matters of National Environmental Significance (MNES) protected under the Act.

Link for further information including a guide to the referral process is available at: http://www.environment.gov.au/epbc/index.html.

MNES relevant to the project are summarised in Table 5. It includes an assessment against the EPBC Act policy statements published by the Australian Government which provide guidance on the practical application of EPBC Act.

Table 5 Assessment of project in relation to the EPBC Act.

MNES	Project specifics	Assessment against significant impact guidelines
Threatened species and ecological communities	4 listed threatened ecological communities are identified as potentially occurring in the local area. 21 species have been recorded or predicted to occur in the project search area. The likelihood of these species occurring in the study area is assessed in Appendices 1 and 2.	Survey confirms the presence of Grassy Eucalypt Woodland of the Victorian Volcanic Plain (DSEWPaC 2011). Golden Sun Moth has been recorded in relatively large numbers within the study area and development is likely to have a significant impact on this species (DEWHA 2009). Surveys provide evidence that Matted Flax-lily and Striped Legless Lizard are not present.
Migratory species	11 migratory species have been recorded or predicted to occur in the project search area (Appendix 4).	While some of these species would be expected to use the study area on occasions, and some of them may do so regularly or may be resident, it does not provide important habitat for an ecologically significant proportion of any of these species.
Wetlands of international importance (Ramsar sites).	No Ramsar Wetlands occur on site or within the vicinity of the study area.	No impact likely on any significant wetland.

On the basis of potential for significant impacts on Golden Sun Moth the EPBC Act is likely to be triggered and referral of the proposed action to the Australian Government Minister for the Environment is therefore recommended.

4.2 State

4.2.1 Flora and Fauna Guarantee Act 1988 (FFG Act)

The FFG Act is the key piece of Victorian legislation for the conservation of threatened species and communities and for the management of potentially threatening processes. Under the FFG Act a permit is required from DELWP to 'take' protected flora species from public land. A permit is generally not required for removal of protected flora from private land. Authorisation under the FFG Act is required to collect, kill, injure or disturb listed fish.

Native vegetation on site is a listed community, and contains a number of protected flora species, and one listed threatened fauna species (Golden Sun Moth) and associated habitat (Appendix 2).

The land is privately owned, is not declared 'critical habitat' for the purposes of the FFG Act and the flora species are not being taken for the purpose of commercial sale. Therefore a protected flora permit is not required, however the presence of rare or threatened flora and habitat for threatened fauna will be considered by the Responsible Authority in determining its response to an application for vegetation removal under Clause 52.17 (see below).

However, the area impacted by the expansion of Mount Ridley Road will become public land and the development of that area would require an FFG Act permit unless the proponent (which may be VicRoads) has an exemption or an existing permit to cover the works.

Link for further information: http://www.depi.vic.gov.au/environment-and-wildlife/threatened-species-and-communities/flora-and-fauna-guarantee-act-1988.

4.2.2 Catchment and Land Protection Act 1994 (CaLP Act)

The CaLP Act identifies and classifies certain species as noxious weeds or pest animals, and provides a system of controls on noxious species.

Declared noxious weeds identified in the study area are listed in Appendix 1 (Table A1.1) and established pest animals are listed in Appendix 2 (Table A2.1).

The proponent must take all reasonable steps to 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. The State is responsible for eradicating State prohibited weeds from all land in Victoria.

Link for further information: http://www.depi.vic.gov.au/agriculture-and-food/pests-diseases-and-weeds/protecting-victoria-from-pest-animals-and-weeds/legislation-policy-and-permits/legislation.

4.2.3 Planning and Environment Act 1987 (incl. Planning Schemes)

The *Planning and Environment Act 1987* controls the planning and development of land in Victoria, and provides for the development of planning schemes for all municipalities.

Of particular relevance to the development proposal are controls relating to the removal, destruction or lopping of native vegetation contained within the Hume Planning Scheme (the Scheme), including permit requirements. The Scheme (Clause 72) defines 'native vegetation' as 'Plants that are indigenous to Victoria, including trees, shrubs, herbs and grasses'. It is an objective of Clause 12.01-2 of the State Planning Policy Framework (Native Vegetation Management) that removal of native vegetation results in no net loss in the contribution made by native vegetation to Victoria's biodiversity.

Clause 52.17 (Native Vegetation) requires a planning permit to remove, destroy or lop native vegetation including some dead native vegetation, unless the table to Clause 52.17-7 outlines an exemption. Decision guidelines that must be considered by the referral or responsible authority are contained in Section 7 of the Guidelines, and referred to in Clause 52.17-4. It should be noted that where native vegetation does not meet the definition of a patch or scattered tree, as described in Section 3.1, the Guidelines do not apply. However, a permit may still be required to remove, destroy or lop native vegetation under the provisions of the Scheme.

Clause 65.02 requires consideration of native vegetation retention in a subdivision application and siting of open space areas.

Under Clause 66.02 a permit application to remove, destroy or lop native vegetation is required to be referred to DELWP as a recommending referral authority if any of the following apply:

- the class of application is on the detailed assessment pathway
- a property vegetation precinct plan applies to the site or
- the native vegetation is on Crown land occupied or managed by the Responsible Authority.

The need for a permit to remove native vegetation may also be triggered by various overlays within the Scheme. The location of the overlays in relation to the study area can be determined via the following link: http://planningschemes.dpcd.vic.gov.au.

The provisions of the following overlays apply to the study area:

Schedule 5 to the Environmental Significance Overlay (ESO5)

A permit is required to remove native vegetation and an application to remove native vegetation must indicate:

- The total extent of vegetation on the property and the extent of native vegetation proposed to be cleared.
- The purpose of the proposed clearing and any proposals for revegetation, including proposed species, and ground stabilisation.
- A report by a suitable qualified person which describes the vegetation and habitat significance of the site, to the satisfaction of the responsible authority.

Before deciding on an application, the responsible authority must consider:

- The effect of the proposed removal of native vegetation on the habitat value and long term viability of remnant grasses in the vicinity.
- The significance of the native vegetation area.
- The reason for removing the vegetation and the practicality of alternative options which do not require removal of the native vegetation.

- The requirements of the Native Woodland Protection Area Guidelines as they apply to land within the Mount Ridley Local Structure Plan.

Schedule 11 to the Environmental Significance Overlay 11 (ESO11)

The objectives of this overlay are to:

- Protect and improve the viability of habitats, ecological communities, flora and fauna and genetic diversity of key areas within the Urban Growth Boundary.
- Enhance the environmental and landscape values of the area.
- Protect the unique geological features of the area.
- Ensure that any use, development or management of land within and adjacent to areas of biological significance are compatible with their long-term maintenance and conservation and will not have detrimental impacts on biodiversity values.
- Encourage ecological restoration, regeneration and revegetation with indigenous species within the area.
- Maintain and enhance habitat connectivity for listed threatened species.
- Prevent a decline in the extent and quality of native vegetation and native fauna habitat.
- Ensure that the siting and design of any buildings and works maintains the environmental integrity of the area.
- Maintain and enhance the integrity of sites of environmental significance.
- Provide for the long term preservation of the flora and fauna and associated habitat of environmentally significant areas.

A permit is not required to:

- Remove non-native vegetation (including when it is dead).
- Remove vegetation where it has been planted or grown for amenity or aesthetic purposes.
- For the purposes of maintenance where no more than one third of the foliage is removed from any individual plant. This exemption does not apply to the pruning or lopping of the trunk of a tree or shrub or to native vegetation within a road or railway reservation.

An application must be accompanied by:

- A description of any proposed disturbance of surface soil or rocks associated with the proposal.
- The total extent of vegetation on the property and the extent of native vegetation proposed to be cleared.
- A description of the steps that have been taken to avoid and minimise the removal of native vegetation including the practicality of alternative options which do not require removal of the native vegetation.

An application must also be accompanied by, as appropriate:

- A flora and fauna assessment of the land prepared by a suitably qualified and experienced person to the satisfaction of the responsible authority. The assessment must include:
  - A flora and fauna survey.
  - A habitat hectare assessment.
  - Identification of the vegetation and habitat significance of the property.
  - A description of the effect of the proposed development in relation to other areas of native vegetation or native fauna habitat, including any proposed reserves, strategic reserves, conservation reserves, streams and waterways.

- A land and environmental management plan prepared by a suitably qualified person identifying, as appropriate:
  - Any proposals for revegetation, including proposed species, and ground stabilisation.
  - How any vegetation removal will be offset (an offset plan), in accordance with Victoria's Native Vegetation Management: A Framework for Action (NRE 2002).
  - Weed management, including species to be targeted and proposed management techniques.
  - Pest animal management, including species to be targeted and proposed management techniques.

If in the opinion of the responsible authority a flora and fauna assessment of the land or a land and environmental management plan is not relevant to the assessment of an application, the responsible authority may waive or reduce the requirement.

Specific ESO requirements / objectives

ESO5

The focus of ESO5 appears to be the conservation of significant species, communities and habitats in the Mount Ridley locality, with this area identified as of state significance due to the high diversity of flora species and relatively intact examples of Red Gum woodland and their natural grassy understorey. The best examples of this are conserved in the Mount Ridley Woodland Reserve which is contiguous with the Mount Ridley Grasslands conservation area.

Lindum Vale does support two areas of Red Gum woodland with at least some natural grassy understorey, with the most intact and species rich area being HZ 1 (Figure 2) and to a lesser extent HZs 2, 3 & 4. Habitat Zones 5 & 6 are typically dominated by mature trees with high habitat values. However these areas exist as patches because of the presence of three or more canopy trees providing more than 20% projected foliage cover while the ground cover typically supports a low abundance of a small number of otherwise common indigenous grasses and herbs.

The clearing of native vegetation within the study area, including patches of native vegetation and scattered trees would have a localised impact on populations of common and threatened species, specifically Austral Crane's-bill and Golden Sun Moth. This is unlikely to have an impact on the viability or conservation status of other native vegetation within the general locality or broader bioregion, including the area of ESO5 within Lindum Vale.

The impact on Austral Crane's-bill will largely result from the upgrade of Mount Ridley Road (outside ESO5) as all individuals of this species were recorded within the area to be impacted by this upgrade. No other threatened flora were recorded within the broader area of Lindum Vale.

In terms of habitat connectivity for vertebrate fauna, the majority of species within the local area are widespread and common. While the site may be utilised on occasion by rare or threatened fauna (i.e. Swift Parrot, Grey headed Flying-fox) these species are highly mobile and the foraging habitat present does not represent a significant proportion of the broader habitat resources for these species.

The critically endangered Golden Sun Moth has been recorded within the study area and this population is considered part of a broader population that extends south, north and east of the study area. The proposal will likely have a significant impact on the local population of this species through loss of habitat and habitat fragmentation.

More mobile examples of the resident fauna include woodland and open country birds and microbats. These species will suffer a loss of habitat from any clearing associated with residential development (e.g. loss of pasture foraging areas and loss of trees as foraging, perching, nesting and roosting sites). Many of these

species are dependent on large old hollow bearing trees for nesting and/or shelter. Large old trees also provide an abundance of food resources for birds that forage in the foliage and flowers. Many of the birds and microbats are highly mobile and are able to move around the local landscape despite the exiting barriers such as roads, residential developments and clearing associated with agriculture. The proposed residential development will likely present less of a barrier to movement for these species.

The removal of large old trees within Lindum Vale would reduce the hollow/foraging resource for the existing vertebrate fauna, but given the mobile nature of these local inhabitants, connectivity to and between Mount Ridley Woodland and BCS Conservation Area 29 is unlikely to be significantly influenced by such clearing. For these reasons, the loss of some of this habitat is not considered to be a significant impact on local habitat connectivity. Therefore, while the retention of large old trees should be encouraged, the optimum arrangement would be to retain consolidated patches of habitat rather than scattered individual trees.

Mammals that move across the ground such as Eastern Grey Kangaroo *Macropus giganteus* and Common Brushtail Possum *Trichosurus vulpecula* will also suffer a loss of habitat as well as a loss of habitat connectivity as the environment will present additional physical barriers (e.g. roads, housing) as well as behavioural barriers such that deter movement such as dogs and humans. For these species, losses in or restrictions in habitat connectivity is plausible.

In summary the clearing of native vegetation associated with the urban development of PSP 1202 will have a negative impact on the species richness, habitat values and overall intactness within areas covered by ESO5. As this vegetation contributes to the broader Mount Ridley woodlands which have regional and state conservation significance any clearing within Lindum Vale could be viewed as inconsistent with the objectives of ESO5. However, given the condition of the vegetation in comparison to the broader Mount Ridley woodland, the impact of limited clearing is not expected to be significant at the regional or state level. It also important to note that the current land use, if continued, would also result in an ongoing decline in the values ESO5 attempts to protect.

