VICTORIAN PLANNING AUTHORITY

AUGUST 2020

FLORA AND FAUNA ASSESSMENT

WALLAN SOUTH PRECINCT

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Flora and fauna assessment
Wallan South Precinct

Victorian Planning Authority

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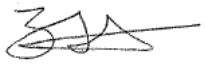
Prepared by:	Zoë Steven	13/08/2020	
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GLOSSARY AND ABBREVIATIONS

DELWP Advisory listing	Department of Environment, Land, Water and Planning (DELWP) Advisory list of rare or threatened flora and fauna.
Biodiversity	The biological diversity of life is commonly regarded as being made up of the following three components: — Genetic diversity — the variety of genes (or units of heredity) in any population. — Species diversity — the variety of species. — Ecosystem diversity — the variety of communities or ecosystems.
Bioregion (region)	A bioregion defined in a national system of bioregionalisation. The majority of the Study Area falls within the Central Victorian Uplands bioregion with smaller areas covered by the Victorian Volcanic Plain bioregion.
Canopy tree	See 'Native Canopy Tree'.
CMA	Catchment Management Authority (area).
Department of Environment, Land, Water and Planning (DELWP)	This department was formerly known as: — Department of Environment and Primary Industries (DEPI). — Department of Planning, Local Government, and Property and Land Titles (DTPLI).
Department of the Environment and Energy (DoEE)	The department develops and implements national policy, programs and legislation to protect and conserve Australia's natural environment and cultural heritage and administers the EPBC Act. The Commonwealth Department of the Environment was previously known as: — Department of Sustainability, Environment, Water, Population and Communities (SEWPAC). — Department of the Environment, Water, Heritage and the Arts (DEWHA). — Department of Environment and Heritage (DEH). — Department of the Environment and Water Resources (DEWR).
DBH	Diameter at Breast Height. The diameter of the main trunk of a tree measured over bark at 1.3 m above ground level.
Drip Line	The outermost boundary of a tree canopy (leaves and/or branches) where the water drips onto the ground.
Ecological community	An assemblage of species occupying a particular area.
Ecological Vegetation Class (EVC)	A type of native vegetation classification that is described through a combination of its floristics, life form and ecological characteristics, and through an inferred fidelity to particular environmental attributes. Each EVC includes a collection of floristic communities (i.e. lower level in the classification that is based solely on groups in the same species) that occur across a biogeographic range, and although differing in species, have similar habitat and ecological processes operating.
EES	Environment Effects Statement
Environmental weed	Any plant that is not native to a local area that has invaded native vegetation.

EPBC Act	Commonwealth *Environment Protection and Biodiversity Conservation Act 1999.*
Exotic	Introduced from outside the area (Ensbey and Johnson, 2009) used in the context of this report to refer to species introduced from overseas.
FFG Act	State *Flora and Fauna Guarantee Act 1988*.
GPS	Global Positioning System – a navigational tool which uses radio receivers to pick up signals from four or more special satellites to provide precise determination of location.
Habitat	An area or areas occupied, or periodically or occasionally occupied, by a species, population or ecological community, including any biotic or abiotic components.
Habitat Hectare	A site-based measure of quality and quantity of native vegetation that is assessed in the context of the relevant native vegetation type.
Habitat score	The score assigned to a habitat zone that indicates the quality of the vegetation relative to the EVC benchmark – sum of the site condition score and landscape context score usually expressed as a percentage or as a decimal fraction of 1.
Habitat Zone	A discrete area of native vegetation consisting of a single vegetation type (EVC) with an assumed similar quality. This is the base spatial unit for conducting a habitat hectare assessment.
Indigenous	Native to the subject area: not exotic.
Introduced	Not native to the area: not indigenous. Refers to both exotic and non-indigenous Australian native species of plants and animals.
Likely	Taken to be a real chance or possibility.
Local population	The population that occurs within the site, unless the existence of contiguous or proximal occupied habitat and the movement of individuals or exchange of genetic material across the boundary can be demonstrated.
Locality	The area within a 10 km radius of the site.
Location Category	There are three location categories that indicate the potential risk to biodiversity from removing a small amount of native vegetation. These location categories are identified by DELWP as follows: — Location 3: includes locations where the removal of less than 0.5 hectares of native vegetation could have a significant impact on habitat for a rare or threatened species. — Location 2: includes locations that are mapped as endangered EVCs and/or sensitive wetlands and coastal areas (section 3.2.1) and are not included in Location 3. — Location 1: includes all remaining locations in Victoria.
Mapped wetlands	Mapped wetlands may or may not be visible on the ground and are treated as a patch of native vegetation for the purpose of offsets unless they are covered by a hardened, man-made surface, for example, a roadway.

Matters of National Environmental Significance (MNES)	The following Matters of National Environmental Significance are protected under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act): listed threatened species and communities, listed Migratory species, Ramsar wetlands of international importance, Commonwealth marine environment, World Heritage Properties, National Heritage Places, the Great Barrier Reef Marine Park and nuclear actions.
Migratory species	Species listed as Migratory under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 relating to international agreements to which Australia is a signatory. These include Japan-Australia Migratory Bird Agreement, China-Australia Migratory Bird Agreement, Republic of Korea-Australia Migratory Bird Agreement and the Bonn Convention on the Conservation of Migratory Species of Wild Animals. Capitalisation of the term 'Migratory' in this report refers to those species listed as Migratory under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999.
Native Canopy Tree	A native canopy tree is either: – a mature tree (able to flower) that is greater than three metres in height and is normally found in the upper layer of the relevant vegetation type (EVC); or – a standing dead tree (stag) if it has a trunk diameter of 40 centimetres or more at a height of 1.3 metres above the ground.
Native Vegetation	Native vegetation is defined in the Victoria Planning Provisions as 'plants that are indigenous to Victoria, including trees, shrubs, herbs and grasses'.
No Net Loss	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.
Noxious weed	An introduced species listed under the *Catchment and Land Protection Act 1994* Under the Act, noxious weeds have specific control measure and reporting requirements.
NVPP	Native Vegetation Precinct Plan
Offset	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. Offsets are to be secured in perpetuity with an on-Title conservation covenant.
Offset target	The amount of Offset required, measured in Habitat Units, to ensure permitted clearing of native vegetation results in no net loss in the contribution made by native vegetation to Victoria's biodiversity.
P&E Act	*Planning and Environment Act 1987*

Patch of native vegetation	A patch of native vegetation is either: — an area of vegetation where at least 25 per cent of the total perennial understorey plant cover is native; or — any area with three or more native canopy trees where the drip line of each tree touches the drip line of at least one other tree, forming a continuous canopy; or — any mapped wetland included in the current wetlands layer available in Native Vegetation Information Management (NVIM) and other DELWP systems.
Potentially Threatening Processes	The state equivalents of Key Threatening Processes, Potentially Threatening Processes are listed under Section 10 of the *Flora and Fauna Guarantee Act 1988* (FFG Act).
Project area	The areas for which planning approvals are sought as part of the project.
Protected species	Those species defined as protected under the *Flora and Fauna Guarantee Act, Environment Protection and Biodiversity Conservation Act* or DELWP Advisory Lists.
PSP	Precinct Structure Plan
Ramsar	The Convention on Wetlands, called the Ramsar Convention, is an intergovernmental treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources.
Recovery plan	A plan prepared under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* to assist the recovery of a Threatened species, population or ecological community.
Recruitment	The production of new generations of plants, either by allowing natural ecological processes to occur (regeneration etc.), by facilitating such processes, or by actively revegetating (replanting, reseeding). See revegetation.
Revegetation	Establishment of native vegetation to a minimum standard in formerly cleared areas, outside of a Remnant Patch.
Scattered trees	A scattered tree is a native canopy tree (see 'Native Canopy Tree' above) that does not form part of a patch. Scattered trees have two sizes, small and large: — a small scattered tree is less than the large tree benchmark for the species in the relevant EVC — a large tree is equal to or greater than the large tree benchmark for the species in the relevant EVC — a standing dead tree that does not form part of a patch is treated as a large scattered tree if it has a trunk diameter of 40 centimetres or more at a height of 1.3 metres above the ground.
Significant	Important, weighty or more than ordinary; typically used to describe the importance of a species or community at local, regional, state or federal levels.

Species – General Offset Test	The species-general offset test measures the proportional impact from the removal of native vegetation on the habitat of rare or threatened species, according to the Habitat importance maps, and compares this to the species offset threshold.
Species Offset	A Species Offset is required when the removal of native vegetation has a significant impact on habitat for a rare or threatened species. Species Offsets must compensate for the removal of that particular species' habitat.
Species richness	Species richness is simply the number of species present in a sample, community, or taxonomic group. Species richness is one component of the concept of species diversity, which also incorporates evenness, that is, the relative abundance of species.
spp.	Abbreviation of *species plural*
sp.	Abbreviation of *species*
Strategic Biodiversity Value (SBV)	The Strategic Biodiversity Value is a rank of a location's complementary contribution to Victoria's biodiversity, relative to other locations across the state with regard to its condition, extent, connectivity and the support function it plays for species.
ssp.	Abbreviation for *subspecies*
Threatened species, populations and ecological communities	Species, populations and ecological communities listed as Vulnerable, Endangered or Critically Endangered (collectively referred to as Threatened) under the DELWP's Advisory listings, the FFG Act, or EPBC Act. Capitalisation of the terms 'Threatened', 'Vulnerable', 'Endangered' or 'Critically Endangered' in this report refers to listing under the relevant state and/or Commonwealth legislation.
Tree Protection Zone (TPZ)	Calculated area (based on AS 4970-2009 (Protection of trees on development sites)) of soil volume required to encompass sufficient absorbing tree root systems to ensure the long-term survival of a tree. Calculated as (12 x DBH) of the tree. Trees may be considered as lost (and may require an Offset) if impacts of greater than 10% intrusion into the TPZ occur.
Weed	A plant growing out of place or where it is not wanted: often characterised by high seed production and the ability to colonise disturbed ground quickly. Weeds include both exotic and Australian native species of plant naturalised outside of their natural range.