ESO5 Requirements

ESO5 requires that the total extent of vegetation on the property, its condition and significance is described. This report satisfies that requirement although it is required to be accepted by Hume City Council.

ESO5 also requires the extent to which that native vegetation is proposed to be cleared is defined. An NVPP to be prepared by the VPA (in consultation with Hume City Council) would define the extent of proposed clearing.

Once the proposed clearing is defined, there is an expectation that some areas of native vegetation would be retained as part of the PSP, specifically some or all of the area of Plains Grassy Woodland in the south eastern corner adjacent to Mount Ridley Road. This area would then have an environmental management plan prepared to identify any revegetation and rehabilitation works (as required by ESO5).

ESO11

The first objective for ESO11, relates to key areas within the UGB. Based on past discussions with DELWP, and their recent attempts to conserve HZ 1 & 2 (Figure 2), they would consider these two habitat zones to be defined as such a key area. This, by default suggests that DELWP would not consider other areas of native vegetation within the study area as key areas within the UGB. Given the critically endangered nature of this vegetation community, this remnant is considered to be of conservation significance in the local area.

The generic objectives of ESO11, such as the enhancement of the environmental and landscape values, would be difficult to achieve if any clearing was proposed in association with the broader residential development of this land. However, the current land use, if continued, would also result in an ongoing decline in both of these

values. While the current land owner may be encouraged to conduct ecological restoration activities, these have not occurred to date.

The objective of ESO11to maintain and enhance habitat connectivity for listed threatened species suggests that the site either provides important habitat or is an essential movement corridor for such species. As discussed above, the site does provide potential habitat for a small number threatened vertebrate fauna species (Swift Parrot and Grey-headed Flying-fox). While the proposal would likely result in the removal of habitat for these species, in terms of habitat connectivity, these species are highly mobile and it is not expected that a loss of habitat connectivity would result from the proposed subdivision. Given the context of the site, it is fair to say that virtually all other threatened vertebrate fauna recorded or predicted to occur in the local area are either uncommon or vagrant visitors or are locally extinct.

Golden Sun Moth has been recorded and is widely distributed on site. Urban development will lead to a loss of habitat for this species in the local area and is also likely to result in the fragmentation of the broader population that extends beyond the study area into smaller, discrete populations. However, existing approvals associated with the expanded urban growth boundary will already largely result in the isolation of Lindum Vale's Golden Sun Moth habitat.

The objective of ESO 11 to prevent a decline in the extent and quality of the native vegetation and fauna habitat identified in this report is impossible under current land use conditions and under any development scenario.

Maintenance of native vegetation condition would require a significant conservation management effort. No resources are available for such works and even if there were, the site is private property and any such works would require the participation of the land owner.

ESO11 Requirements

This report provides for the information requirements of ESO11, including a flora and fauna survey, a habitat hectare assessment, identification of the vegetation and habitat significance of the property and a description of the effect of the proposed development in relation to other areas of native vegetation and fauna habitat, including any proposed reserves, strategic reserves, conservation reserves, streams and waterways.

ESO11 requires any development application to describe the steps taken to avoid and minimise the clearing of native vegetation. In this context, avoidance of clearing could be demonstrated through the exclusion of one or more patches of native vegetation from development. Minimising the impact on native vegetation can be identified through the design process avoiding higher quality areas of native vegetation and protecting groups of large old trees, while identifying lower quality areas of native vegetation and/or scattered trees to be cleared in favour of development. Identifying the design process for all such choices would document the "avoid and minimise" process conducted by a developer.

ESO11 requires a land and management plan identifying how any vegetation removal will be offset (an offset plan), in accordance with Victoria's Native Vegetation Management: A Framework for Action (NRE 2002) (the Framework). Permitted clearing in Victoria is currently governed by the Guidelines which have superseded the Framework. Any offsets associated with the development of PSP 1202 would result in the requirement to provide offsets as General Habitat Units which must be provided either within the City of Hume or within the administrative boundary of the Port Phillip and Westernport Catchment Management Authority (PPWPCMA). Under the Framework, offsets would be prescribed in terms of habitat hectares and large old tree protection requirements. These would need to be provided within the Victorian Volcanic Plain bioregion.

Identifying a requirement to produce a management plan for any native vegetation retained as a conservation reserve would be a reasonable permit condition to ensure consistency with the requirements of ESO11 to identify pest plant and animal management procedures for such a reserve.

The potential effect of native vegetation removal on local habitat values and the long term viability of remnant grasses in the vicinity have been discussed above. It is likely that the proposed duplication of Mount Ridley Road would result in a significant impact on Austral Crane's-bill due to the highly localised distribution of this species. However individuals of this species could be propagated and established within a reserve to be established in this vicinity. Otherwise, it is considered unlikely that the loss of some trees and scattered areas of remnant understorey species would have any measurable impact on the viability of other native vegetation in the local area.

References to the Framework within this overlay are considered out of date and a management plan should identify how native vegetation removal will be offset in accordance with the Guidelines (DELWP 2017).

Victoria's Guidelines for the removal, destruction or lopping of native vegetation

The Guidelines are incorporated into the Victoria Planning Provisions and all planning schemes in Victoria (DELWP 2017). The Guidelines replaced the previous incorporated document titled *Permitted clearing of native vegetation – Biodiversity assessment guidelines* (DEPI 2013) on 12 December 2017.

The purpose of the Guidelines is to guide how impacts to biodiversity should be considered when assessing a permit application to remove, destroy or lop native vegetation. The objective for the guidelines in Victoria is 'No net loss to biodiversity as a result of the removal, destruction or lopping of native vegetation'.

A detailed assessment of the implications for the project under the Guidelines is provided in Section 5 of this report. Under the Guidelines, there are three assessment pathways for assessing an application for a permit to remove native vegetation: basic, intermediate and detailed.

A detailed determination of the assessment pathway for the planning application relevant to the proposed development is provided in Section 5.2. In summary, the planning application for removal of native vegetation must meet the requirements of, and be assessed in, the detailed assessment pathway. These requirements are outlined in Section 5.

4.2.4 Water Act 1989

The primary purpose of the *Water Act 1989* is to provide a framework for the allocation and management of surface water and groundwater throughout Victoria. It provides a principal mechanism for maintenance of ecosystem functions including those of aquatic ecosystems. Under By-Laws created by the relevant Authority under the Act, the authorities regulate the works within and in the vicinity of waterways. In Melbourne Water's management area this applies to all waterways with a catchment area of 60 hectares or more. These waterways are deemed to be Melbourne Water assets, while all smaller watercourses are deemed the responsibility of the local government.

The proposed development will involve construction or maintenance activities that may affect waterways through increased or decreased surface run off. Development within the study area will require a permit from Melbourne Water. Guidelines and application forms are available from Melbourne Water's Asset Service team.

For developments within Melbourne Water's management area that entail the provision of new drainage infrastructure (e.g. residential or industrial subdivisions), approval for works on waterways is covered under the Agreement process set out in the Land Development Manual (http://ldm.melbournewater.com.au/content/introduction/introduction.asp).

4.2.5 Environment Protection Act 1970: State Environmental Protection Policy (Waters of Victoria) 2003

The Environment Protection Act underpins the State Environmental Protection Policy (SEPP) - Waters of Victoria which provides a legal framework for the protection and rehabilitation of Victoria's surface water environments.

The project may directly and/or indirectly impact upon Malcolm Creek and its aquatic ecosystems. The SEPP (Schedule 7 – Waters of the Yarra Catchment) requires that aquatic ecosystem values be protected. Environmental quality objectives and indicators are defined to protect beneficial uses (i.e. the uses and values of the water environment) and an attainment program provides guidance on protection of the beneficial uses.

Impacts to surface water quality must not result in changes that exceed background levels and/or the water quality objectives specified for the Rural Western Waterways segment to protect surface water uses and values. The proponent needs to ensure that direct and indirect (e.g. runoff) impacts to surface water quality do not exceed the background levels and/or water quality objectives.

Link to further information: http://www.epa.vic.gov.au/water/epa/wov.asp.

5. Victoria's Guidelines for the removal, destruction or lopping of native vegetation

The Guidelines were introduced in December 2017. They set out and describe the application of Victoria's state wide policy in relation to assessing and compensating for the removal of native vegetation in order to achieve the objective of 'no net loss to biodiversity as a result of the removal, destruction or lopping of native vegetation'.

This objective is to be achieved through Victoria's planning system using an assessment approach that relies on strategic planning and the permit and offset system. The key policy for achieving no net loss to biodiversity is the three-step approach of avoid, minimise and offset:

- **Avoid** the removal, destruction or lopping of native vegetation to ensure that the important biodiversity values of native vegetation continue to be delivered into the future.
- **Minimise** impacts resulting from the removal of native vegetation that cannot be avoided.
- Provide an **offset** to compensate for the biodiversity impact resulting from the removal of native vegetation.

The steps that have been taken during the design of the development to ensure that impacts on biodiversity from the removal of native vegetation have been minimised include:

- Locating the proposed buildings on existing disturbed land to minimise impacts to native vegetation
- Designing the access road to avoid scattered trees.

DELWP has provided biodiversity information tools to assist with determining the assessment pathway associated with the removal of native vegetation and the contribution that native vegetation within the study area makes to Victoria's biodiversity.

All planning permit applications to remove native vegetation are assigned to an assessment pathway determined by the extent and location of proposed native vegetation removal. The assessment pathway will dictate the information to be provided in a planning permit application and the decision guidelines the responsible authority (e.g. Council) and/or DELWP as a referral authority will use to assess the permit application.

The biodiversity information tools have two components:

Site-based information

The site-based information is observable at a particular site. Biosis has collected the requisite site-based information for the assessment against the Guidelines.

Landscape scale information

Landscape scale information requires consideration of information beyond the site. This information is managed by DELWP and can be accessed via the NVIM.

The following section summarises the results of the site-based assessment and the outputs generated by the Native Vegetation Removal Report (NVRR), which identifies the assessment pathway on which the planning application will be assessed. The full NVRR can be viewed in Appendix 4.

5.1 Proposed removal of native vegetation

The extent of native vegetation patches, the location of large trees within patches and any scattered trees were mapped within the study area (Figure 2) and the condition was assessed in relation to standard methods provided by DSE (2004) and pre-determined EVC benchmarks: https://www.environment.vic.gov.au/biodiversity/bioregions-and-evc-benchmarks.

The proposed removal of native vegetation was assessed in accordance with the concept design provided. Vegetation lost is mapped in Figure 3. The development proposes to remove 6.786 hectares of native vegetation, comprising patch vegetation and scattered trees (Figure 3). 29 large trees are proposed to be removed. Spatial data (shapefiles) of proposed vegetation removal were submitted to DELWP's Native Vegetation Support team by the VPA, who provided a NVRR for the project. This is provided in Appendix 4 and summarised in the following sections.

5.1.1 Habitat hectares

Areas of uniform quality for each EVC within the patches are termed 'habitat zones' (HZ) and are assessed separately. The condition score of the HZ is multiplied by the extent of the zone to give a value in Habitat hectares.

Eight habitat zones are identified. The results of the condition assessment are provided in Table 6 with the number of Habitat hectares in each HZ.

Table 6 Habitat hectares of native vegetation within the study area.