EXECUTIVE SUMMARY

WSP Australia Pty Limited (WSP) conducted an ecological assessment of the proposed Wallan South Precinct, consisting of a desktop and site assessment undertaken in November and December 2019. The aim of this assessment was to determine the ecological values present, and to support the development of a native vegetation precinct plan (NVPP). An assessment had previously been completed by Biosis in 2017 (Biosis, 2017) for most of the study area, however this assessment was conducted under the previous Biodiversity Assessment Guidelines (DEPI, 2013) which have since been replaced with the *Guidelines for the removal, destruction or lopping of native vegetation* (The Guidelines) (DELWP, 2017a). WSP completed the assessment in accordance with the new Guidelines and updated the data to reflect current conditions.

STUDY AREA

The study area is approximately 830 ha located to the south and west of the Wallan town centre, 50 km north of Melbourne. It is within Mitchell Shire Council, and borders two bioregions, the Victorian Volcanic Plains and the Central Victorian Uplands. The study area currently consists of low-density rural housing and agricultural land utilised for both cropping and grazing.

METHODS

The Flora and Fauna Assessment consisted of a desktop assessment, a site assessment and targeted fauna surveys.

The desktop assessment included a database search and review of relevant literature including biodiversity assessment reports undertaken previously for the study area.

A site assessment was then undertaken during which all native vegetation was mapped as per the The Guidelines (DELWP, 2017a). Habitat hectare assessments were undertaken on all patches of native vegetation according to the *Vegetation Quality Assessment Manual-Guidelines for applying the habitat hectares scoring method* (DSE, 2004).

Potential habitat was identified for Golden Sun Moth, Brown Toadlet and Southern Toadlet. Targeted surveys were undertaken for these species according to the relevant survey guidelines (DEWHA, 2009), (ARC, 2020).

RESULTS

The assessment found a total of 134.586 ha of native vegetation across the study area from seven Ecological Vegetation Classes (EVC) and 180 scattered trees. A DELWP modelled wetland of 41.829 ha is present along the southern boundary of the study area.

One listed fauna species, Golden Sun Moth, had been recorded previously by Biosis. Additional records were made by WSP during targeted surveys for this assessment and habitat mapping for the species was refined. No listed flora was recorded on site. One *Flora and Fauna Guarantee Act 1988* (FFG Act) listed community had previously been recorded within the study area by Biosis, Western (Basalt) Plains Grassland. This community was confirmed during this assessment. No *Environment Protection and Biodiversity Conservation Act 1999* (EPBC) listed communities were recorded within the study area. Surveys were undertaken for Brown Toadlet and Southern Toadlet however none were recorded.

ECOLOGICAL IMPACTS

WSP have proposed a retention area of 228 ha (an increase of 44 ha from the retention area proposed by Biosis). This will protect a large proportion of the native vegetation, including large trees in patches, and Golden Sun Moth habitat. A

preliminary total of 15.334 ha of native vegetation, 131 scattered trees and the large modelled wetland are outside the retention zone and therefore likely to be impacted. A 2.226 ha patch of Golden Sun Moth habitat is also likely to be impacted.

LEGISLATION

A referral under the EPBC Act has been submitted by Biosis for the removal of 2.226 ha of Golden Sun Moth habitat. No further impacts to any EPBC Act listed Matters of National Environmental Significance (MNES) is likely.

The FFG Act does not apply to private land. No permit under the FFG Act is required for impacts to Western (Basalt) Plains Grassland or Golden Sun Moth as they are found on private land within the study area. A 'Permit to Take' will be required for flora species protected under the FFG Act if removed from public land, for example the roadsides.

No individual, or cumulative referral criteria indicating the need for an Environmental Effects Statement are triggered by the project. Retention of native vegetation is recommended to keep the clearance below 10 hectares.

The project will require offsets under the *Planning and Environment Act 1987* for all native vegetation impacted, plus the modelled wetland. The total amount not contained within the retention zone is 15.334 ha of native vegetation, 131 scattered trees and the 41.829 ha modelled wetland. Offsets will be calculated once the final native vegetation losses are determined after further avoid and minimise workshopping with the VPA.

Nine weed species listed under the CaLP Act 1994 were found within the study area. The landholder must take all reasonable measures to prevent their spread and control these weed species both during and after construction.

RECOMMENDATIONS

WSP recommend that the amount of native vegetation retained across the study area is increased from that proposed by Biosis. Further retention opportunities can be identified in later stages of the precinct planning.

Targeted surveys for Striped Legless Lizard and additional survey for Brown and Southern Toadlet are recommended.

Restoration and revegetation works are recommended in degraded creek lines and Swampy Riparian Woodland.

A Construction Environmental Management Plan (CEMP) should be developed prior to any vegetation clearing within the precinct to communicate the ecological sensitivities and mitigation measures to the construction crews including sediment and erosion control, weed management, areas to be retained, protecting trees and managing fauna on site.

1 INTRODUCTION

WSP Australia Pty Limited (WSP) was engaged by the Victorian Planning Authority (VPA) to prepare a biodiversity assessment report and Native Vegetation Precinct Plan to inform precinct planning and development of the Wallan South precinct. The biodiversity assessment report will be used by the VPA to inform the future development of the Precinct Structure Plan (PSP) area, in particular it will assist in decision-making around the retention, removal and/or offsetting and native vegetation and fauna habitat. WSP undertook this flora and fauna assessment as per Section 1.2 of the Biodiversity Precinct Planning Kit (DSE, 2010). The Biodiversity assessment is the first stage of the assessment, with stage two being the development of the Native Vegetation Precinct Plan which will follow after further discussions with VPA.

The objectives of the assessment, as per the Biodiversity Precinct Planning Kit (DSE, 2010), are to:

1. Identify, assess and map significant flora, fauna, and habitat in the study area.
2. Collect data at sufficient detail and standard that enables a Precinct Structure Plan and Biodiversity Plan to be developed.
3. Ensure environmental values identified are integrated with the planning and development of the Precinct.
4. Ensure proposed development in the precinct is, where possible, designed to reduce the potential impact on biodiversity values and to suggest mitigation actions.
5. Provide advice on any works or management measures that may reduce adverse impacts of the development on species known or likely to occur in the Precinct.
6. Ensure that development of the precinct is able to comply with Government legislative and policy requirements on the protection of indigenous fauna and flora species and Communities.

Biosis completed an assessment for the Wallan South study area in 2017 for Crystal Creek Properties Pty Ltd (Biosis, 2017). This data was provided to WSP by the VPA. Several properties were not able to be accessed for field work during the Biosis assessment due to land access constraints. The Biosis assessment was conducted under the former *Biodiversity Assessment Guidelines* (DEPI, 2013) which have since been superseded by the *Guidelines for the removal, destruction or lopping of native vegetation* (DELWP, 2017a) (the 'Guidelines'). The purpose of the WSP assessment was to update the data to the standards of the 2017 Guidelines, fill in any data gaps from previously un-surveyed properties, and update mapping to reflect current conditions.

1.1 PROJECT SCOPE

The following scope of work was defined for the project:

- Desktop review of flora and fauna databases and relevant biodiversity strategies, policies and legislation.
- Review previously completed preliminary assessments.
- Map native vegetation as per the *Guidelines for the removal, destruction or lopping of native vegetation* (DELWP, 2017a) for native vegetation patches, scattered trees and other relevant environmental features. Assess mapped as native vegetation were scored as per the Habitat Hectare methodology (DSE, 2004).
- Conduct fauna habitat assessments and undertake a targeted survey for the Golden Sun Moth targeted survey for the Golden Sun Moth *Synemon plana.*
- Assess the likelihood of threatened flora and fauna and communities listed under *the Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and *Flora and Fauna Guarantee Act 1988* (FFG Act), and the Victorian Advisory Lists of threatened flora and fauna (DEPI, 2014, DSE, 2013).
- Evaluate the potential ecological impacts and recommend mitigation measures, specifically with practical recommendations to avoid, minimise or mitigate and offset ecological impacts.
- Evaluate implications of relevant biodiversity policy and legislation, and triggers for permits (including FFG Act permit and EPBC Act referral).
- Consideration of biodiversity values, reporting and recommendations for the purposes of informing the development of a Native Vegetation Precinct Plan (NVPP) as per *Preparing a Native Vegetation Precinct Plan* (DELWP, 2017b).

1.2 STUDY AREA

The study area for this assessment is the proposed precinct area as defined by the cadastral boundaries of the properties included within the precinct. It is the area for which planning approvals for the development of the Wallan South Precinct will be sought and is shown in Appendix C. A glossary on Page vii provides definitions of terms used throughout this report.

Wallan South Precinct is an area of approximately 830 hectares located to the south and west of the Wallan town centre. The study area is bounded by the Hume Freeway in the east, Old Sydney Road in the west, Darraweit Road, Rowes Lane and Taylors Lane in the north and the southern boundary follows a property boundary from Old Sydney Road to the Northern Highway (See Mapping in Appendix C).

The study area currently consists of low density rural housing and agricultural land utilised for both cropping and grazing.

The study area is approximately 50 km north of Melbourne, within Mitchell Shire and spans two bioregions, the Victorian Volcanic Plains and the Central Victorian Uplands. The traditional owners of the land contained within the study area are the Wurundjeri People.

2 METHODOLOGY

2.1 PERSONNEL

The contributors to this study, their qualifications and Project roles are provided in Table 2.1.

Table 2.1 Contributors and their roles

NAME	QUALIFICATIONS	POSITION AND ROLE/S ON PROJECT
Justin Pegg	BSc, M. Env&Sus	Senior Ecologist – Project Manager, field survey
Nic McCaffrey	BSc	Principal Ecologist – Ecology project director, field survey
Zoë Steven	BSc Hons, M. Env	Senior Ecologist – Field survey and reporting
Danelle Scicluna	BEnvSc	Graduate Ecologist – Field survey and desktop assessment
Timothy O'Donnell	Senior Spatial Consultant	GIS Technician, mapping and data management

2.2 DATABASE AND LITERATURE REVIEW

A database search and literature review were undertaken for an indication of the ecological values of the study area, and potential constraints to the project. Relevant and available documents were reviewed for information on past land uses, presence of vegetation communities as well as flora and fauna. Relevant databases were searched for records of threatened species within a five-kilometre radius of the study area.

This review was used to prepare a list of threatened flora and fauna species, ecological communities, and any significant habitat previously recorded or predicted to occur in the study area and the broader locality (listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and *Flora and Fauna Guarantee Act 1988* (FFG Act). The following sources of information were consulted:

- The Department of Environment, Land, Water and Planning (DELWP) NatureKit online tool (DELWP, 2018c)
- The Victorian Biodiversity Atlas – five-kilometre radius of the study area
- Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) Protected Matters Search Tool – five kilometre radius of the study area (DoEE, 2019)
- The Commonwealth Department of the Environment and Energy Species Profile and Threats Database
- Victorian Rare or Threatened Species Advisory Lists (DSE, 2013, DEPI, 2014, DSE, 2009)
- The Guidelines for the removal, destruction or lopping of native vegetation (DELWP, 2017a)
- Native Vegetation Information Management System (DELWP, 2020)
- Vegetation Quality Assessment Manual (DSE, 2004)
- BioSites (DELWP, 2014)
- Publicly available and supplied reports including:
  - Preliminary (Desktop) Biodiversity Assessment, Ecology and Heritage Partners, 2015
  - Wallan South Biodiversity Assessment Report, Biosis, 2017
  - Highlighting the need for integrated catchment management planning across PSP's in the northern growth corridor, including specific feedback on the Beveridge North West PSP, Nature Glenelg Trust, 2020
- Aerial imagery to determine habitat extents and linkages
- Relevant legislation, government policy and strategies including:
  - *Preparing a Native Vegetation Precinct Plan* (DELWP, 2017b)
  - *Biodiversity Precinct Planning Kit* (DSE, 2010).

2.3 FLORA SURVEY

Site assessments for flora and vegetation were undertaken across eight days in November and December 2019 to determine the type and extent of native vegetation present, habitat resources available, and the possible impacts to biodiversity values. The following techniques were utilised:

- field validation of vegetation modelling – the extent and condition of native vegetation was mapped and assessed against the most appropriate EVC benchmark
- habitat hectare assessments were completed for all habitat zones identified within the study area in accordance with the '*Vegetation Quality Assessment Manual – Guidelines for applying the habitat hectares scoring method Version 1.3'* (DSE, 2004)
- any other incidental observations, or evidence of flora or fauna were recorded.

The specific methods used to survey vegetation and flora are detailed below.

2.3.1 CATEGORISING VEGETATION WITHIN THE STUDY AREA

Field validation (or ground-truthing) of extant vegetation modelling (DEPI, 2009) and vegetation mapping was undertaken for the assessment of native vegetation as per the *Guidelines for the removal, destruction or lopping of native vegetation* (the Guidelines) (DELWP, 2017a).

Native vegetation is defined in planning scheme as 'plants that are indigenous to Victoria, including trees, shrubs, herbs and grasses'. The Guidelines further classify native vegetation as a patch or a scattered tree as per the following.

> *A patch of native vegetation is:*
>
> - *an area of vegetation where at least 25 per cent of the total perennial understorey plant cover is native, or*
> - *any area with three or more native canopy trees where the drip line of each tree touches the drip line of at least one other tree, forming a continuous canopy, or*
> - *any mapped wetland included in the 'Current wetlands map', available in DELWP systems and tools.*
>
> *A scattered tree is a native canopy tree that does not form part of a patch.*

The locations of scattered trees were recorded with a handheld GPS where they did not meet the criteria for a remnant patch. The vegetation patches were all collected by WSP and the scattered tree data was supplied by the arborist.

2.3.2 REVEGETATION

Revegetation is extensive across the study area and was mapped in revegetation polygons. Individual planted trees were not mapped. Vegetation surrounding houses that was clearly planted for amenity (e.g. garden beds) was not mapped, or were mapped broadly, however some older indigenous trees within gardens were recorded where they appeared to be remnant.

Where revegetation of non-indigenous species had occurred within remnant patches, such as along the creek banks, these species were considered in the weed score of a habitat hectare assessment. Where the percentage of non-indigenous species accounted for over 75% of total vegetation cover, those areas were not included as part of the patch.

2.3.3 HABITAT HECTARE ASSESSMENTS

Habitat hectare assessments were undertaken on remnant patches of native vegetation to determine the condition of the vegetation in the context of the local area and the relevant bioregions. This methodology is outlined in *Vegetation Quality Assessment Manual-Guidelines for applying the habitat hectares scoring method* (DSE, 2004). The habitat hectare method involves making visual and quantitative assessments on various characteristics of native vegetation according to established criteria that are set against an optimum benchmark. This process aims to establish the significance of native vegetation through an objective and repeatable methodology using working documents (benchmark data and field assessment score sheets) that are uniformly applied across Victoria.

In summary, this process begins with the identification of the EVC. Each EVC has a benchmark of optimal values which are found on DELWP's website (DELWP, 2018b). Site assessments are undertaken using the DSE *Vegetation Quality Field Assessment Sheet* (Version 1.3 October 2004) (DSE, 2004). Further to the site condition criteria, the habitat hectare process also requires an assessment of the site in a landscape context (DSE, 2004).

If a site meets or exceeds all benchmark criteria it will receive a total score of 100, which is a total of the above condition and landscape scores in pristine undisturbed condition. However, in many cases in the urban-influenced ecosystems, sites receive a score less than 60, due to their relatively high level of modification. The final habitat score is presented as a percentage and then converted to a score out of 1.00.

2.4 FAUNA SURVEY

2.4.1 HABITAT ASSESSMENT

Fauna habitats were assessed by examining characteristics such as the structure and floristics of the canopy, understorey and ground vegetation, the structure and composition of the litter layer, and other habitat attributes important for feeding, roosting and breeding.

2.4.2 GOLDEN SUN MOTH TARGETED SURVEY

Golden Sun Moth *Synemon plana* are a critically endangered species that is found in grassland and grassy woodland habitats west and north of Melbourne into NSW and the ACT. The larvae feed off the roots of native Wallaby Grasses (*Rytiodosperma* spp.) and Spear Grass (*Austrostipa* app.), as well as the introduced Chilean Needle Grass *Nassella neesiana*. Patches of vegetation containing these habitat species within the known range for the Golden Sun Moth require a targeted survey.

Biosis recorded Golden Sun Moth at several locations across the study area in 2017 (Biosis, 2017). These areas were mapped as 'confirmed habitat' and anywhere that contained appropriate food plants but was not able to be accessed for a targeted survey was mapped as 'unconfirmed habitat'. WSP conducted targeted surveys within the patches of unconfirmed habitat mapped by Biosis, and also refined the mapping of these patches based on current habitat condition. Some properties Biosis mapped as unconfirmed habitat were removed from the survey plan as the correct food plants were not found to be present during the current vegetation assessments. Two properties were not able to be surveyed due to land access constraints. One property was accessed once and did contain a small patch of potential habitat, but access was difficult to arrange with the tenant, so no further surveys were conducted. The other was not accessed at all as the land owner could not be contacted.

The Department of Environment and Energy (DoEE) produce survey guidelines for key threatened species in order to maximise detection and reduce the chances of the survey producing a false negative result (DEWHA, 2009). Surveys for Golden Sun Moth need to be conducted during the flying season which varies from year to year but is generally between late October and early January. Surveys need to be undertaken four times, approximately a week apart, under the following conditions:

- warm day (above 20 degrees by 10 am)
- between 10 am and 2 pm
- clear or cloudless sky
- still or relatively low winds
- at least 2 days since rain.

Prior to conducting surveys, a reference check was undertaken at a location where the moths have previously been recorded. The property at 1470 Old Sydney Road where Biosis had recorded moths flying in 2017 (Biosis, 2017) was used as reference check location. Due to some unseasonably cool weather conditions in December, some of the surveys were conducted in weather conditions outside what is recommended by the Guidelines, however a reference check recorded males flying and the surveys are therefore still considered to be valid. The following table provides the details of the surveys conducted.

Table 2.2 Golden Sun Moth survey dates and details

PROPERTY	SURVEY DATA	SURVEY 1	SURVEY 2	SURVEY 3	SURVEY 4
64 Rowes Lane (front)	Date	20/11/19	9/12/19	13/12/19	17/12/19
	Temp ˚C	19	26	18	22
	Wind Speed (km/h)	24	33	22	26
	Cloud Cover (%)	10	5	10	0
90 Rowes Lane	Date	5/12/19	No further surveys [1]		
	Temp ˚C	21			
	Wind Speed (km/h)	28			
	Cloud Cover (%)	10			
1470 Old Sydney Road	Date	20/11/19	9/12/19	13/12/19	17/12/19
	Temp ˚C	19	28	18	22
	Wind Speed (km/h)	24	33	22	26
	Cloud Cover (%)	10	0	10	0
1450 Old Sydney Road	Date	29/11/19	9/12/19	13/12/19	17/12/19
	Temp ˚C	22	26	18	22
	Wind Speed (km/h)	20	30	22	24
	Cloud Cover (%)	20	10	0	0
30 Macsfield Road	Date	13/12/19	20/12/19	24/12/19	9/1/19
	Temp ˚C	16	35	23	27
	Wind Speed (km/h)	20	43	26	20
	Cloud Cover (%)	10	0	10	0

PROPERTY	SURVEY DATA	SURVEY 1	SURVEY 2	SURVEY 3	SURVEY 4
1255 Old Sydney Rd	Date	9/12/19	17/12/19	No further surveys [2]	
	Temp ˚C	28	24		
	Wind Speed (km/h)	30	26		
	Cloud Cover (%)	5	0		

(1) No Further surveys were conducted due to difficulties with land access

(2) Mapped as 'Unconfirmed Habitat' by Biosis, however no appropriate vegetation present, no further surveys undertaken

2.4.3 TOADLET SURVEYS

Targeted surveys for Brown Toadlet *Pseudophryne bibronii* and Southern Toadlet *Pseudophryne semimarmorata* were undertaken on 6 and 7 May 2020. These species are found under rocks, logs or leaf litter in forests near creeks, gutters or ditches that are inundated after rain. The calling period for both species is Autumn (ARC, 2020). Both species have very high numbers of records within 5 km of the project area. Surveys for these species were recommended in the first version of this report. It has since been updated to include the results.