Site ID			1	2	3	4	5	6	7	8	
Habitat Zone ID			A	A	A	A	A	A	A	A	
EVC #: Name			PGW*	PGW	PGW	PGW	PGW	PGW	PGW	PGW	
		Max Score	**Score**	**Score**	**Score**	**Score**	**Score**			**Score**	**Total**
Site Condition	Large Old Trees	10	3	4	3	0	10	10	0	0	
	Canopy Cover	5	3	3	3	0	5	5	0	5	
	Lack of Weeds	15	4	4	4	4	0	0	0	0	
	Understorey	25	15	5	15	5	5	5	5	0	
	Recruitment	10	5	5	5	5	5	5	0	0	
	Organic Matter	5	3	3	3	4	2	2	2	2	
	Logs	5	2	2	0	0	4	0	0	0	
	Total Site Score		35	26	33	18	31	27	7	7	
Landscape Value	Patch Size	10	6	6	1	1	1	1	1	1	
	Neighbourhood	10	1	1	0	0	0	0	0	0	
	Distance to Core	5	3	3	3	3	3	3	3	3	
	Total Landscape Score		10	10	4	4	4	4	4	4	
HABITAT SCORE		100	45	36	37	22	35	31	11	11	
Habitat points = #/100		1	0.45	0.36	0.37	0.22	0.35	0.31	0.11	0.11	
Habitat Zone area (ha)			2.812	7.000	1.027	0.87	4.421	0.691	0.105	0.033	16.959
Habitat hectares (Hha)			1.265	2.520	0.380	0.191	1.547	0.214	0.012	0.004	6.133
Habitat Zone area cleared (ha)			0.226	3.932	0.989	0.87	0.115	0.000	0.105	0.033	6.181
Habitat hectares cleared (Hha)			0.102	1.415	0.366	0.191	0.040	0.000	0.012	0.004	2.121

A total of 166 large trees occur within patches of native vegetation within the study area. The locations of large trees within patches are shown in Figure 2 and the circumference of all large trees is provided in Appendix 5.

There are 71 scattered large trees within the study area (38 that require removal). For applications that propose to remove scattered trees, the extent of scattered trees is calculated using the standard extents described in Section 2.4.1. A condition score is applied to each scattered tree based on information provided by DELWP's NVIM. Scattered trees within the study area equate to 0.399 Habitat hectares (Table 7). The locations of scattered trees within the study area are shown in Figure 2 and further details for each tree (e.g. size, extent and circumference) are provided in Appendix 5.

Table 7 Habitat hectare conversion for trees within the study area.

Scattered trees	Number within study area	Condition score	Standard extent (ha)	Habitat hectares (Hha)
Small	19	0.2	0.031	0.1178
Large	52	0.2	0.070	0.728

Summary of Habitat hectares within the study area

In summary, the study area supports 0.8458 Habitat hectares.

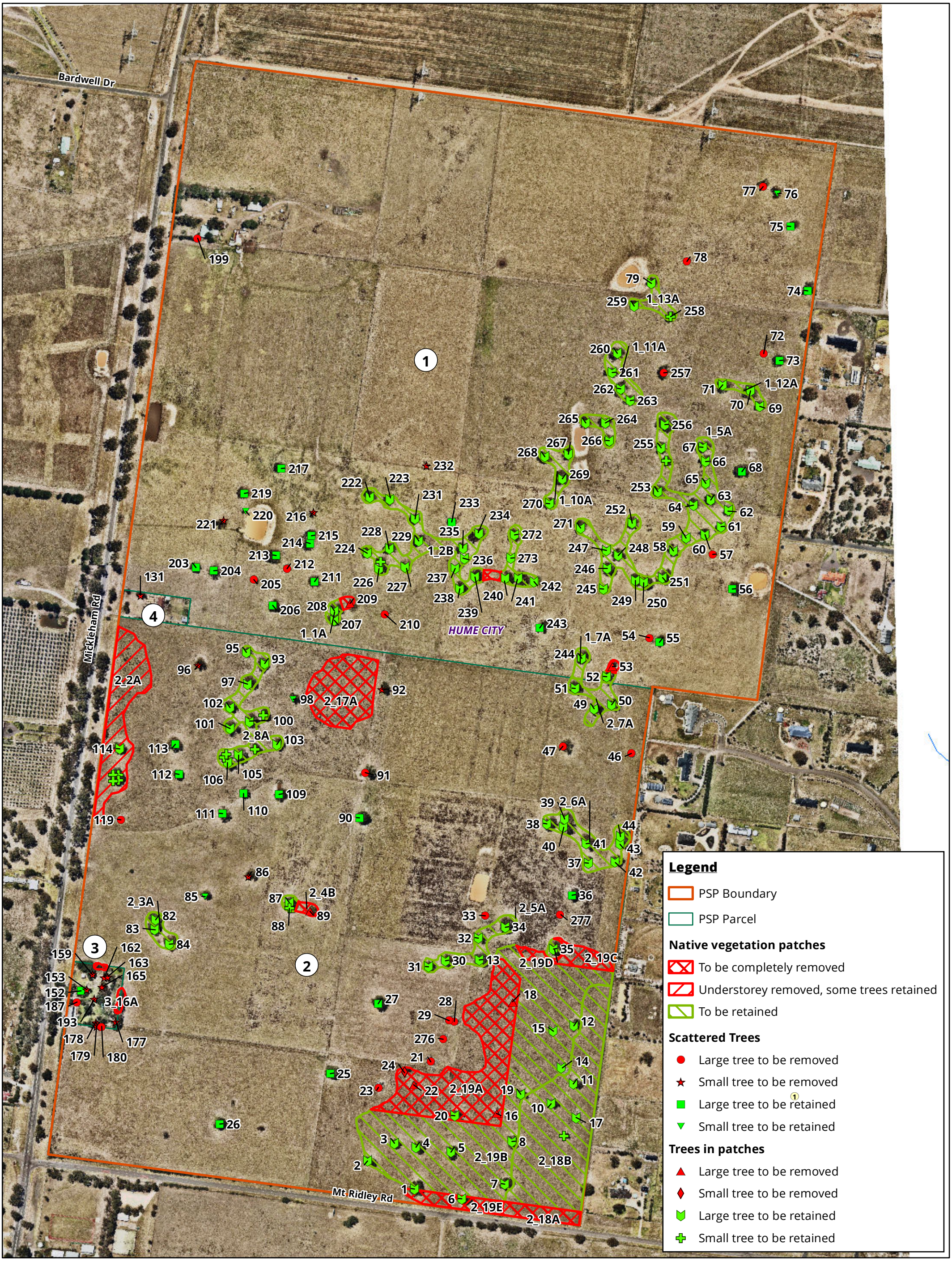

Figure 3: Native vegetation proposed to be retained and lost within Lindum Vale

Biosis Pty Ltd

Albury, Ballarat, Melbourne, Newcastle, Sydney, Wangaratta & Wollongong

Acknowledgements: NearMap imagery 2018, VicMap data ©State of Victoria

Matter: 27694,
Date: 15 June 2018,
Checked by: SGM, Drawn by: SKM, Last edited by: smitchell
Location:P:\27600s\27694\Mapping\27694_F3_Veg_Impact.mxd

0 40 80 120 160 200

Metres

Scale 1:5,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

N

5.2 Determining the assessment pathway

Applications to remove native vegetation are categorised into one of three assessment pathways: basic, intermediate or detailed. Two factors are used to determine the assessment pathway for a permit application, the **location** and **extent** of the native vegetation proposed to be removed. Location has been divided into three possible categories by DELWP, and has been pre-determined by DELWP for all locations in Victoria. The location of a particular site is determined using the *location map* available in the NVIM system (http://nvim.depi.vic.gov.au).

The extent of native vegetation proposed to be removed determines the assessment pathway by considering the following:

- The total area (hectares) of native vegetation (including any patches and scattered trees) proposed to be removed
- Whether any large trees are proposed to be removed, either as scattered trees or occurring in patches.

The proposal will require the removal of ≥ 0.5 hectares and 29 large trees therefore the application for removal of this native vegetation must meet the requirements of, and be assessed in, the detailed assessment pathway. These requirements are provided in Appendix 4.

5.3 Offset requirements

In order to ensure a gain to Victoria's biodiversity that is equivalent to the loss resulting from the proposed removal of native vegetation, compensatory offsets are required. Losses and gains are measured in general or species habitat scores or units. The offset must also include at least one large tree for every large tree removed.

For a detailed assessment pathway application, the species-general offset test will determine if a general offset, species offset or combination of both is required.

The results of the species-general offset test are provided in Appendix 4 and summarized in Table 8.

Table 8 Summary of DELWP Native Vegetation Removal Report.

Attribute	Outcome
Location category	2
Native vegetation removal extent	6.807 hectares
Assessment pathway	Detailed
Strategic Biodiversity Value Score	0.565
Modelled habitat for rare or threatened species	Modelled habitat for 28 species, however all are below the offset thresholds.
Offset type	General
Offset amount: general habitat units	2.150
General offset vicinity	PPWCMA or Hume City Council
General offset minimum Strategic Biodiversity Value Score	0.452

Attribute	Outcome
Large tree attributes	29 large trees (offsets for 29 large trees required)

5.4 Proposed offset strategy

The proponent has indicated the desire to retain and manage native vegetation to supply a portion of the required general offsets. However, the freehold offset site identified does not meet the minimum strategic biodiversity value score requirements to be used for this purpose. Therefore, the proponent may look for other land which meets the minimum strategic biodiversity score (0.390) requirements, or alternatively may wish to purchase the required offset credits from the Victorian Native Vegetation Credit Register via an accredited broker.

6. Key ecological values and recommendations

This section identifies the key ecological features of the study area, provides an outline of potential implications of proposed development on those values and includes recommendations to assist the VPA to design a PSP to minimise impacts on biodiversity.

The primary measure to reduce impacts to biodiversity values within the study area is to avoid and minimise removal of native vegetation and terrestrial and aquatic habitat. It is critical that this be considered during the design phase of the project, when key decisions are made about the location of major roads and services, parks and housing areas. The results of this assessment should therefore be incorporated into the project design, by adding the flora and fauna mapping information into the planning maps and investigating options to retain as much of the mapped vegetation/habitats as possible. Priority should be given to highest value areas and retaining larger areas in preference to numerous smaller ones.

The design phase is also the time during which future requirements for infrastructure and services must be forecast and allowance made outside any nominated reserves for all construction works, such as road batters, footpaths, drainage and services (including optic fibre). All areas of vegetation/habitat nominated in the design plan as 'retained' are to be treated as no-go zones and are not to be encroached upon as development progresses.

A summary of potential implications of development of the study area and recommendations to minimise impacts during the **design phase** of the project is provided in Table 9.

Table 9 Summary of key ecological values, potential implications of developing the study area and recommendations to minimise ecological impacts during the design phase.

Ecological feature	Implications of development	Recommendations
Native vegetation	The permanent removal of to 6.807 hectares of native vegetation	Avoid and minimise removal of native vegetation, in accordance with the Guidelines (no net loss). Refer to Section 5.
	Removal of habitat for Golden Sun Moth and potential impacts to areas of Plains Grassy Woodland.	Avoid and minimise removal of terrestrial habitat to retain habitat linkages within the development. Retained native vegetation will provide stepping stone links to other areas of native vegetation within the broader area.
	The application will be assessed on the detailed assessment pathway. Impacts to native vegetation are all below the specific offset threshold for the threatened species habitat modelled within the study area.	Identify and implement appropriate general offsets for vegetation losses as outlined in Section 5.3.
Other habitat features	Removal of known habitat for Golden Sun Moth.	Avoid/minimise impacts on higher quality Golden Sun Moth habitat.

Ecological feature	Implications of development	Recommendations
Habitat connectivity	Removal of vegetation / habitat that forms part of a broader array of remnant habitat.	Retain patches and scattered trees within the development area to function as habitat islands. Existing and proposed developments will continue to isolate the existing remnants from all but the more mobile fauna. Any retained remnants of native vegetation within this PSP will only maintain habitat continuity as stepping stone habitat for more mobile species.

Construction and post-construction management

Specific detail relating to preventing impacts to retained native vegetation and aquatic and terrestrial habitat should be addressed in a site-specific Construction Environmental Management Plan. This will include issues relating to contractors such as environmental inductions, installation of temporary fencing/signage, drainage and sediment control.

An Ecological Management Plan should be prepared by an ecological consultant to provide detailed advice on the ongoing protection and long-term management of retained vegetation/ habitat, creation of linkages and other habitat features such as wetlands, if proposed.

References

Biosis Research 2009. *Survey of the Golden Sun Moth at Lindum Vale, Mickleham, Victoria*. Report for MAB Corporation. Authors Venosta, M. Biosis Research, Melbourne. Project No. 7564.

Biosis Research 2010. *Targeted Striped Legless Lizard survey – Lindum Vale Property, Mickleham*. Report for MAB Corporation. Authors Venosta, M. Gilmore, D. and Garvey, N. Biosis Research, Melbourne. Project No. 7559.

Biosis Research 2012. '*Lindum Vale' Property, 1920 and 2040 Mickleham Road, Mickleham, Victoria: Flora and fauna assessment*. Report for MAB Corporation. Authors Mueck, S. and Gilmore, D. Biosis Research, Melbourne. Project No. 13869.

Biosis 2013. *Systematic search for Matted Flax-lily in areas of native vegetation at "Lindum Vale" 1920 and 2040 Mickleham Road, Mickleham*. Report for MAB Corporation. Author Mueck, S. Biosis Research, Melbourne. Project No. 16178.

Biosis 2014. *Tree Assessment and Arboricultural Report: Lindum Vale, Mickleham*. Report for MAB Corporation. Authors Callow, D. Biosis, Melbourne. Project No. 17916.

Biosis 2015. *Lindum Vale: Golden Sun Moth survey and habitat assessment*. Report for MAB Corporation. Author: Venosta, M. and Mueck, S. Biosis Pty Ltd, Melbourne. Project no. 19308.

DELWP 2017. *Guidelines for the removal, destruction or lopping of native vegetation.* Victorian Government Department of Land, Water and Planning, Melbourne (December 2017).

DEPI 2013a. *Biodiversity Conservation Strategy for Melbourne's Growth Corridors.* Victorian Government Department of Environment and Primary Industries, Melbourne (May 2013).

DEPI 2013b. *Permitted clearing of native vegetation - Biodiversity assessment guidelines.* Victorian Government Department of Environment and Primary Industries, Melbourne (September 2013).

DEPI 2013c. *Advisory List of Threatened Vertebrate Fauna in Victoria – 2013.* Victorian Government Department of Environment & Primary Industries, Melbourne.

DEPI 2014. *Advisory List of Rare or Threatened Plants in Victoria – 2014*. Victorian Government Department of Environment & Primary Industries, East Melbourne.

DNRE 2002. *Victoria's Native Vegetation Management: A Framework for Action.* Victorian Government Department of Natural Resources & Environment, East Melbourne.

DSE 2004. *Native Vegetation: Sustaining a living landscape. Vegetation Quality Assessment Manual – Guidelines for applying the Habitat hectares scoring method. Version 1.3.* Victorian Government Department of Sustainability & Environment, Melbourne.

DSE 2005. *Biosites Maps and Reports, Port Phillip Region (CD).* Department of Sustainability and Environment, Melbourne.

DEPI 2014. Victorian Biodiversity Atlas 'VBA_FAUNA25, FAUNA100 & FAUNARestricted, FLORA25, FLORA100 & FLORARestricted' August 2010 © The State of Victoria. Victorian Government Department of Sustainability & Environment, Melbourne.

DEWHA 2009. *Significant impact guidelines for the critically endangered golden sun moth* (Synemon plana). Nationally threatened species and ecological communities EPBC Act policy statement 3.12, Department of the Environment, Water, Heritage & the Arts. Australian Government, Canberra.

DSEWPaC 2011. *Nationally Threatened Ecological Communities of the Victorian Volcanic Plain: Natural Temperate Grassland & Grassy Eucalypt Woodland A guide to the identification, assessment and management of nationally*

threatened ecological communities. Australian Government Department of Sustainability, Environment, Water, Population & Communities, Canberra.

Appendices

Appendix 1 Flora

Notes to tables:

EPBC Act: CR - Critically Endangered EN - Endangered VU - Vulnerable PMST – Protected Matters Search Tool	**DEPI 2014a:** e - endangered v - vulnerable r - rare k - poorly known
FFG Act: L - listed as threatened under FFG Act P - protected under the FFG Act (public land only)	**Noxious weed status:** SP - State prohibited species RP - Regionally prohibited species RC - Regionally controlled species RR - Regionally restricted species # - Native species outside natural range

A1.1 Flora species recorded from the study area

Table A1.1 Flora species recorded from the study area (Biosis 2016).

Status	Scientific name		Common name
Indigenous species			
	Acacia paradoxa		Hedge Wattle
	Allocasuarina verticillata		Drooping Sheoak
	Amphibromus nervosus		Common Swamp Wallaby-grass
	Anthosachne scabra		Common Wheat-grass
	Arthropodium strictum		Chocolate Lily
	Atriplex semibaccata		Berry Saltbush
	Austrostipa bigeniculata		Kneed Spear-grass
	Austrostipa mollis		Supple Spear-grass
	Austrostipa scabra subsp. *falcata*		Rough Spear-grass
	Austrostipa semibarbata		Fibrous Spear-grass
	Austrostipa spp.		Spear Grass
	Bothriochloa macra		Red-leg Grass
	Burchardia umbellata		Milkmaids
	Carex inversa		Knob Sedge
	Chloris truncata		Windmill Grass
	Crassula decumbens var. *decumbens*		Spreading Crassula
	Dianella revoluta s.l.		Black-anther Flax-lily
	Dichelachne crinita		Long-hair Plume-grass
	Dichondra repens		Kidney-weed
	Dysphania pumilio		Clammy Goosefoot
	Eleocharis acuta		Common Spike-sedge
	Enchylaena tomentosa var. *tomentosa*		Ruby Saltbush
	Epilobium billardierianum		Variable Willow-herb
	Epilobium hirtigerum		Hairy Willow-herb
	Eryngium ovinum		Blue Devil
	Eucalyptus camaldulensis		River Red-gum
	Eucalyptus microcarpa		Grey Box
	Euchiton involucratus		Star Cudweed
P	*Euchiton sphaericus*		Annual Cudweed

Status	Scientific name		Common name
	Geranium retrorsum s.s.		Grassland Crane's-bill
P	*Helichrysum luteoalbum*		Jersey Cudweed
	Hypericum gramineum spp. *agg.*		Small St John's Wort
	Isolepis hookeriana		Grassy Club-sedge
	Juncus bufonius		Toad Rush
	Juncus gregiflorus		Green Rush
	Juncus subsecundus		Finger Rush
	Lachnagrostis filiformis		Common Blown-grass
	Lobelia spp.		Lobelia
	Lomandra filiformis		Wattle Mat-rush
	Lythrum hyssopifolia		Small Loosestrife
	Melicytus dentatus		Tree Violet
	Microlaena stipoides var. *stipoides*		Weeping Grass
	Oxalis perennans		Grassland Wood-sorrel
	Phragmites australis		Common Reed
	Poa labillardierei		Common Tussock-grass
	Poa morrisii		Soft Tussock-grass
	Rumex brownii		Slender Dock
	Rytidosperma duttonianum		Brown-back Wallaby-grass
	Rytidosperma geniculatum		Kneed Wallaby-grass
	Rytidosperma racemosum var. *racemosum*		Slender Wallaby-grass
	Rytidosperma setaceum		Bristly Wallaby-grass
	Rytidosperma spp.		Wallaby Grass
	Schoenus apogon		Common Bog-sedge
P	*Senecio quadridentatus*		Cotton Fireweed
P	*Solenogyne dominii*		Smooth Solenogyne
	Themeda triandra		Kangaroo Grass
	Veronica gracilis		Slender Speedwell
Introduced species			
	Acetosella vulgaris		Sheep Sorrel
	Agrostis capillaris		Brown-top Bent
	Arctotheca calendula		Cape Weed

Status	Scientific name		Common name
	Bromus catharticus		Prairie Grass
	Bromus diandrus		Great Brome
	Bromus hordeaceus subsp. *hordeaceus*		Soft Brome
RC	*Carthamus lanatus*		Saffron Thistle
	Cerastium glomeratum		Sticky Mouse-ear Chickweed
	Chenopodium album		Fat Hen
	Chenopodium murale		Sowbane
RC	*Cirsium vulgare*		Spear Thistle
	Conyza bonariensis		Flaxleaf Fleabane
RC	*Crataegus monogyna*		Hawthorn
	Cynara cardunculus subsp. *flavescens*		Artichoke Thistle
	Cynodon dactylon var. *dactylon*		Couch
	Dactylis glomerata		Cocksfoot
	Ehrharta erecta var. *erecta*		Panic Veldt-grass
	Ehrharta longiflora		Annual Veldt-grass
	Festuca arundinacea		Tall Fescue
	Gamochaeta purpurea		Spiked Cudweed
RC	*Genista monspessulana*		Montpellier Broom
	Helminthotheca echioides		Ox-tongue
	Hirschfeldia incana		Buchan Weed
	Holcus lanatus		Yorkshire Fog
	Hordeum leporinum		Barley-grass
	Hypochaeris radicata		Flatweed
	Leontodon taraxacoides subsp. *taraxacoides*		Hairy Hawkbit
	Lepidium africanum		Common Peppercress
	Lolium rigidum		Wimmera Rye-grass
RC	*Lycium ferocissimum*		African Box-thorn
	Malva nicaeensis		Mallow of Nice
	Molineriella minuta		Small Hair-grass
	Nassella hyalina		Cane Needle-grass
	Nassella leucotricha		Texas Needle-grass
RR	*Nassella neesiana*		Chilean Needle-grass

Status	Scientific name		Common name
RC	*Nassella trichotoma*		Serrated Tussock
RR	*Oxalis pes-caprae*		Soursob
	Paspalum dilatatum		Paspalum
	Phalaris aquatica		Toowoomba Canary-grass
	Plantago lanceolata		Ribwort
	Poa annua		Annual Meadow-grass
	Polygonum aviculare		Hogweed
	Prunus cerasifera		Cherry Plum
	Romulea rosea		Onion Grass
RC	*Rosa rubiginosa*		Sweet Briar
RC	*Rubus fruticosus* spp. agg.		Blackberry
	Rumex crispus		Curled Dock
RC	*Silybum marianum*		Variegated Thistle
	Solanum nigrum		Black Nightshade
	Sonchus asper		Rough Sow-thistle
	Sonchus oleraceus		Common Sow-thistle
	Stellaria media		Chickweed
	Trifolium angustifolium var. *angustifolium*		Narrow-leaf Clover
	Trifolium campestre var. *campestre*		Hop Clover
	Trifolium glomeratum		Cluster Clover
	Trifolium subterraneum		Subterranean Clover
	Triticum aestivum		Wheat
	Ulmus spp.		Elm
	Urtica urens		Small Nettle

A1.2 Listed flora species

The following table includes the listed flora species that have potential to occur within the study area. The list of species is sourced from the Victorian Flora Information System and the Protected Matters Search Tool (DoE; accessed on 18.05.2018).

Table A1.2 Listed flora species recorded / predicted to occur within 5 km of the study area.

Scientific name	Common name	Conservation status			Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	VIC	FFG					
National significance									
Amphibromus fluitans	River Swamp Wallaby-grass	VU			2008	PMST	Swampy areas, mainly along the Murray River between Wodonga and Echuca with scattered records from southern Victoria.	Low	Areas that are seasonally inundated with water may provide suitable habitat.
Carex tasmanica	Curly Sedge	VU	v	L	-	PMST	Seasonally wet areas, such as around drainage lines and freshwater swamps, on fertile, clay soils derived from basalt.	Low	No suitable habitat.
Dianella amoena	Matted Flax-lily	EN	e	L	2011	PMST	Lowland grassland and grassy woodland, on well-drained to seasonally waterlogged fertile sandy loam soils to heavy cracking clays.	Low	Suitable habitat present but targeted searches failed to locate.
Dodonaea procumbens	Trailing Hop-bush	VU	v			PMST	Sandy or clay soils in low-lying, winter-wet areas in grasslands, woodlands, and low-open forest.	Negligible	No suitable habitat and no nearby records.

Scientific name	Common name	Conservation status			Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	VIC	FFG					
Glycine latrobeana	Clover Glycine	VU	v	L		PMST	Grasslands and grassy woodlands, particularly those dominated by Kangaroo Grass.	Low	Considered very rare in the Melbourne area.
Lachnagrostis adamsonii	Adamson's Blown-grass	EN	v	L		PMST	Low-lying, seasonally wet or swampy areas of plains communities, often in slightly saline conditions.	Low	No suitable habitat.
Leucochrysum albicans var. *tricolor*	White Sunray	EN	e	L		PMST	Grasslands of the Victorian Volcanic Plains, primarily on acidic clay soils derived from basalt, with occasional occurrences on adjacent sedimentary, sandy-clay soils.	Low	No suitable habitat. No nearby records.
Pimelea spinescens subsp. *spinescens*	Spiny Rice-flower	CR	e	L		PMST	Primarily grasslands featuring a moderate diversity of other native species and inter-tussock spaces, although also recorded in grassland dominated by introduced perennial grasses.	Negligible	Suitable habitat but species not recorded from northern Melbourne.
Prasophyllum frenchii	Maroon Leek-orchid	EN	e	L		PMST	Grassland and grassy woodland environments on sandy or black clay loam soils that are generally damp but well drained.	Negligible	Heavily disturbed habitat.