The survey was undertaken by two ecologists over two nights. It involved walking along creeklines within the study area where potential habitat exists, listening for calls and then doing call playback for both species through a speaker and listening for responses. Weather data for the survey is provided in Table 2.3.

The banks of Strathayre Creek were surveyed from Darraweit Road and from Rowes Lane.

Table 2.3 Toadlet survey data

SURVEY DATA	SURVEY 1	SURVEY 2
Date	6/05/20	7/05/20
Time	5 – 6:30 pm	5 – 6:30 pm
Start Temperature	12.3°C	13.2°C

2.5 LIKELIHOOD OF OCCURRENCE

The presence or absence of a particular species cannot be definitively determined during a relative short survey timeline. For this study, the likelihood of occurrence of threatened and migratory species and populations was determined based on the criteria shown in Table 2.4 below. This method identifies the habitat requirements of the species, outcomes of a habitat assessment, the state of habitat connectivity, records of historical and recent presence as identified in the Victorian Biodiversity Atlas (VBA), and modelled presence from the Protected Matters Search Tool (PMST).

Table 2.4 Likelihood of occurrence criteria for threatened flora and fauna species

LIKELIHOOD	DESCRIPTION
Low	Species considered to have a low likelihood of occurrence include species not recorded during the field surveys that fit one or more of the following criteria: — have not been recorded previously in the study area and surrounds and for which the study area is beyond the current distribution range — rely on specific habitat types or resources that are not present in the study area — are considered locally extinct — are a non-cryptic perennial flora species that were specifically targeted by surveys and not recorded.

LIKELIHOOD	DESCRIPTION
Moderate	Species considered to have a moderate likelihood of occurrence include species not recorded during the field surveys that fit one or more of the following criteria: — have infrequently been recorded previously in the study area and surrounds — use habitat types or resources that are present in the study area, although generally in a poor or modified condition — are unlikely to maintain sedentary populations, however, may seasonally use resources within the study area opportunistically during variable seasons or migration — are cryptic flowering flora species that were not seasonally targeted by surveys and that have not been recorded.
High	Species considered to have a high likelihood of occurrence include species not recorded that fit one or more of the following criteria: — have frequently been recorded previously in the study area and surrounds — use habitat types or resources that are present in the study area, that are abundant and/or in good condition within the study area — are known or likely to maintain resident populations surrounding the study area — are known or likely to visit the site during regular seasonal movements or migration.
Recorded	Any significant species recorded during field surveys.

2.6 PLANT IDENTIFICATION

Flora species that could not be identified in the field were recorded to the nearest possible family or genus. These were then collected and identified as per protocols of the Flora and Fauna Guarantee Permit (10007800) for the collection of plant material.

2.7 LIMITATIONS

A common limitation of ecological surveys is the short time period in which they are undertaken and the lack of seasonal sampling, which can lead to lack of detection of some species. The results of the field survey are indicative of the environmental conditions at the time of assessment, including the presence or otherwise of species. Also, it should be recognised that site conditions, including the presence of threatened species, can change with time.

To overcome this as much as possible, the likely presence of threatened fauna species was determined primarily through habitat assessment, which is a conservative approach likely to include species that are difficult to detect if suitable habitat was observed in the study area, and if that species was known to occur regionally.

Permission from land owners was sought prior to accessing land for each site assessment. One property (1500 Old Sydney Road) was not accessed because no contact details for the land owner were available. Another property (90 Rowes Lane) was accessed once for vegetation mapping however the tenants could not be contacted again to give permission for subsequent Golden Sun Moth surveys.

2.8 PERMITS

All WSP staff and subcontractors are covered under the Standard Operating Procedures approved by the Department of Economic Development, Jobs, Transport and Resources, Wildlife and Small Institutions Animal Ethics Committee approval (08.17) and Victorian *Wildlife Act 1975* Research Permit (100007593). Additionally, all relevant WSP staff are covered under the Victorian *Flora and Fauna Guarantee Act 1988* Permit to take/keep protected flora (10007800).

3 RESULTS

3.1 DATABASE AND LITERATURE REVIEW

3.1.1 VBA AND PMST SEARCH RESULTS

The Victorian Biodiversity Atlas (VBA) query returned records for 15 flora and 37 fauna species of state and/or national significance within the local area (five-kilometre radius of the project area).

The Department of the Environment and Energy's (DoEE) Protected Matters Search Tool (PMST) returned an additional 12 fauna, and 12 flora species to that returned by the VBA that have modelled habitat in the area.

Marine or pelagic species returned by database searches were not considered further due to lack of appropriate habitat.

Summaries of species thought likely to occur are provided in the flora and fauna results Sections 3.2.1.1 and 3.2.2.7 respectively.

A Likelihood of Occurrence Assessment is provided in Appendix A.

3.1.2 EPBC ACT LISTED COMMUNITIES

The PMST report found five listed ecological communities considered likely to occur within a 5 km radius of the study area. Although considered likely to occur on the PMST report, none were recorded during the site assessments.

Table 3.1 EPBC listed communities likely to occur

COMMUNITY	STATUS	TYPE OF PRESENCE (PMST)	PRESENCE IN STUDY AREA
Grassy Eucalypt Woodland of the Victorian Volcanic Plain	Critically Endangered	Community known to occur within area	Not found – associated EVCs not mapped within study area
Grey Box Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	Endangered	Community may occur within area	Not found – associated EVCs not mapped within study area
Natural Temperate Grasslands of the Victorian Volcanic Plain	Critically Endangered	Community likely to occur within area	Not found – grasslands in study area did not meet condition thresholds of this community
Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains	Critically Endangered	Community likely to occur within area	Not found – wetlands in study area did not meet condition requirements of this community
White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community likely to occur within area	Not found – associated EVCs not mapped within study area

3.1.3 EXTANT VEGETATION MODELLING

Extant vegetation modelling (DEPI, 2009) indicates the presence of EVC 22: Grassy Dry Forest and EVC 23: Herb-rich Foothill Forest across the western side of the precinct. Patches of EVC 126: Swampy Riparian Complex and EVC 125: Plains Grassy Wetland were modelled as present along creeklines and dams.

3.1.4 PREPARING A NATIVE VEGETATION PRECINCT PLAN

Preparing a Native Vegetation Precinct Plan (DELWP, 2017b) provides guidance for the preparation of a Native Vegetation Precinct Plan (NVPP), including when to use an NVPP, the content of an NVPP, and how to implement an NVPP. Implications of this guidance document are discussed in Section 3.2.4. The NVPP will be developed following consultation with VPA on potential for native vegetation retention based on the findings of this assessment.

3.1.5 PLANNING OVERLAYS

There are several planning overlays relevant to an ecological assessment across the site including a Vegetation Protection Overlay (VPO) Schedule 1 along Old Sydney Road includes parts of the properties adjoining the road reserve and VPO Schedule 2 along the Hume Freeway including parts of the properties within the precinct between the Northern Highway and the Hume. There is also a Bushfire Management Overlay (BMO) and an Erosion Management Overlay (EMO) over much of the western side of the precinct. Under the EMO, a permit is required to remove all vegetation, not just native. See Section 3.3 for more detail on relevant overlays.

3.1.6 PREVIOUS REPORTS

PRELIMINARY (DESKTOP) BIODIVERSITY ASSESSMENT, WALLAN STRUCTURE PLAN, ECOLOGY AND HERITAGE PARTNERS (ECOLOGY AND HERITAGE PARTNERS PTY LTD, 2015)

A desktop assessment was conducted by Ecology and Heritage Partners in 2015 of an area comprising approximately 2,768 ha. This area includes the area assessed for this current study for Wallan South Precinct, and the study area for the Wallan East Precinct.

This report categorised the study area into four broad habitat types:

1. Remnant Vegetation – considered to be high conservation value given the expansion of urban development in the area, likely to form important wildlife corridors within the broader landscape.
2. Planted Vegetation – including street trees plantings and garden beds, while not considered as high conservation value, still contributes to wildlife corridors, particularly for urban adapted birds.
3. Exotic Dominated Grassland – including pasture dominated by introduced species and maintained lawns and rail/road reserves, provides limited habitat value.
4. Aquatic Habitat – the Ecology and Heritage Partners study area included Merri Creek and as well as many dams, tributaries and drainage lines. Riparian vegetation condition was overall rated as low across Merri Creek and its tributaries.

Three EPBC Act listed flora and an additional three state flora listed species are known to occur within the study area for this assessment, as per records in the VBA and from data obtained from the Merri Creek Management Authority (cited in EHP 2015):

- Swamp Fireweed *Senecio psilocarpus* (EPBC – VU, VicAdv – vulnerable)
- Swamp Everlasting *Xerochrysum palustre* (EPBC – VU, FFG listed, VicAdv – vulnerable)
- Matted Flax-lily *Dianella amoena* (EPBC – EN, FFG listed, VicAdv – endangered)
- Small-flower Wallaby-grass *Rytiodosperma monticola* (VicAdv – rare)
- Pale Swamp Everlasting *Coronidium gunnianum* (VicAdv – vulnerable)
- Floodplain Fireweed *Senecio campylocarpus* (VicAdv – rare).