Scientific name	Common name	Conservation status			Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	VIC	FFG					
Rutidosis leptorrhynchoides	Button Wrinklewort	EN	e	L		PMST	Higher quality Plains Grassland and Grassy Woodland in Western Victoria, particularly those with fertile soil and light timber cover.	Low	Not known from the area. Limited suitable habitat.
Senecio macrocarpus	Large-headed Fireweed	VU	e	L		PMST	Grassland, shrubland and woodland habitats on heavy soils subject to waterlogging and/or drought conditions in summer.	Negligible	No local records. Perennial species which would have been recorded.
Thelymitra matthewsii	Spiral Sun-orchid	VU	v	L		PMST	Typically on well-drained soils on slightly elevated sites, but also on coastal sandy flats. Often in open situations following disturbance.	Negligible	Heavily disturbed habitat. No members of this genus recorded.
Xerochrysum palustre	Swamp Everlasting	VU	v	L		PMST	Sedge-swamps and shallow freshwater marshes and swamps in lowlands, on black cracking clay soils.	Negligible	No suitable habitat.
State significance									
Amphibromus pithogastrus	Plump Swamp Wallaby-grass		e	L	1992		Seasonally damp depressions in grassland or grassy wetland.	Medium	Has been recorded in the local area. Only other members of this genus observed.
Callitriche umbonata	Winged Water-starwort		r		2012		Damp, periodically waterlogged sites; swamps and shallow freshwater ponds.	Low	Recorded from relatively undisturbed wetland in Mount

Scientific name	Common name	Conservation status			Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	VIC	FFG					
									Ridley Woodland.
Cullen tenax	Tough Scurf-pea		e	f	2008		Lowland grasslands, including pastures and occasionally in otherwise disturbed grassy areas.	Low	Perennial species which would have been recorded since 2005.
Geranium solanderi var. *solanderi* s.s.	Austral Crane's-bill		v		2012		Grasslands or grassy woodlands where hydrology is not a limiting factor.	Recorded	Recorded from Mount Ridley Rd and area proposed for expansion of this road.
Geranium sp. 3	Pale-flower Crane's-bill		r		2012		Grasslands and dry woodlands.	Low	Perennial species which would have been observed.
Melaleuca armillaris subsp. *armillaris*	Giant Honey-myrtle		r		2007		Near coastal heath/scrub, rocky coast and foothill outcrops.	Negligible	No suitable habitat. Any specimens present will be planted and are outside of it's natural range.

Appendix 2 Fauna

Notes to tables:

EPBC Act:	**DSE 2009, DSE 2013:**
EX - Extinct CR - Critically Endangered EN - Endangered VU - Vulnerable CD - Conservation dependent	ex - extinct cr - critically endangered en - endangered vu - vulnerable nt - near threatened dd - data deficient rx - regionally extinct
FFG Act:	**Introduced species**
L - listed as threatened under FFG Act N - nominated for listing as threatened I - determined ineligible for listing	PS - pest species listed under the CaLP Act * - introduced species
Most recent database records are from the Victorian Biodiversity Atlas unless otherwise specified as follows PMST – Protected Matters Search Tool BA – Birds Australia	

A4.1 Fauna species recorded from the study area

Table A2.1 Vertebrate fauna recorded from the study area (Biosis 2016).

Status	Scientific name	Common name
Mammals		
	Common Brushtail Possum	*Trichosurus vulpecula*
	Eastern Grey Kangaroo	*Macropus giganteus*
*	Brown Hare	*Lepus capensis*
*	Red Fox	*Canis vulpes*
Birds		
	Masked Lapwing	*Vanellus miles*
	White-faced Heron	*Egretta novaehollandiae*
	Brown Falcon	*Falco berigora*
	Nankeen Kestrel	*Falco cenchroides*
	Sulphur-crested Cockatoo	*Cacatua galerita*
	Long-billed Corella	*Cacatua tenuirostris*
	Galah	*Cacatua roseicapilla*
	Eastern Rosella	*Platycercus eximius*
	Red-rumped Parrot	*Psephotus haematonotus*
	Pallid Cuckoo	*Cuculus pallidus*
	Horsfield's Bronze-Cuckoo	*Chrysococcyx basalis*
	Welcome Swallow	*Hirundo neoxena*
	Tree Martin	*Hirundo nigricans*
	Willie Wagtail	*Rhipidura leucophrys*
	Flame Robin	*Petroica phoenicea*
	Magpie-lark	*Grallina cyanoleuca*
	Black-faced Cuckoo-shrike	*Coracina novaehollandiae*
	Yellow-rumped Thornbill	*Acanthiza chrysorrhoa*
	Spotted Pardalote	*Pardalotus punctatus*
	White-plumed Honeyeater	*Lichenostomus penicillatus*
	Noisy Miner	*Manorina melanocephala*
	Spiny-cheeked Honeyeater	*Acanthagenys rufogularis*
	Australasian Pipit	*Anthus novaeseelandiae*
	Australian Magpie	*Gymnorhina tibicen*

Status	Scientific name	Common name
	Australian Raven	*Corvus coronoides*
	Little Raven	*Corvus mellori*
*	Rock Dove	*Columba livia*
*	Striated Pardalote	*Pardalotus striatus*
*	Common Blackbird	*Turdus merula*
*	Skylark	*Alauda arvensis*
*	House Sparrow	*Passer domesticus*
*	Common Myna	*Acridotheres tristis*
*	Common Starling	*Sturnus vulgaris*
Reptiles		
	Marbled Gecko	*Phyllodactylus marmoratus*
	Common Blue-tongued Lizard	*Tiliqua scincoides*
Frogs		
	Southern Bullfrog (northern)	*Limnodynastes dumerilii dumerilii*
	Spotted Marsh Frog SCR	*Limnodynastes tasmaniensis* SCR

A2.2 Listed fauna species

The following table includes a list of the listed fauna species that have potential to occur within the study area. The list of species is sourced from the Victorian Biodiversity Atlas and the Protected Matters Search Tool (DoE; accessed on 18.05.2018).

Table A2.2 Listed fauna species recorded, or predicted to occur, within 5 km of the study area

Scientific name	Common name	Conservation status			Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	VIC	FFG					
National significance									
Pedionomus torquatus	Plains-wanderer	CR	cr	L	1989	PMST	Native grassland with a sparse, open structure.	Low	Vagrant in southern Victoria.
Numenius madagascariensis	Eastern Curlew	CR	vu	L		PMST	Large intertidal sandflats, banks, mudflats, estuaries, inlets, sewage farms, saltworks, harbours, coastal lagoons and bays.	Negligible	No suitable habitat.
Calidris ferruginea	Curlew Sandpiper	CR	en	L		PMST	Large intertidal sandflats, banks, mudflats, estuaries, inlets, sewage farms, saltworks, harbours, coastal lagoons and bays.	Negligible	No suitable habitat.
Rostratula australis	Australian Painted Snipe	EN	cr	L		PMST	Shallows of well-vegetated freshwater wetlands.	Negligible	No suitable habitat.
Botaurus poiciloptilus	Australasian Bittern	EN	en	L		PMST	Shallow freshwater and brackish wetlands with abundant emergent aquatic vegetation.	Negligible	No suitable habitat.

Scientific name	Common name	Conservation status			Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	VIC	FFG					
Lathamus discolor	Swift Parrot	CR	en	L	1990	PMST	A range of forests and woodlands, especially those supporting nectar-producing tree species. Also well-treed urban areas.	Low	River Red Gum not considered to be a valuable food tree. Small numbers of Grey Box trees present.
Grantiella picta	Painted Honeyeater	VU	vu	L		PMST	Dry open woodlands and forests. Typically forages for fruit and nectar in mistletoes and in tree canopies.	Low	Study area provides limited suitable habitat.
Anthochaera phrygia	Regent Honeyeater	CR	cr	L		PMST	A range of dry woodlands and forests dominated by nectar-producing tree species.	Low	Extinct in southern Victoria.
Petauroides volans	Greater Glider	VU	vu	L		PMST	Wet and damp sclerophyll forest with large hollow-bearing trees.	Negligible	No suitable habitat.
Pteropus poliocephalus	Grey-headed Flying-fox	VU	vu	L		PMST	Rainforest, wet and dry sclerophyll forest, woodland and urban areas.	Medium	May forage in eucalypts when flowering.
Aprasia parapulchella	Pink-tailed Worm-Lizard	VU	en	L		PMST	Woodland and grassland with partially buried rocks.	Negligible	No suitable habitat.
Delma impar	Striped Legless Lizard	VU	en	L		PMST	Natural temperate grassland, grassy woodland and exotic grassland.	Low	Past targeted surveys failed to detect this species.

Scientific name	Common name	Conservation status			Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	VIC	FFG					
Litoria raniformis	Growling Grass Frog	VU	en	L	2013	PMST	Still or slow-flowing waterbodies and surrounding terrestrial vegetation.	Negligible	No suitable habitat.
Prototroctes maraena	Australian Grayling	VU	vu	L		PMST	Adults inhabit cool, clear, freshwater streams.	Negligible	No suitable habitat.
Galaxiella pusilla	Dwarf Galaxias	VU	en	L		PMST	Slow-flowing or still freshwater wetlands such as swamps, drains and backwaters of streams.	Negligible	No suitable habitat.
Maccullochella peelii peelii	Murray Cod	VU	vu	L		PMST	A diverse range of stream habitats in the Murray-Darling basin; principally the main channels of rivers and their major tributaries.	Negligible	No suitable habitat.
Synemon plana	Golden Sun Moth	CR	cr	L	2014	PMST	Natural temperate grassland, grassy woodland and pasture supporting spear grasses and wallaby grasses and exotic grassland dominated by Chilean needle grass.	Recorded	Large resident population recorded over a number of years.
State significance									
Dromaius novaehollandiae	Emu		nt		2014		Most environments from semi-arid grasslands to dense forests and alpine areas, moving in response to seasonal conditions.	High	Likely to be present within local area.

Scientific name	Common name	Conservation status			Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	VIC	FFG					
Phalacrocorax varius	Pied Cormorant		nt		1979		Primarily marine environments and coastal waters including beaches, coastal lagoons, estuaries and rock platforms.	Negligible	No suitable habitat.
Chlidonias hybrida	Whiskered Tern		nt		1981		A breeding migrant to Australia from September to March where it occurs in wetlands, lakes, swamps, rivers, and other water bodies with submerged and emergent vegetation such as grasses, sedges, reeds and rushes. Rarely recorded along rivers or creeks.	Negligible	No suitable habitat.
Hydroprogne caspia	Caspian Tern		nt	L	1981		Estuaries, inlets, bays, lagoons, inland lakes, flooded pasture, sewage ponds.	Negligible	No suitable habitat.
Actitis hypoleucos	Common Sandpiper		vu			PMST	Migrates to Australia from Eurasia in August where it inhabits a wide variety of coastal and inland wetlands with muddy margins before departing north in March.	Negligible	No suitable habitat.
Tringa nebularia	Common Greenshank		vu			PMST	A variety of ephemeral and permanent inland wetlands and sheltered coastal wetlands.	Negligible	No suitable habitat.
Gallinago hardwickii	Latham's Snipe		nt	I		PMST	A migrant to Australia from July to April occurring in a wide variety of permanent and ephemeral wetlands. Prefers open freshwater wetlands with nearby cover, but also recorded on the edges of creeks and rivers, river-pools and floodplains.	Medium	May forage in areas of damp pasture.

Scientific name	Common name	Conservation status			Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	VIC	FFG					
Platalea regia	Royal Spoonbill		nt		1989		Permanent and ephemeral wetlands and wet grassland areas, particularly large expanses of water such as lakes, swamps or lagoons.	Low	Limited suitable habitat.
Egretta garzetta	Little Egret		en	L	1980		Swamps, billabongs, floodplain pools, mudflats, mangroves and channels; breeds in trees standing in water.	Medium	May forage in open farmland and local farm dams.
Ardea intermedia	Intermediate Egret		en	L	1980		Densely-vegetated freshwater wetlands including lakes, swamps and billabongs. Breeds in trees standing in water.	Medium	May forage in open farmland and local farm dams.
Ardea modesta	Eastern Great Egret		vu	L	2014		Flooded crops, pasture, swamps, lagoons, saltmarsh, sewage ponds, estuaries, dams, roadside ditches. Breeds in trees standing in water.	Medium	May forage in open farmland and local farm dams.
Nycticorax caledonicus hillii	Nankeen Night Heron		nt		2002		A variety of estuarine and terrestrial wetlands where it forages on the margins in shallow still or slow-moving water or exposed banks, mudflats and swamp vegetation of these environments.	Low	No suitable habitat.
Anas rhynchotis	Australasian Shoveler		vu		2012		Prefers large, permanent lakes and swamps with deep water, stable conditions and abundant aquatic vegetation.	Negligible	No suitable habitat.