With the exception of Small-flower Wallaby Grass these species were all recorded in the Beveridge to Wallan Rail Reserve which is outside the study area for the Wallan South precinct.

Two EPBC Act listed fauna species and an additional six state listed species were recorded within the study area for the EHP assessment:

- Swift Parrot *Lathamus discolour* (EPBC – CR, FFG listed, VicAdv – endangered)
- Australian Bittern *Botaurus poiciloptilus* (EPBC – EN, FFG listed, VicAdv – endangered)
- Speckled Warbler *Pyrrholaemus sagittatus* (FFG listed, VicAdv – vulnerable)
- Hardhead *Aythya australis* (VicAdv – vulnerable)
- Musk Duck *Biziura lobata* (VicAdv – vulnerable)
- Black Falcon *Falco subniger* (FFG listed, VicAdv – vulnerable)
- Royal Spoonbill *Platalea regia* (VicAdv – near threatened)
- Brown Toadlet *Pseudophryne bibronii* (FFG listed, VicAdv – endangered).

The report identifies four additional fauna species that have not been recorded within the assessment's study area but are considered likely to occur:

- Growling Grass Frog *Litoria raniformis* (EPBC – VU, FFG listed, VicAdv – endangered)
- Striped Legless Lizard *Delma impar* (EPBC – VU, FFG listed, VicAdv – endangered)
- Golden Sun Moth *Synemon plana* (EPBC – CR, FFG listed, VicAdv – critically endangered)
- Grey-headed Flying-fox *Pteropus poliocephalus* (EPBC – VU, FFG listed, VicAdv – vulnerable).

WALLAN SOUTH: BIODIVERSITY ASSESSMENT REPORT, BIOSIS (BIOSIS, 2017)

Biosis undertook a biodiversity assessment of the Wallan South Precinct area in 2017 commissioned by Crystal Creek Properties. The data collected as part of this assessment was made available to WSP and has been updated and edited according to current conditions and legislation. The Biosis assessment included a field assessment where native vegetation was assessed as per *the Permitted clearing of native vegetation: Biodiversity Assessment Guidelines* (DEPI, 2013). These Guidelines have since been replaced by the *Guidelines for the removal, destruction or lopping of native vegetation* (DELWP, 2017a). One of the main changes in the new Guidelines is the inclusion of mapping and measuring large trees within patches. This has been included in the current WSP assessment.

The Biosis report found 144.150 ha of native vegetation and 133 scattered trees present across the study area. Small patches of Western (Basalt) Plains Grassland FFG Act listed community occurred across the project area.

Targeted surveys were conducted for Growling Grass Frog and Golden Sun Moth. No Growling Grass Frog were recorded but 17 Golden Sun Moth were recorded. Biosis mapped 41.686 ha of confirmed Golden Sun Moth habitat and an additional 33.605 ha of unconfirmed habitat. Some properties were not able to be assessed by Biosis due to land access constraints. Two other listed fauna species, Latham's Snipe *Gallinago hardwickii* and Pied Cormorant *Phalacrocorax varius* were recorded by Biosis but no listed flora species were observed.

The assessment concluded that the study area featured high habitat and connectivity values which should be maintained where possible.

INTEGRATED CATCHMENT MANAGEMENT PLANNING

The Wallan area previously contained a large complex of wetlands inclusive of Herne Swamp, a large swamp to the east of the Wallan South PSP area and Hanna Swamp and Meade Swamp which are within the Wallan South PSP area. Hanna Swamp features on the DELWP Current Wetlands modelling (DELWP, 2013) (See Appendix C-2) and was previously mapped (Biosis, 2017) as Plains Grassy Wetland EVC 125 (See Appendix C-4). Meade Swamp does not feature in the current wetlands modelling and is not represented in native vegetation mapping undertaken previously by Biosis.

Prior to agricultural development, Hanna Swamp would have been a seasonal wetland. However, with agricultural development of the area, the natural flow of Strathaird Creek was channelised to provide water and land for agricultural use. Despite this, Hanna Swamp is either partially or fully inundated approximately one in every three years (NGT, 2020a). Recommendations have been made by community interest groups that the natural flow of Strathaird Creek into Hanna Swamp should be reinstated and Hanna Swamp restored and protected during the development of the PSP (NGT,

2020b). Consideration should be given to the reinstatement of Hannah Swamp, this could be done in consultation with Melbourne Water, relevant CMAs and community interest groups.

3.2 FIELD ASSESSMENT

3.2.1 FLORA

3.2.1.1 FLORA SPECIES

A total of 151 vascular plant species were recorded in the study area during the field assessment survey, of which 94 (63%) were indigenous and 50 (33%) introduced species, and 6 (4%) non-indigenous native species.

A list of flora species recorded in the study area is provided in Appendix B; Table B.1.

3.2.1.2 SIGNIFICANT FLORA SPECIES

No flora species of conservation significance were recorded in the study area. One species, Small-flower Wallaby-grass *Rytiodosperma monticola*, is still considered moderately likely to occur as it could have escaped detection over such a large project area containing many other *Rytiodosperma* species.

3.2.1.3 LISTED VEGETATION COMMUNITIES

No EPBC Act listed ecological communities were recorded within the study area. Patches of the FFG Act listed community Western (Basalt) Plains Grassland were recorded within the study area by Biosis (Biosis, 2017), however they did not meet the size and condition requirements to be included in the equivalent EPBC Act community Natural Temperate Grasslands of the Victorian Volcanic Plains. For inclusion in this community the patch must have greater than 50% cover of native grass species, which the patches of Plains Grassland in the study area did not meet.

3.2.1.4 GENERAL SITE CONDITION

Approximately three quarters of the study area has been cleared of native vegetation to use for agricultural purposes. This area is used for cropping, grazing and an egg farm. Some of the grazed areas retain native grass species but there are large sections of the study area consisting only of introduced pasture grass. Some remnant scattered trees remain across this pasture dominated area, many of which are large and hollow bearing. There are also large numbers of planted non-native trees in wind rows. Surrounding the houses within the study area was a mixture of landscaped gardens and scattered native and introduced trees, all of which are considered to be planted with the exception of any clearly older indigenous trees found within the planted vegetation.

The remaining quarter of the study area, along the western boundary, supports remnant native vegetation. This vegetation was in moderate condition with near benchmark numbers of large hollowing bearing trees and logs, but with poor understorey diversity and high weed cover.

This native vegetation across the study area was attributed to the following seven EVCs:

- Aquatic Herbland EVC 653
- Grassy Dry Forest EVC 22
- Herb-rich Foothill Forest EVC 23
- Plains Grassland EVC 132
- Plains Grassy Wetland EVC 125
- Swampy Riparian Woodland EVC 83
- Tall Marsh EVC 821.

The roadsides consist of remnant vegetation in some areas such as Old Sydney Rd and Rowes Lane, with planted non-indigenous trees in other areas such as along the Northern Highway.

Strathayre Creek runs through the middle of the study area. The vegetation on either side of this creek is a mixture of remnant riparian vegetation, planted trees native to Victoria and elsewhere in Australia, and some introduced species which may have been planted or self-seeded. The banks have significant erosion issues.

3.2.1.5 NATIVE VEGETATION MAPPING

Patches of native vegetation and indigenous scattered trees qualify for legislative protection as per the Guidelines (DELWP, 2017a, DELWP, 2015). Patches of native vegetation are classified by Ecological Vegetation Class (EVC). An EVC is a unit of consistent vegetation displaying broadly similar botanical characteristics reflecting consistent environmental and structural conditions (Oates and Taranto 2001). EVCs mapped on site and their extents and conservation statuses in the relevant Bioregions are detailed in Table 3.2. The scattered trees are detailed in Table 3.3 in Section 3.2.1.7. Mapping of native vegetation found in the study area is provided in Appendix C.

Brief descriptions of remnant vegetation are provided in Section 3.2.1.6 below.

Implications of possible clearance of mapped native vegetation is detailed and discussed in Section 1.1.

Table 3.2 Native vegetation as attributed to Ecological Vegetation Classes mapped within the study area

NUM. PATCH	EVC NUMBER	ECOLOGICAL VEGETATION CLASS	BIOREGION	BIOREGION CONSERVATION STATUS	AREA MAPPED (ha)
8	653	Aquatic Herbland	Central Victorian Uplands Victorian Volcanic Plains	Endangered	0.99
34	22	Grassy Dry Forest	Central Victorian Uplands	Depleted	53.216
40	23	Herb-rich Foothill Forest	Central Victorian Uplands Victorian Volcanic Plains	Depleted Vulnerable	70.510
6	132	Plains Grassland	Central Victorian Uplands Victorian Volcanic Plains	Endangered	3.335
2	125	Plains Grassy Wetland	Victorian Volcanic Plains	Endangered	1.393
11	83	Swampy Riparian Woodland	Central Victorian Uplands Victorian Volcanic Plains	Endangered	4.438
2	821	Tall Marsh	Victorian Volcanic Plains	Endangered	0.202
Total					134.586

3.2.1.6 EVC DESCRIPTIONS

AQUATIC HERBLAND

Eight patches of Aquatic Herbland were mapped within the study area in the Central Victorian Uplands and Victorian Volcanic Plains Bioregions with a total area of 0.99 ha and an average habitat hectare score of 40 (See Appendix D for full habitat hectare assessment results). The description of this EVC from the EVC Benchmarks is (DELWP, 2016a):

> *"Herbland of permanent to semi-permanent wetlands, dominated by sedges (especially on shallower verges) and/or aquatic herbs. Occurs on fertile paludal soils, typically heavy clays beneath organic accumulations."*

This EVC is found around the edges of dams across the study area. It is of relatively poor quality with low species diversity. It is lacking the diversity of herbs typical of this EVC, instead containing monocultures of Juncus (e.g. Pale Rush *J. palladis* or Gold Rush *J. flavidius*) and sometimes also including Common Spike-sedge *Eleocharis acuta*.

Photo 3.1 Aquatic Herbland EVC found surrounding dams across the study area

GRASSY DRY FOREST

This EVC dominated the upper slopes of the large patch of remnant vegetation at the western side of the study area. The total area mapped within the study area is 53.216 ha. The habitat hectare scores ranged from 40 to 69 across the patches of Grassy Dry Forest with an average of 47. The description of this EVC from the EVC Benchmarks is (DELWP, 2016a):

> *"Occurs on a variety of gradients and altitudes and on a range of geologies. The overstorey is dominated by a low to medium height forest of eucalypts to 20m tall, sometimes resembling an open woodland with a secondary, smaller tree layer including a number of Acacia species. The understorey usually consists of a sparse shrub layer of medium height. Grassy Dry Forest is characterised by a ground layer dominated by a high diversity of drought-tolerant grasses and herb, often including a suite of fern species."*

Within the study area, this EVC consisted of a canopy layer featuring a range of Eucalypt species including Broad-leaf Peppermint *Eucalyptus dives*, Narrow-leaf Peppermint *E. radiata*, Messmate *E. obliqua* and Bundy *E. goniocalyx*. There were a high number of large trees within the patch and also of dead standing trees which provide important habitat for hollow nesting birds and mammals.

This EVC showed signs of grazing pressure with both cattle and horses present in the paddocks supporting this EVC. Other herbivores including Eastern Grey Kangaroos *Macropus giganteus* and wild Sambar Deer *Rusa unicolor* were also observed. Because of this grazing pressure, the understorey was in worse condition than the adjoining vegetation in the road reserve, which supported a high diversity of native understorey grasses and herbs. Despite the grazing pressure, the understory contained several species of native grass including: Slender Wallaby Grass *Rytidosperma racemosum*, Supple Spear Grass *Austrostipa mollis*, Weeping Grass *Microlaena stipoides* var *stipoides* and Kangaroo Grass *Themeda triandra*. Other understorey species present include Wattle Mat-rush *Lomandra filiformis*, Common Rice-flower *Pimelea humilis*, Shiny Cassinia *Cassinia longifolia* and Grey Everlasting *Ozothamnus obcordatus*.

Weed cover mainly consisted of introduced grass species such as Quaking Grass **Briza maxima*, Squirrel-tail Fescue **Vulpia bromoides* and Perennial Rye Grass **Lollium perenne*. However, there were also several large dense patches of Gorse **Ulex europaeus*, which is listed under the CaLP Act.

Photo 3.2 Grassy Dry Forest EVC featuring a high number of large trees, including many dead and hollow bearing trees. Many patches also recorded a high volume of logs. High weed cover across all patches contributed to relatively low habitat hectare scores

HERB-RICH FOOTHILL FOREST

This EVC was present on the lower slopes of the large remnant patch on the western side of the study area and 70.51 ha of this EVC were mapped. Habitat hectares scores ranged from 12, typically from patches with a single indigenous understorey species, to 63. The description from the EVC benchmark is (DELWP, 2016a):

> *"Occurs on relatively fertile, moderately well-drained soils on an extremely wide range of geological types and in areas of moderate to high rainfall. Occupies easterly and southerly aspects mainly on lower slopes and in gullies. A medium to tall open forest or woodland to 25m tall with a small tree layer over a sparse to dense shrub layer. A high cover and diversity of herbs and grasses in the ground layer characterise this EVC."*

Within the study area, this EVC had a canopy layer consisting of a range of Eucalypt species including Manna Gum *Eucalyptus viminalis* subsp *viminalis*, Messmate and Candlebark *E. rubida* subsp. *rubida*. A high number of large trees were recorded including many dead standing trees with hollows. Log cover was also high across this EVC.

Herb species recorded in the understorey included: Common Raspwort *Gonocarpus tetragynus*, Small St John's Wort *Hypericum gramineum*, Tall Bluebell *Whalembergia stricta* subsp *stricta* and Sheep's Burr *Acaena echinata*.

Weeds present in this EVC were mainly pasture grasses such as Quaking Grass, Squirrel-tail Fescue and Perennial Rye Grass.

As for the patches of Grassy Dry Forest, the grazing pressure from horses, cattle and kangaroos was evident in the patches of Herb-rich Foothill Forest resulting in low cover and diversity of native herb and grass species.

Photo 3.3 Herb-rich Foothill Forest was mapped within the study area as moderate quality remnant patches, highly modified treeless patches and patches featuring only canopy trees with no native understorey

PLAINS GRASSLAND

Six patches of Plains Grassland were recorded with a total of 3.335 ha across the study area. It was located within the Victorian Volcanic Plains Bioregion. The average habitat hectare score was 27. This EVC is described in the benchmarks as (DELWP, 2016a):

> *"Treeless vegetation mostly less than 1 m tall dominated by largely graminoid and herb life forms. Occupies fertile cracking basalt soils prone to seasonal waterlogging in areas receiving at least 500 mm annual rainfall."*

The patches on site were of relatively poor quality. The cover of native species was low, generally 25–40%, with a high proportion of introduced grasses. Diversity was also low, with several grass species but very few herbs. These patches had been impacted by significant grazing pressure from cows and horses, as well as kangaroos. Grass species present include Weeping Grass, Slender Wallaby Grass, Bristly Wallaby Grass, Kneed Wallaby Grass, Veined Spear Grass, Supple Spear Grass and Kangaroo Grass. Weed species present include Flatweed **Hypochaeris radicata*, Ribwort **Plantego lanceolata*, Prairie Grass **Bromus catharticus*, Brown-topped Bent **Agrostis capillaris*, Cocksfoot **Dactylis glomerata* and many other introduced grass species.

Despite the poor quality of these patches, Golden Sun Moth have been recorded in some patches of Plains Grassland mapped within the study area by Biosis. Additional patches of Plains Grassland were recorded by WSP in parts of the study area not surveyed by Biosis, including at a property on Macsfield Lane, however no Golden Sun Moths were recorded there during surveys.

Photo 3.4 Patches of Plains Grassland EVC, generally supporting only 25–40% cover of indigenous grass species

PLAINS GRASSY WETLAND

Two patches of Plains Grassy Wetland are present within the study area totalling 1.893 ha. They both received a habitat hectare score of 39. Description of the EVC from the Benchmarks is (DELWP, 2016a):

> *"This EVC is usually treeless, but in some instances can include sparse River Red Gum Eucalyptus camaldulensis or Swamp Gum Eucalyptus ovata. A sparse shrub component may also be present. The characteristic ground cover is dominated by grasses and small sedges and herbs. The vegetation is typically species-rich on the outer verges but is usually species-poor in the wetter central areas."*

The patches on site were in low lying depressions, generally surrounded by introduced pasture grass species. They were highly modified and with poor species diversity. The patches primarily consisted of Juncus sp, Brown-back Wallaby Grass *Rytidosperma duttonianum* and Southern Swamp Wallaby-grass *Amphibromus neesii*.

Photo 3.5 Patches of Plains Grassy Wetland in low lying depressions

SWAMPY RIPARIAN WOODLAND

Eleven patches of Swampy Riparian Woodland were recorded across the study area with a total area of 4.438 ha. The habitat hectare scores for this EVC ranged from 22 to 57. This EVC was found in both and Central Victorian Uplands and Victorian Volcanic Plains bioregions. It is described in the benchmarks as (DELWP, 2016a):

> *"Woodland to 15 m tall generally occupying low energy streams of the foothills and plains. The lower strata are variously locally dominated by a range of large and medium shrub species on the stream levees in combination with large tussock grasses and sedges in the ground layer."*

The lower sections of Strathayre Creek where this EVC was recorded were of moderate quality. The canopy contained Swamp Gum *Eucalyptus ovata* and Manna Gum. There were a number of non-indigenous tree species in this EVC which appeared to have been planted including Swamp Yate *E. occidentalis* and Spotted Gum *Corymbia maculata*. The mid storey contained Blackwood *Acacia melanoxylon* and Black Wattle *A. mearnsii*. The understorey along the creekline supported native species such as Common Tussock- grass *Poa labillardierei*, and Pale Rush *Juncus pallidus* as well as many exotic species such as Tall Fescue **Festuca arundinacea* and Cocksfoot **Dactylis glomerata*.

The lower-scoring patches of this EVC were generally treeless patches along dry drainage channels. These patches had been mapped by Biosis as Plains Grassy Wetland but are better described as a highly modified, poor condition Swampy Riparian Woodland, as this is the EVC which would historically have been present in these areas and is indicated by the DELWP 1750 native vegetation modelling (DELWP, 2016b).

Photo 3.6 Patches of Swampy Riparian Woodland along Stratharye Creek

TALL MARSH

Two patches of Tall Marsh were mapped within the study area with a total area of 0.202 ha and an average habitat hectare score of 36. This EVC was found in the Victorian Volcanic Plains Bioregion. The description of this EVC from the benchmarks is (DELWP, 2016a):

> *"Closed to open grassland/sedgeland to 3 m tall, dominated by Common Reed and Cumbungi. Small aquatic and semi-aquatic species occur amongst the reeds. Occurs on Quaternary sedimentary geology of mainly estuarine sands, soils are peaty, silty clays, and average annual rainfall is approximately 600 mm. It requires shallow water (to 1 m deep) and low current-scour, and can only tolerate very low levels of salinity."*

The patches within the study area consisted primarily of Narrow-leaf Cumbungi *Typha domingensis*.