Scientific name	Common name	Conservation status			Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	VIC	FFG					
Aythya australis	Hardhead		vu		2015		A mainly aquatic species preferring large, deep freshwater environments with abundant aquatic vegetation, including slow moving areas of rivers.	Negligible	No suitable habitat.
Oxyura australis	Blue-billed Duck		en	L	2015		Open or densely vegetated wetlands.	Negligible	No suitable habitat.
Biziura lobata	Musk Duck		vu		1981		A largely aquatic species preferring deep water on large, permanent swamps, lakes and estuaries with abundant aquatic vegetation.	Negligible	No suitable habitat.
Circus assimilis	Spotted Harrier		nt		1989		Inhabits open and wooded country of inland and sub-inland Australia, where they hunt over flat or undulating country with low vegetation cover. Most common over the Murray Valley with occasional visits to coastal Victoria.	Medium	May forage in airspace over the study area.
Falco subniger	Black Falcon		vu		2005		Woodlands, open country and around terrestrial wetlands areas, including rivers and creeks. Mostly hunts over open plains and undulating land with large tracts of low vegetation.	Medium	May forage in airspace over the study area.

Scientific name	Common name	Conservation status			Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	VIC	FFG					
Hirundapus caudacutus	White-throated Needletail		vu	L	1981	PMST	An almost exclusively aerial species within Australia, occurring over most types of habitat, particularly wooded areas.	Medium	May forage in airspace over the study area.
Melanodryas cucullata	Hooded Robin		nt	L	1990		Woodlands of eucalypt, mallee, semi-cleared farmland.	Low	Poor habitat for this species.
Chthonicola sagittata	Speckled Warbler		vu	L	1978		Eucalypt woodland with rocky gullies, ridges, tussock grasses and a sparse shrub understorey.	Low	Poor habitat for this species.
Stagonopleura guttata	Diamond Firetail		nt	L	1977		Open forests and woodlands with a grassy ground layer.	Low	Poor habitat for this species.
Calidris melanotos	Pectoral Sandpiper		nt			PMST	A variety of wetland habitats with fringing mudflats including bays, coastal lagoons, lakes, swamps, creeks, inundated grasslands, saltmarshes and artificial wetlands. Mostly recorded from Port Phillip Bay and Murray River Valley region.	Negligible	No suitable habitat.
Sminthopsis crassicaudata	Fat-tailed Dunnart		nt		1989		Inhabits sparse grasslands and open shrubland habitats, usually where there is a significant component of bare ground and suitable refuge sites such as surface rocks or logs where it constructs nests of grass or other dried plant material.	High	Introduced vegetation and rocky outcrops/dry stone walls provides habitat.
Pseudemoia pagenstecheri	Tussock Skink		vu		2013		On the ground in a range of grasslands or sparse grassy woodlands from alps to coast.	High	Suitable habitat present.

Scientific name	Common name	Conservation status			Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	VIC	FFG					
Pseudophryne bibronii	Brown Toadlet		en	L	1990		A wide variety of woodland, forest and grassland habitats.	Negligible	No suitable habitat.
Pseudophryne semimarmorata	Southern Toadlet		vu		1960		A variety of habitats such as open forests, lowland woodlands and heathlands where adults shelter beneath leaf litter and other debris in moist soaks and depressions.	Negligible	No suitable habitat.
Miniopterus schreibersii oceanensis	Eastern Bent-wing Bat		vu	L	2013		A variety of treed and treeless habitats. Roosts in caves and man-made structures.	High	Likely to utilise study area for foraging.

A2.3 Migratory species (EPBC Act listed)

Table A2.3 Migratory fauna species recorded or predicted to occur within 5 km of the study area.

Scientific name	Common name	Most recent record
Hydroprogne caspia	Caspian Tern	1981
Numenius madagascariensis	Eastern Curlew	PMST
Actitis hypoleucos	Common Sandpiper	1981
Tringa nebularia	Common Greenshank	PMST
Calidris ferruginea	Curlew Sandpiper	PMST
Calidris acuminata	Sharp-tailed Sandpiper	PMST
Gallinago hardwickii	Latham's Snipe	PMST
Ardea modesta	Eastern Great Egret	2014
Pandion cristatus	Eastern Osprey	PMST
Merops ornatus	Rainbow Bee-eater	1981
Hirundapus caudacutus	White-throated Needletail	1981
Apus pacificus	Fork-tailed Swift	2005
Rhipidura rufifrons	Rufous Fantail	1981
Myiagra cyanoleuca	Satin Flycatcher	1978
Monarcha melanopsis	Black-faced Monarch	PMST
Acrocephalus stentoreus	Clamorous Reed Warbler	1981
Motacilla flava	Yellow Wagtail	PMST
Ardea ibis	Cattle Egret	1990
Calidris melanotos	Pectoral Sandpiper	PMST

Appendix 3 Photos of the study area

Plate 1 **Scattered River Red Gum with patches of Plains Grassy Woodland in background.**

Plate 2 **Scattered River Red Gum with epicormic growth.**

Plate 3 Tree Violet along a dry stone wall with scattered River Red-Gum in background.

Plate 4 Plains Grassy Woodland patch with logs.

Plate 5 **Fire killed River Red Gum which has completely collapsed.**

Plate 6 **Plains Grassy Woodland understorey patch with Hedge Wattle and Weeping Grass.**

Plate 7 Hedge Wattle recruitment.

Plate 8 Large scattered tree.

Appendix 4 Native Vegetation Removal Report

Appendix 5 Tree data

Tree number	Species	Circumference	Size class	Tree protection zone	Status
1	*Eucalyptus camaldulensis*	442.97	Large	15	Retain
2	*Eucalyptus camaldulensis*	323.58	Large	12.36	Retain
3	*Eucalyptus camaldulensis*	333.01	Large	12.72	Retain
4	*Eucalyptus camaldulensis*	333.01	Large	12.72	Retain
5	*Eucalyptus camaldulensis*	405.27	Large	15	Retain
6	*Eucalyptus camaldulensis*	395.84	Large	15	Retain
7	*Eucalyptus camaldulensis*	411.55	Large	15	Retain
8	*Eucalyptus camaldulensis*	336.15	Large	12.84	Retain
9	*Eucalyptus camaldulensis*	119.38	Small	4.56	Retain
10	*Eucalyptus camaldulensis*	355.00	Large	13.56	Retain
11	*Eucalyptus camaldulensis*	442.97	Large	15	Retain
12	*Eucalyptus camaldulensis*	420.97	Large	15	Retain
13	*Eucalyptus camaldulensis*	433.54	Large	15	Retain
14	*Eucalyptus camaldulensis*	0.00	Large	0	Retain
15	*Eucalyptus camaldulensis*	0.00	Large	0	Retain
16	*Eucalyptus camaldulensis*	0.00	Large	0	Remove
17	*Eucalyptus camaldulensis*	0.00	Large	0	Retain

Tree number	Species	Circumference	Size class	Tree protection zone	Status
18	*Eucalyptus camaldulensis*	0.00	Large	0	Remove
19	*Eucalyptus camaldulensis*	395.84	Large	15	Retain
20	*Eucalyptus camaldulensis*	364.43	Large	13.92	Retain
21	*Eucalyptus camaldulensis*	0.00	Large	0	Remove
22	*Eucalyptus camaldulensis*	0.00	Large	0	Remove
23	*Eucalyptus camaldulensis*	0.00	Large	0	Remove
24	*Eucalyptus camaldulensis*	232.48	Small	8.88	Remove
25	*Eucalyptus camaldulensis*	364.43	Large	13.92	Retain
26	*Eucalyptus camaldulensis*	348.72	Large	13.32	Retain
27	*Eucalyptus camaldulensis*	358.14	Large	13.68	Retain
28	*Eucalyptus camaldulensis*	408.41	Large	0	Remove
29	*Eucalyptus camaldulensis*	0.00	Large	0	Remove
30	*Eucalyptus camaldulensis*	285.89	Large	10.92	Retain
31	*Eucalyptus camaldulensis*	257.61	Large	9.84	Retain
32	*Eucalyptus camaldulensis*	314.16	Large	12	Retain
33	*Eucalyptus camaldulensis*	358.14	Large	0	Remove
34	*Eucalyptus camaldulensis*	376.99	Large	14.4	Retain
35	*Eucalyptus camaldulensis*	351.86	Large	13.44	Retain
36	*Eucalyptus camaldulensis*	351.86	Large	13.44	Retain
37	*Eucalyptus camaldulensis*	439.82	Large	15	Retain

Tree number	Species	Circumference	Size class	Tree protection zone	Status
38	*Eucalyptus camaldulensis*	339.29	Large	12.96	Retain
39	*Eucalyptus camaldulensis*	263.89	Large	10.08	Retain
40	*Eucalyptus camaldulensis*	376.99	Large	14.4	Retain
41	*Eucalyptus camaldulensis*	376.99	Large	14.4	Retain
42	*Eucalyptus camaldulensis*	358.14	Large	13.68	Retain
43	*Eucalyptus camaldulensis*	320.44	Large	12.24	Retain
44	*Eucalyptus camaldulensis*	392.70	Large	15	Retain
46	*Eucalyptus camaldulensis*	408.41	Large	0	Remove
47	*Eucalyptus camaldulensis*	603.19	Large	15	Remove
49	*Eucalyptus camaldulensis*	285.89	Large	10.92	Retain
50	*Eucalyptus camaldulensis*	336.15	Large	12.84	Retain
51	*Eucalyptus camaldulensis*	314.16	Large	12	Retain
52	*Eucalyptus camaldulensis*	414.69	Large	15	Retain
53	*Eucalyptus camaldulensis*	386.42	Large	14.76	Remove
54	*Eucalyptus camaldulensis*	0.00	Large	0	Remove
55	*Eucalyptus camaldulensis*	289.03	Large	11.04	Retain
56	*Eucalyptus camaldulensis*	358.14	Large	13.68	Retain
57	*Eucalyptus camaldulensis*	0.00	Large	0	Remove
58	*Eucalyptus camaldulensis*	380.13	Large	14.52	Retain
59	*Eucalyptus camaldulensis*	358.14	Large	13.68	Retain

Tree number	Species	Circumference	Size class	Tree protection zone	Status
60	*Eucalyptus camaldulensis*	298.45	Large	11.4	Retain
61	*Eucalyptus camaldulensis*	282.74	Large	10.8	Retain
62	*Eucalyptus camaldulensis*	326.73	Large	12.48	Retain
63	*Eucalyptus camaldulensis*	279.60	Large	10.68	Retain
64	*Eucalyptus camaldulensis*	376.99	Large	14.4	Retain
65	*Eucalyptus camaldulensis*	420.97	Large	0	Retain
66	*Eucalyptus camaldulensis*	301.59	Large	11.52	Retain
67	*Eucalyptus camaldulensis*	414.69	Large	15	Retain
68	*Eucalyptus camaldulensis*	380.13	Large	14.52	Retain
69	*Eucalyptus camaldulensis*	267.04	Large	10.2	Retain
70	*Eucalyptus camaldulensis*	339.29	Large	12.96	Retain
71	*Eucalyptus camaldulensis*	311.02	Large	11.88	Retain
72	*Eucalyptus camaldulensis*	0.00	Large	0	Remove
73	*Eucalyptus camaldulensis*	273.32	Large	10.44	Retain
74	*Eucalyptus camaldulensis*	273.32	Large	10.44	Retain
75	*Eucalyptus camaldulensis*	414.69	Large	15	Retain
76	*Eucalyptus camaldulensis*	238.76	Small	9.12	Retain
77	*Eucalyptus camaldulensis*	295.31	Large	11.28	Remove
78	*Eucalyptus camaldulensis*	292.17	Large	11.16	Remove
79	*Eucalyptus camaldulensis*	282.74	Large	10.8	Retain