Photo 3.7 Tall Marsh consisting of Narrow-leaf Cumbungi Typha domingensis

3.2.1.7 TREE SUMMARY

SCATTERED TREES

Any indigenous tree not forming part of a patch was recorded as a scattered tree. A total of 137 scattered trees were recorded across the study area, of which 19 are considered large trees. The following table summarises the scattered trees present. This table includes any dead scattered trees, some of which could not be identified to a species.

Table 3.3 Scattered trees

SCIENTIFIC NAME	COMMON NAME	TOTAL NUMBER	NUMBER LARGE
Eucalyptus camaldulensis	River Red Gum	5	0
Eucalyptus dives	Broad Leaved Peppermint	4	0
Eucalyptus goniocalyx	Bundy	4	2
Eucalyptus macrorhyncha	Red Stringybark	1	0
Eucalyptus melliodora	Yellow Box	5	1
Eucalyptus microcarpa	Grey Box	1	0
Eucalyptus obliqua	Messmate	14	3
Eucalyptus ovata	Swamp Gum	19	1
Eucalyptus radiata	Narrow-leaf Peppermint	1	0

SCIENTIFIC NAME	COMMON NAME	TOTAL NUMBER	NUMBER LARGE
Eucalyptus rubida	Candlebark	35	2
Eucalyptus saligna	Sydney Blue Gum	1	0
Eucalyptus viminalis subsp viminalis	Manna Gum	35	7
	Unidentified Eucalypt	6	3
	Dead Stag	6	0
Total		**137**	**19**

LARGE TREES IN PATCHES

The 2017 *Guidelines* require the assessor to collect data relating to the number of large trees within patches so each large tree removed can be offset. This was not required in the 2013 Guidelines and therefore was not included in the Biosis assessment. The total number of large trees in patches recorded was 653. The following table summarises the large trees in patches that were present. This table includes any dead scattered trees, many of which could not be identified to a species.

Table 3.4 Large trees in patches

SCIENTIFIC NAME	COMMON NAME	TOTAL NUMBER
Eucalyptus camaldulensis	River Red Gum	3
Eucalyptus dives	Broad Leaved Peppermint	17
Eucalyptus goniocalyx	Bundy	101
Eucalyptus macrorhyncha	Red Stringybark	15
Eucalyptus melliodora	Yellow Box	11
Eucalyptus obliqua	Messmate	180
Eucalyptus ovata	Swamp Gum	6
Eucalyptus radiata	Narrow-leaved Peppermint	9
Eucalyptus rubida	Candlebark	11
Eucalyptus viminalis subsp viminalis	Manna Gum	113
	Unidentified Eucalypt	187
Total		**653**

3.2.2 FAUNA

3.2.2.1 SPECIES OBSERVED

A comprehensive fauna survey was included as part of the assessment. Incidental observations of 35 fauna species were made during the field assessment. Fauna species observed are listed in Appendix B. This included 30 native and 5 introduced species, mostly species common to agricultural areas.

3.2.2.2 GOLDEN SUN MOTH TARGETED SURVEY RESULTS

Golden Sun Moth were recorded in several locations in the study area by Biosis (2017). In the Biosis data, areas where the species was recorded and potential habitat immediately adjoining these areas were mapped as 'Confirmed Habitat'. Areas not able to be surveyed due to land access constraints but considered likely to contain habitat were mapped by Biosis as 'Unconfirmed Habitat'. WSP aimed to conduct surveys in all 'Unconfirmed habitat' across the study area, however two properties remain unsurveyed due to land access constraints. These properties remain as 'unconfirmed habitat' in the mapping and should be treated as though the species is present in patches of appropriate habitat.

WSP conducted surveys through November and December 2019 (Table 3.5). Golden Sun Moths were recorded in two paddocks at 1470 Old Sydney Road (the rear of 64 Rowes Lane). One of these paddocks had already been mapped as confirmed habitat by Biosis (Biosis, 2017) and was used as a reference check site prior to surveying other parts of the study area, the other was mapped as 'unconfirmed habitat' and is now confirmed habitat. Moths were confirmed to be flying at each of the reference checks prior to commencing surveys. No other new records were found across the study area.

Some of the habitat mapped by Biosis as "confirmed habitat" was found to not contain any of the host flora species required by the moths, i.e. *Rytidosperma* and *Austrostipa* spp. and has therefore been removed or revised down as appropriate in the WSP mapping provided in Appendix C. Patches of appropriate vegetative species immediately surrounding previous records were maintained as confirmed habitat even where the condition appeared to have deteriorated and no moths were seen flying. However, if there were large areas of non-suitable vegetation between records, these areas were removed from the area considered 'confirmed habitat'.

Sites that were mapped as "unconfirmed habitat" by Biosis that were surveyed by WSP and no moths were found are no longer considered to be habitat. These are shown on the map in Appendix C as "Survey conducted – GSM absent".

Surveys were not able to be completed on two properties considered unconfirmed habitat by Biosis again due to land access constraints. One of these (90 Rowes Lane) was accessed on one occasion and the habitat mapping was revised based on current conditions. The habitat mapping on the other property (1510 Old Sydney Rd) has been revised through an assessment 'over the fence' and using aerial imagery. Much of this property was overgrown with Gorse.

Table 3.5 Golden Sun Moth survey results

PROPERTY	SURVEY DATA	SURVEY 1	SURVEY 2	SURVEY 3	SURVEY 4
64 Rowes Lane (front)	Date	20/11/19	9/12/19	13/12/19	17/12/19
	Temp °C	19	26	18	22
	Wind Speed (km/h)	24	33	22	26
	Cloud Cover (%)	10	5	10	0
	Result	No moths recorded despite appropriate vegetation present, no longer considered habitat.			

PROPERTY	SURVEY DATA	SURVEY 1	SURVEY 2	SURVEY 3	SURVEY 4
90 Rowes Lane	Date	5/12/19	No further surveys [1]		
	Temp °C	21			
	Wind Speed (km/h)	28			
	Cloud Cover (%)	10			
	Result	No moths recorded on the one survey conducted, appropriate habitat present, remains 'unconfirmed habitat'.			
1470 Old Sydney Road	Date	20/11/19	9/12/19	13/12/19	17/12/19
	Temp °C	19	28	18	22
	Wind Speed (km/h)	24	33	22	26
	Cloud Cover (%)	10	0	10	0
	Result	Multiple moths recorded throughout paddock at each survey, confirmed habitat, mapping refined.			
1450 Old Sydney Road	Date	29/11/19	9/12/19	13/12/19	17/12/19
	Temp °C	22	26	18	22
	Wind Speed (km/h)	20	30	22	24
	Cloud Cover (%)	20	10	0	0
	Result	No moths recorded despite appropriate vegetation present, no longer considered habitat.			
30 Macsfield Road	Date	13/12/19	20/12/19	24/12/19	9/1/19
	Temp °C	16	35	23	27
	Wind Speed (km/h)	20	43	26	20
	Cloud Cover (%)	10	0	10	0
	Result	No moths recorded despite appropriate vegetation present, no longer considered habitat.			
1255 Old Sydney Rd	Date	9/12/19	17/12/19	No further surveys [2]	
	Temp °C	28	24		
	Wind Speed (km/h)	30	26		
	Cloud Cover (%)	5	0		
	Result	Large parts of this property were mapped as 'Confirmed habitat' but did not contain the appropriate host species. Small patch of appropriate habitat surrounding previous records kept as 'confirmed habitat', rest of mapping refined to meet current conditions. No individuals recorded across 2 surveys on this property.			

(1) No Further surveys were conducted due to difficulties with land access

(2) Mapped as 'Confirmed Habitat' by Biosis, however much of the area contained unsuitable habitat and mapping was refined to represent current conditions

3.2.2.3 TOADLET TARGETED SURVEY RESULTS

Targeted surveys for Southern Toadlet and Brown Toadlet were recommended in the first version of this report due to the high number of records within 5 km (90 and 144 respectively). Surveys were undertaken during the Autumn calling period on 6 and 7 May 2020. Neither species was heard calling or responded to the recorded calls. There is always a small likelihood that the species is present and not detected during survey. Due to the high number of records the two species are still considered moderately likely to occur. They could be present in low numbers and not detected during survey.

The majority of potential habitat for these species is contained within the recommended retention zone. Maintaining this retention zone will help ensure this habitat is available for future use or as connectivity between sites if the species is present within the area.

Table 3.6 Toadlet targeted survey results

DATA	SURVEY 1	SURVEY 2
Date	6/05/20	7/05/20
Time	5 – 6:30 pm	5 – 6:30 pm
Start Temperature	12.3 °C	13.2 °C
Species recorded	Common Froglet *Crinia signifera*	Common Froglet *Crinia signifera*

3.2.2.4 FAUNA HABITAT WITHIN THE STUDY AREA

Habitat types for fauna species observed during the field assessment are described in the table below.

Table 3.7 Habitat descriptions

HABITAT	DESCRIPTION	VALUES
Remnant vegetation patches	A large patch of remnant vegetation was present on the western side of the study area with smaller patches elsewhere, mainly along roadsides. The larger patch and the roadside of Rowes Lane were of moderate habitat value. High numbers of dead hollow trees were present as well of fallen logs. However weed cover in the understorey was high and grazing pressure was impacting the cover and abundance of small shrubs and herbs. Smaller patches elsewhere were generally of lower habitat value but still provide important connectivity.	The high number of large hollow bearing and dead trees in the remnant vegetation provide good habitat for arboreal mammals, bats and hollow nesting birds. The fallen timber provides good habitat for reptiles. A range of common bird species were recorded utilising this habitat during day time assessments however it is likely also habitat for many nocturnal animals not surveyed for including Sugar Glider *Petaurus breviceps*, Common Ringtail Possum *Pseudocheirus peregrinus* and a range of bats and owls.
Highly modified open landscape	Open highly modified land utilised for agricultural purposes primarily for the grazing of ungulates. These areas are primarily dominated by weedy exotic graminoids. This habitat type dominated the Wallan South precinct area.	These areas provide abundant foraging resources for common bird species and grazing for kangaroos.