Tree number	Species	Circumference	Size class	Tree protection zone	Status
82	*Eucalyptus camaldulensis*	464.96	Large	15	Retain
83	*Eucalyptus camaldulensis*	0.00	Large	0	Retain
84	*Eucalyptus camaldulensis*	323.58	Large	12.36	Retain
85	*Eucalyptus microcarpa*	207.35	Small	7.92	Retain
86	*Eucalyptus microcarpa*	248.19	Small	9.48	Remove
87	*Eucalyptus camaldulensis*	295.31	Large	11.28	Retain
88	*Eucalyptus camaldulensis*	248.19	Small	9.48	Retain
89	*Eucalyptus camaldulensis*	449.25	Large	15	Remove
90	*Eucalyptus camaldulensis*	449.25	Large	15	Retain
91	*Eucalyptus microcarpa*	351.86	Large	13.44	Remove
92	*Eucalyptus microcarpa*	235.62	Small	9	Remove
93	*Eucalyptus camaldulensis*	289.03	Large	11.04	Retain
95	*Eucalyptus microcarpa*	289.03	Large	11.04	Retain
96	*Eucalyptus microcarpa*	238.76	Small	9.12	Remove
97	*Eucalyptus microcarpa*	307.88	Large	11.76	Retain
98	*Eucalyptus microcarpa*	210.49	Small	8.04	Retain
99	*Eucalyptus camaldulensis*	232.48	Small	8.88	Retain
100	*Eucalyptus camaldulensis*	358.14	Large	13.68	Retain
101	*Eucalyptus microcarpa*	307.88	Large	11.76	Retain
102	*Eucalyptus camaldulensis*	358.14	Large	13.68	Retain

Tree number	Species	Circumference	Size class	Tree protection zone	Status
103	*Eucalyptus microcarpa*	292.17	Large	11.16	Retain
104	*Eucalyptus microcarpa*	248.19	Small	9.48	Retain
105	*Eucalyptus microcarpa*	380.13	Large	14.52	Retain
106	*Eucalyptus microcarpa*	295.31	Large	11.28	Retain
107	*Eucalyptus microcarpa*	226.20	Small	8.64	Retain
108	*Eucalyptus microcarpa*	150.80	Small	5.76	Retain
109	*Eucalyptus camaldulensis*	336.15	Large	12.84	Retain
110	*Eucalyptus microcarpa*	276.46	Large	10.56	Retain
111	*Eucalyptus microcarpa*	351.86	Large	13.44	Retain
112	*Eucalyptus camaldulensis*	279.60	Large	10.68	Retain
113	*Eucalyptus camaldulensis*	464.96	Large	15	Retain
114	*Eucalyptus camaldulensis*	355.00	Large	13.56	Retain
115	*Eucalyptus camaldulensis*	188.50	Small	7.2	Retain
116	*Eucalyptus camaldulensis*	94.25	Small	3.6	Retain
117	*Eucalyptus camaldulensis*	245.04	Small	9.36	Retain
118	*Eucalyptus camaldulensis*	0.00	Large	0	Retain
119	*Eucalyptus camaldulensis*	0.00	Large	0	Remove
131	*Eucalyptus camaldulensis*	119.38	Small	4.56	Remove
152	*Eucalyptus camaldulensis*	336.15	Large	12.84	Retain
153	*Eucalyptus camaldulensis*	40.84	Small	2	Remove

Tree number	Species	Circumference	Size class	Tree protection zone	Status
159	*Eucalyptus camaldulensis*	65.97	Small	2.52	Remove
162	*Eucalyptus microcarpa*	119.38	Small	4.56	Remove
163	*Eucalyptus microcarpa*	75.40	Small	2.88	Remove
165	*Eucalyptus microcarpa*	150.80	Small	5.76	Remove
177	*Eucalyptus microcarpa*	119.38	Small	4.56	Remove
178	*Eucalyptus camaldulensis*	103.67	Small	3.96	Remove
179	*Eucalyptus camaldulensis*	53.41	Small	2.04	Remove
180	*Eucalyptus camaldulensis*	0.00	Large	0	Remove
187	*Eucalyptus camaldulensis*	0.00	Small	15	Remove
193	*Eucalyptus camaldulensis*	56.55	Small	2.16	Remove
199	*Eucalyptus camaldulensis*	0.00	Large	0	Remove
203	*Eucalyptus camaldulensis*	267.04	Large	10.2	Retain
204	*Eucalyptus camaldulensis*	333.01	Large	12.72	Retain
205	*Eucalyptus camaldulensis*	282.74	Large	10.8	Remove
206	*Eucalyptus camaldulensis*	348.72	Large	13.32	Retain
207	*Eucalyptus camaldulensis*	314.16	Large	12	Retain
208	*Eucalyptus camaldulensis*	373.85	Large	14.28	Retain
209	*Eucalyptus microcarpa*	317.30	Large	12.12	Remove
210	*Eucalyptus camaldulensis*	0.00	Large	0	Remove
211	*Eucalyptus camaldulensis*	351.86	Large	13.44	Retain

Tree number	Species	Circumference	Size class	Tree protection zone	Status
212	*Eucalyptus camaldulensis*	285.89	Large	10.92	Remove
213	*Eucalyptus camaldulensis*	326.73	Large	12.48	Retain
214	*Eucalyptus camaldulensis*	314.16	Large	12	Retain
215	*Eucalyptus camaldulensis*	361.28	Large	13.8	Retain
216	*Eucalyptus camaldulensis*	248.19	Small	9.48	Remove
217	*Eucalyptus camaldulensis*	364.43	Large	13.92	Retain
219	*Eucalyptus camaldulensis*	257.61	Large	9.84	Retain
220	*Eucalyptus camaldulensis*	78.54	Small	3	Retain
221	*Eucalyptus camaldulensis*	238.76	Small	9.12	Remove
222	*Eucalyptus camaldulensis*	320.44	Large	12.24	Retain
223	*Eucalyptus camaldulensis*	336.15	Large	12.84	Retain
224	*Eucalyptus camaldulensis*	251.33	Large	9.6	Retain
225	*Eucalyptus camaldulensis*	232.48	Small	8.88	Retain
226	*Eucalyptus camaldulensis*	348.72	Large	13.32	Retain
227	*Eucalyptus camaldulensis*	301.59	Large	11.52	Retain
228	*Eucalyptus camaldulensis*	329.87	Large	12.6	Retain
229	*Eucalyptus camaldulensis*	292.17	Large	11.16	Retain
231	*Eucalyptus camaldulensis*	314.16	Large	12	Retain
232	*Eucalyptus camaldulensis*	219.91	Large	0	Remove
233	*Eucalyptus camaldulensis*	527.79	Large	15	Retain

Tree number	Species	Circumference	Size class	Tree protection zone	Status
234	*Eucalyptus camaldulensis*	348.72	Large	13.32	Retain
235	*Eucalyptus camaldulensis*	304.74	Large	11.64	Retain
236	*Eucalyptus camaldulensis*	326.73	Large	0	Retain
237	*Eucalyptus camaldulensis*	439.82	Large	15	Retain
238	*Eucalyptus camaldulensis*	361.28	Large	13.8	Retain
239	*Eucalyptus camaldulensis*	370.71	Large	14.16	Retain
240	*Eucalyptus camaldulensis*	307.88	Large	11.76	Retain
241	*Eucalyptus camaldulensis*	373.85	Large	14.28	Retain
242	*Eucalyptus camaldulensis*	345.58	Large	13.2	Retain
243	*Eucalyptus camaldulensis*	376.99	Large	14.4	Retain
244	*Eucalyptus camaldulensis*	355.00	Large	13.56	Retain
245	*Eucalyptus camaldulensis*	301.59	Large	11.52	Retain
246	*Eucalyptus camaldulensis*	364.43	Large	13.92	Retain
247	*Eucalyptus camaldulensis*	342.43	Large	13.08	Retain
248	*Eucalyptus camaldulensis*	383.28	Large	14.64	Retain
249	*Eucalyptus camaldulensis*	304.74	Large	11.64	Retain
250	*Eucalyptus camaldulensis*	301.59	Large	11.52	Retain
251	*Eucalyptus camaldulensis*	383.28	Large	14.64	Retain
252	*Eucalyptus camaldulensis*	326.73	Large	12.48	Retain
253	*Eucalyptus camaldulensis*	395.84	Large	15	Retain

Tree number	Species	Circumference	Size class	Tree protection zone	Status
254	*Eucalyptus camaldulensis*	238.76	Small	9.12	Retain
255	*Eucalyptus camaldulensis*	486.95	Large	15	Retain
256	*Eucalyptus camaldulensis*	0.00	Small	15	Retain
257	*Eucalyptus camaldulensis*	417.83	Large	15	Remove
258	*Eucalyptus camaldulensis*	241.90	Small	9.24	Retain
259	*Eucalyptus camaldulensis*	323.58	Large	12.36	Retain
260	*Eucalyptus camaldulensis*	370.71	Large	14.16	Retain
261	*Eucalyptus camaldulensis*	361.28	Large	13.8	Retain
262	*Eucalyptus camaldulensis*	420.97	Large	15	Retain
263	*Eucalyptus camaldulensis*	304.74	Large	11.64	Retain
264	*Eucalyptus camaldulensis*	358.14	Large	13.68	Retain
265	*Eucalyptus camaldulensis*	314.16	Large	12	Retain
266	*Eucalyptus camaldulensis*	408.41	Large	15	Retain
267	*Eucalyptus camaldulensis*	389.56	Large	14.88	Retain
268	*Eucalyptus camaldulensis*	376.99	Large	14.4	Retain
269	*Eucalyptus camaldulensis*	329.87	Large	12.6	Retain
270	*Eucalyptus camaldulensis*	430.40	Large	15	Retain
271	*Eucalyptus camaldulensis*	376.99	Large	14.4	Retain
272	*Eucalyptus camaldulensis*	392.70	Large	15	Retain
273	*Eucalyptus camaldulensis*	263.89	Large	10.08	Retain

Tree number	Species	Circumference	Size class	Tree protection zone	Status
276	*Eucalyptus camaldulensis*	0.00	Large	0	Remove
277	*Eucalyptus camaldulensis*	358.14	Large	0	Remove

***Tree measurements of zero are unknown**

Appendix 6 Glossary

Items marked with 'A' are cited from DEPI (2013a); items marked with 'B' are cited from DSE (2007b) and items marked with a 'C' are cited from DEPI (2014).

Avoid [A]

Avoiding removing any native vegetation when undertaking a use or development. This can be either by not permitting or not going ahead with the use or development, or locating it elsewhere so that removing native vegetation is not required.

Benchmark [B]

A standard vegetation –quality reference point, dependent on vegetation type, which is applied in Habitat hectare assessments. Represents the average characteristics of a mature and apparently long undisturbed state of the same vegetation type.

Biodiversity [A]

The variety of all life forms, the different plants, animals and microorganisms, the genes they contain, and the ecosystems of which they form a part.

Biodiversity Interactive Map (BIM)

Web based interactive map available on the DSE website that provides information on the biodiversity of Victoria and displays flora and fauna data from the Victorian Biodiversity Atlas.

Bioregion [B]

Biogeographic areas that capture the patterns of ecological characteristics in the landscape or seascape, providing a natural framework for recognising and responding to biodiversity values. A landscape based approach to classifying the land surface using a range of environmental attributes such as climate, geomorphology, lithology and vegetation.

BushBroker [A]

A program coordinated by DELWP to match parties that require native vegetation offsets with third party suppliers of native vegetation offsets.

Canopy Tree [C]

Is a mature tree greater than 3 m in height and is normally found in the upper layer of a vegetation type. Immature trees that are not yet able to flower and are less than three metres in height are considered part of the understorey (see definition of understorey).

Condition score

The score assigned to a habitat zone that indicates the quality of the vegetation relative to the ecological vegetation class benchmark, usually expressed as a percentage or on a scale of 0 to 1.

Degraded treeless vegetation [B]

Vegetation that is neither a wetland, a remnant patch nor scattered tree(s).

DBH (Diameter at Breast Height) [B]

The diameter of the main trunk of a tree measured 1.3 m above ground level.

Dispersed habitat [A]

Habitat for a rare or threatened species whose habitat is spread over a relatively broad geographic area.

Ecological vegetation class (EVC) [A]

A native vegetation type classified on the basis of a combination of its floristic, life form, environmental and ecological characteristics.

EVC (see Ecological vegetation class) [B]

Extent risk [A]

The level of risk to biodiversity from the removal of native vegetation based on the area and/or number of scattered trees to be removed.

Forb

A herbaceous flowering plant that is not a graminoid (grass, sedge or rush).

Gain [A]

Predicted improvement in the contribution to Victoria's biodiversity achieved from an offset, calculated by combining site gain with the strategic biodiversity score or habitat importance score of the site. Gain is measured with biodiversity equivalence scores or units.

Gain Target [B]

The amount of gain that needs to be achieved to offset a loss measured in Habitat hectares.

General biodiversity equivalence score / units [A]

Score or units used to quantify the relative overall contribution of a site to Victoria's biodiversity.

General offset [A]

An offset that is required when a proposal to remove native vegetation is not deemed, by application of the specific-general offset test, to have a significant impact on habitat for any rare or threatened species.

General provisions [A]

Operational requirements in planning schemes which are consistent across the state, relating to matters such as administrative provisions, ancillary activities and referral of applications.

Habitat hectares [A]

Combined measure of condition and extent of native vegetation. This measure is obtained by multiplying the site's condition score (measured between 0 and 1) with the area of the site (in hectares).

Habitat hectares benchmark [A]

A reference point for each vegetation type that represents the average condition of mature stands that are likely to reflect pre-settlement circumstances.

Habitat hectares site assessment [A]

A site-based measure of the condition of native vegetation with reference to the benchmark for the same type of native vegetation. The assessment generates a condition score of between 0 and 1.

Habitat importance map [A]

A map that indicates the importance of locations as habitat for a particular rare or threatened species. This map is based on modelled data.

Habitat importance score [A]

Measure of the importance of the habitat located on a site for a particular rare or threatened species.

Habitat zone [B]

A discrete area of native vegetation consisting of a single vegetation type (EVC) within an assumed similar quality. This is the base spatial unit for conducting a Habitat hectare assessment. Separate *Vegetation Quality Assessments* (or Habitat hectare assessments) are conducted for each habitat zone within the designated assessment area.

Highly localised habitat [A]

Habitat for rare or threatened species whose habitat is spread over a very restricted area (i.e. less than 2,000 ha). This can also be applied to a similarly limited sub-habitat that is disproportionately important for a wide-ranging rare or threatened species.

Improvement gain [B]

This is gain resulting from management commitments beyond existing obligations under legislation to improve the current vegetation quality. Achieving improvement gain is predicated on maintenance commitments being already in place. For example, control of any threats such as grazing that could otherwise damage the native vegetation must already be agreed. Typical actions leading to an improvement gain include reducing or eliminating environmental weeds, enhancement planting or revegetation over a 10-year management period. If the vegetation is to be used as an offset, a commitment to maintain the improvement gain (i.e. no subsequent decline in quality) will be required in perpetuity.

Incorporated document [A]

A document that is included in the list of incorporated documents in a planning scheme. These documents affect the operation of the planning scheme.

Indigenous vegetation [B]

The type of native vegetation that would have normally been expected to occur on the site prior to European settlement.

Landholder [A]

An owner, occupier, proprietor or holder of land.

Landowner [A]

Owner of land.

Landscape scale information [A]

Mapped or modelled information based on data collected across the landscape rather than just on a particular site.

Large Old Tree (LOT) [B]

A tree with a DBH equal to or greater than the large tree diameter as specified in the relevant EVC benchmark.

Listed species

A flora or fauna species listed under the Commonwealth *Environment Protection and Biodiversity Act 1999* or listed as threatened under the Victorian *Flora and Fauna Guarantee Act 1988*.

Local Planning Policy Framework [A]

Framework outlining a Municipal Strategic Statement and the Local Planning Policies that apply to the local government area.

Location risk [A]

The risk that removing native vegetation in a particular location will have an impact on the persistence of a rare or threatened species.

Loss[A]

Loss in the contribution to Victoria's biodiversity when native vegetation is fully or partially removed, as measured in biodiversity equivalence scores or units.

Maintenance Gain [B]

This is gain from commitments that contribute to the maintenance of the current vegetation quality over time (i.e. avoiding any decline). Includes foregoing certain entitled activities that could otherwise damage or remove native vegetation, such as grazing or firewood collection. Also typically requires a commitment to ensure no further spread of environmental weeds that may otherwise result in the loss of vegetation quality over time. If the vegetation is to be used as an offset, a commitment to maintain the vegetation quality will be required in perpetuity.

Minimise [A]

Locating, designing or managing a use or development to reduce the impacts on biodiversity from the removal of native vegetation.

Native (indigenous) vegetation [B]

Native vegetation is plants that are indigenous to Victoria, including trees, shrubs, herbs and grasses (as defined in Clause 72 of the planning scheme).

Native vegetation credit [A]

Gains in the contribution that native vegetation makes to Victoria's biodiversity that are registered on the native vegetation credit register. Native vegetation credits are offered for sale to parties who are required to offset the removal of native vegetation.

Native vegetation credit register [A]

A statewide register of native vegetation credits that meet minimum standards for security and management of sites. The register is administered by the Department of Environment and Primary Industries, and records the creation, trade and allocation of credits to meet specific offset requirements.

Native vegetation extent [A]

Area of land covered by native vegetation or the number of scattered trees.

Native Vegetation Information Management (NVIM) system [A]

An online tool used to access information about Victoria's native vegetation.

Native vegetation particular provision [A]

Clause 52.17 in the Victoria Planning Provisions that relates to the removing, destroying or lopping of native vegetation.

No net loss [A]

An outcome where a particular gain in the contribution to Victoria's biodiversity is equivalent to an associated loss in the contribution to Victoria's biodiversity from permitted clearing.

Offset [A]

Protection and management (including revegetation) of native vegetation at a site to generate a gain in the contribution that native vegetation makes to Victoria's biodiversity. An offset is used to compensate for the loss to Victoria's biodiversity from the removal of native vegetation.

Offset Management Plan (OMP)

A document which sets out the requirements for establishment, protection and management of an offset site.

Offset market [A]

A system which facilitates trade of native vegetation credits between parties requiring offsets and third party suppliers of offsets.

Old tree [B]

A tree with a DBH equal to or greater than 0.75 of the large tree diameter as specified in the relevant EVC benchmark. Includes medium old trees and large old trees (see separate definitions). Some Regional Native Vegetation Plans additionally define very large old trees (1.5 times large tree diameter).

On-site offset [B]

An offset located on the same property as the clearing.

Particular Provisions [A]

Provisions in the Victoria Planning Provisions that relate to specific activities (for example, native vegetation is a Particular Provision).

Patch (see Remnant Patch)

Permit[A]

A legal document that gives permission for a use or development on a particular piece of land.

Perennial [A]

A plant that lives for more than two years. Perennials include species that are always visible e.g. shrubs and trees, but also include species that are not always visible above ground.

Permitted clearing [A]

Removal of native vegetation for which a planning permit has been granted to remove native vegetation.

Permitted clearing regulations [A]

The rules in the planning system that regulate permits for the removal of native vegetation.

Planning provisions – See Victoria Planning Provisions.

Prior management gain

This gain acknowledges actions to manage vegetation since State-wide planning permit controls for native vegetation removal were introduced in 1989.

Planning scheme [A]

Policies and provisions for the use, development and protection of land in a local government area.

Planning system [A]

Victoria's land-use planning system that includes the Victoria Planning Provisions and each local government's planning scheme.

Property Vegetation Plan [B]

A plan which relates to the management of native vegetation within a property, and which is contained within an agreement made pursuant to section 69 of the Conservation, Forests and Lands Act 1987.

Protected species

A flora species protected under the *Victorian Flora and Fauna Guarantee Act 1988.*

Protection (of a tree) [B]

An area with twice the canopy diameter of the tree(s) fenced and protected from adverse impacts: grazing, burning and soil disturbance not permitted, fallen timber retained, weeds controlled, and other intervention and/or management if necessary to ensure adequate natural regeneration or planting can occur.

Rare or threatened species [A]

A species that is listed in:

- DELWP's Advisory List of Rare or Threatened Plants in Victoria as 'endangered', 'vulnerable', or 'rare', but does not include the 'poorly known' category
- DELWP's Advisory List of Threatened Vertebrate Fauna in Victoria as 'critically endangered', 'endangered' or 'vulnerable', but does not include 'near threatened' or 'data deficient' categories
- DELWP's Advisory List of Threatened Invertebrate Fauna in Victoria as 'critically endangered', 'endangered' or 'vulnerable', but does not include 'near threatened' or 'data deficient' categories.

Recruitment [B]

The production of new generations of plants, either by allowing natural ecological processes to occur (regeneration etc), by facilitating such processes such as regeneration to occur, or by actively revegetating (replanting, reseeding). See Revegetation.

Referral authority [A]

An authority that a permit application is referred to for decision under Section 55 of the Planning and Environment Act 1987. All referral requirements are specified in Clause 66 of planning schemes.

Remnant patch of native vegetation [A]

Either:

- an area of native vegetation , with or without trees, where at least 25 per cent of the total perennial understorey plant cover is native plants
- an area with three or more indigenous canopy trees where the tree canopy cover is at least 20 per cent.

Remnant vegetation [B]

Native vegetation that is established or has regenerated on a largely natural landform. The species present are those normally expected in that vegetation community. Largely natural landforms may have been subject to some past surface disturbance such as some clearing or cultivation (or even the activities of the nineteenth century gold rushes) but do not include man-made structures such as dam walls and quarry floors.

Responsible authority [A]

The authority charged with the responsibility for administering and enforcing particular aspects of a planning scheme.

Revegetation [B]

Establishment of native vegetation to a minimum standard in formerly cleared areas, outside of a remnant patch.

Scattered tree [C]

An indigenous canopy tree that does not form part of a remnant patch of native vegetation (see definition of remnant patch of native vegetation).

Section 173 agreements [B]

A management agreement primarily between a landowner and the responsible authority according to section 173 of the Planning and Environment Act 1987.

Security Gain

This is gain from actions to enhance security of the on-going management and protection of native vegetation at the offset site, either by entering into an on-title agreement (for example under Section 173 of the *Planning and Environment Act 1987*), or by locating the offset on land that has greater security than the clearing site, or by transferring private land to a secure public conservation reserve.

Site [A]

An area of land that contains contiguous patches of native vegetation or scattered trees, within the same ownership.

Site-based information [A]

Information that is collected at a site.

Site gain [A]

Predicted improvement in the condition, or the condition and extent, of native vegetation at a site (measured in Habitat hectares) generated by the landowner committing to active management and increased security.

Site loss [A]

Loss in the condition, or condition and extent, of native vegetation when native vegetation is fully or partially removed, measured in Habitat hectares.

sp.

Species (one species).

spp.

Species (more than one species).

Species persistence [A]

The continued existence of a species into the future.

Specific biodiversity equivalence score / units [A]

With reference to a specific species, a score or units used to quantify the relative contribution of a site to Victoria's biodiversity.

Specific-general offset test [A]

A test used to determine whether a general or specific offset is required based on the impact of native vegetation removal on the habitat for rare or threatened species.

Specific offset [A]

An offset that is targeted to a particular species (or multiple species) impacted by the removal of native vegetation.

State Planning Policy Framework [A]

A collection of clauses in the Victoria Planning Provisions that inform planning authorities and responsible authorities of those aspects of state planning policy which they are to take into account and give effect to in planning and administering their respective areas.

Strategic biodiversity map [A]

A map that shows the relative value of a location in the landscape with regard to its condition, extent, connectivity and the support function it plays for species. The map is based on modelled data.

Strategic biodiversity score [A]

A score that quantifies the relative value of a location in the landscape with regard to its condition, extent, connectivity and the support function it plays for species.

Strategic planning [A]

A coordinated approach to planning where areas for conservation and areas which can be cleared are strategically identified.

Supplementary planting

Establishment of overstorey and/or understorey plants within a remnant patch. Typically includes the planting or direct-seeding of understorey life forms.

Taxon (plural taxa)

A term used to describe any taxonomic unit. This term is typically used when referring broadly to any scientifically recognised species, subspecies or variety.

Third-party offset [B]

An offset located on a property owned by a person other than the landowner who incurs the native vegetation loss being offset.

Understorey

Understorey is all vegetation other than mature canopy trees – includes immature trees, shrubs, grasses, herbs, mosses, lichens and soil crust. It does not include dead plant material that is not attached to a living plant. More information on understorey life forms is set out in the Vegetation Quality Assessment Manual (DSE 2004).

Vegetation Quality Assessment

The standard DELWP method for assessing remnant patches of vegetation. Details of the method are outlined in the Vegetation Quality Assessment Method (DSE 2004). The results of the assessment are expressed in Habitat hectares. Also referred to as a 'Habitat hectare assessment'

Victoria Planning Provisions [A]

A list of planning provisions that provides a standard template for individual planning schemes.

Zone [A]

A zone in the Victoria Planning Provisions is a set of permitted uses of land which are defined spatially.