HABITAT	DESCRIPTION	VALUES
Trees and shrubs	Indigenous, native and exotic trees are supported by the study area. Some of these trees were noted to contain hollows. There were also a large number of dead trees which provide hollows. Various trees and shrubs have been planted around houses and along driveways.	These trees may provide roosting and refuge habitat for native birds foraging and dispersing throughout the landscape. Hollows provide important nesting habitat for many bird and arboreal mammal species. Ornamental flowering shrubs in gardens provide refuge and foraging resources for native birds. Planted non-indigenous trees across the landscape still provide important habitat connectivity across the landscape.
Dams and creeklines.	An ephemeral watercourse, Strathayre Creek, runs through the study area. This was mainly dry during the surveys except for a few small pools and some larger dams connected to the creek. Multiple other dams were scattered across the study area, some containing native fringing vegetation of sedges and rushes.	This habitat offers potential foraging and refuge for amphibians, reptiles and birds. There are a high number of records for Brown Toadlet *Pseudophryne bibronii* and Southern Toadlet *Pseudophryne semimarmorata* within 5 km of the study area. Although not recorded within the study area during targeted surveys, the study area could still provide habitat for these species in future or connectivity between sites if present in the area.. Other listed species likely to utilise the aquatic habitat within the study area based on previous records include Hardhead *Aythya australis*, Musk Duck *Biziura lobata* and Blue-billed Duck *Oxyura australis*.

3.2.2.5 HABITAT CONNECTIVITY

The broader landscape surrounding the study area is highly fragmented. The landscape is primarily urban or agricultural land with patches of remnant vegetation across only a small proportion of the landscape. The conservation value of the large patch of remnant vegetation in the west of the study area is therefore high and it should be prioritised for retention and enhancement of its values. Creeklines and road side remnants can provide important connectivity, particularly in fragmented landscapes. The vegetation along Strathayre Creek has been included in the recommended retention zone because it still functions as habitat connectivity despite the high proportion of non-indigenous species. Vegetation along Rowes Lane should also be retained where possible.

Maintaining and improving connectivity from the remnant vegetation in the west, across to the east of the study area will allow connectivity between the study area and other ‘core areas’ of remnant vegetation in the broader landscape such as Kinglake National Park and Mt Disappointment State Park.

3.2.2.6 PEST FAUNA SPECIES

A herd of Sambar Deer, an invasive species, was recorded within the remnant vegetation on the western side of the study area. Development of the land surrounding this vegetation could impact movement of the deer across the landscape through the erection of fences. This will likely force the deer across the other side of Old Sydney Road. As well as causing damage to native vegetation, deer also pose a safety risk to drivers as collisions can occur when deer cross roads, and this risk could be increased with the increase of traffic likely from the development of the Wallan South precinct. Deer control/removal may be necessary during the development of the precinct to minimise risk of harm to people and biodiversity. Reduction in biodiversity caused by Sambar Deer is listed as a potentially threatening process under the FFG Act and they are considered a prohibited pest species under the CaLP Act. Under the *Wildlife Act 1975*, Sambar deer are classified as a game species that can be hunted by licensed game hunters. DELWP have released a Draft Deer Management Strategy for Public Consultation (DELWP, 2018a).

A number of European Rabbits *Oryctolagus cuniculus* and European Hares *Lepus europaeus* were seen across the project area. Rabbits and Hares are classified as established pest animals under the CaLP Act. The reduction in biomass and biodiversity of native vegetation through grazing by Rabbits is listed as a threatening process under the FFG Act. Rabbit burrows are contributing to erosion problems along the banks of Strathayre Creek. This area is part of the recommended retention area and rabbit population control and/or rabbit proof fencing should be included as part of the restoration of this area.

3.2.2.7 LIKELIHOOD OF OCCURRENCE ASSESSMENT

Following the field assessment, the likelihood of occurrence of the species returned in the Victorian Biodiversity Atlas query and the Protected Matters Search Tool query detailed in section 3.1.1 was assessed. Species considered moderately or highly likely to occur across the study area are listed below. Many species with high numbers of nearby records were ruled out following the site assessment based on lack of appropriate habitat on site. The complete likelihood of occurrence assessment is provided Appendix A.

Table 3.8 Summary of species considered likely to occur following site assessment

SCIENTIFIC NAME	COMMON NAME	EPBC ACT	VIC ADV	FFG ACT	LIKELIHOOD OF OCCURRENCE
Birds					
Aythya australis	Hardhead		vu		High
Biziura lobata	Musk Duck		vu		Moderate
Chlidonias hybrid	Whiskered Tern		nt		Moderate
Falco subniger	Black Falcon		vu	L	Moderate
Gallinago hardwickii	Latham's Snipe	M	nt		Previously recorded[1]
Oxyura australis	Blue-billed Duck		en	L	Moderate
Phalacrocorax varius	Pied Cormorant		nt		Previously recorded[1]
Spatula rhynchotis	Australian Shoveler		vu		Moderate
Insects					
Synemon plana	Golden Sun Moth	CR	cr	L	Recorded
Amphibians					
Pseudophryne bibronii	Brown Toadlet		en	L	Moderate[2]
Pseudophryne semimarmorata	Southern Toadlet		vu		Moderate[2]

Source: (DoEE, 2018, DELWP, 2019)

(1) Recorded by Biosis 2017

(2) Revised down from High after species not recorded during targeted surveys.

Key: ***Conservation Status in Australia (EPBC Act)***
Listing under the federal Environment Protection and Biodiversity Conservation Act 1999 (Environment Protection and Biodiversity Conservation Act): EX = Extinct, CR = Critically Endangered, EN = Endangered, VU = Vulnerable, M = Migratory

Conservation Status in Victoria (Victorian Advisory List) *en = Endangered, vu = Vulnerable, nt = near threatened,*

Status under the FFG Act
L = listed as threatened

STRIPED LEGLESS LIZARD

Stiped Legless Lizards occur in Plains Grassland and Plains Grassy Woodland EVCs, including some highly degraded remnants of these EVCs (DSEWPaC, 2011). This species is considered to have a low likelihood of occurrence within the study area. Much of the study area would previously have supported a woodland community rather than a grassland, which is the preferred habitat of Striped Legless Lizards and some of what was previously grassland has been cropped and would no longer support the species. In addition, there has only been a single record within 5km of the study area, which is from 1991. However, there are some small, fragmented patches of remnant grassland mapped south of Macsfield Lane which are likely to be a modified form of Plains Grassland or Plains Grassy Woodland which is mapped as previously occurring across the area (DELWP, 2016b). While the likelihood is considered to be low, targeted surveys could be undertaken to provide greater certainty regarding the presence or absence of this species, as recommended by DELWP in communications regarding this project. Surveys could be undertaken within patches of appropriate habitat with cracking cray soils, in areas previously mapped as Plains Grassy Woodland at the south-eastern extent of the study area.

1 POTENTIAL ECOLOGICAL IMPACTS

1.1 VEGETATION CLEARING

Clearing of patches of remnant native vegetation and scattered trees identified in the field assessment will be required for the development of the precinct. WSP have provided a recommendation to increase to the size of the 'retained' vegetation area along the western side of the study area from what was provided in the reference documentation. The increase was carefully selected to include additional large trees and high habitat value patches such as the riparian zone of Strathayre Creek (See Section 2.1).

All vegetation not included within this retained section will be considered lost for the purpose of calculating impacts and offsets. The maximum total amount of native vegetation in patches likely to be removed is 15.334 ha, including 19 large trees within patches. In addition, 131 scattered trees are likely to be lost. Further avoid and minimise opportunities should be considered as discussed in Section 2.1. The amount of vegetation clearing required will be finalised in the NVPP.

There is also a modelled wetland (DELWP, 2013) along the southern boundary of the study area, some of which was mapped as Plains Grassy Wetland by Biosis, however the modelled wetland extends much further than the Biosis mapping. This wetland is 41.829 ha and will need to be offset as native vegetation under the Guidelines (2017).

1.2 POTENTIAL IMPACTS ON LISTED SPECIES

One listed species was recorded in the study area, Golden Sun Moth. Development of the precinct has the potential to impact on Golden Sun Moth and their habitat. Based on the Biosis data and assessment, 41.686 ha of confirmed habitat is present within the study area. This was revised down to 20 ha following the WSP assessment. Some patches were removed and other reduced in size due to poor habitat quality and/or lack of host grass species (See Section 3.2.2.2). Of this habitat, approximately 6.79 ha is outside the retention layer provided by Biosis and therefore likely to be impacted. The increase the 'retained' zone proposed will increase the amount of confirmed Golden Sun Moth habitat that is retained and reduce impacts to this species. Only a single patch of 2.226 ha will still require removal based on the new retention zone. A referral under the EPBC Act has already been submitted by Biosis to remove this patch of habitat.

Two other species of conservation significance were recorded by Biosis during their 2017 assessment, Latham's Snipe *Gallinago hardwickii* and Pied Cormorant *Phalacrocorax varius*. Both classified as Near Threatened on the Advisory list of threatened vertebrate fauna (DSE, 2009). There are no legislative requirements resulting from this listing. Latham's Snipe is also classified as a Migratory species under the EPBC Act. Minimising the amount of wetland and fringing vegetation removed for the development of the precinct will be beneficial to protect habitat for these and other listed wetland and migratory species (See Appendix A for impact assessment of species likely to occur). Three additional dams which could provide habitat for these species have been protected under the proposed increase to the retention zone. This results in the majority of appropriate habitat, both aquatic and surrounding terrestrial habitat, for Latham's Snipe and other wetland bird species being protected across the study area. Extending the retention zone even further north to the boundary of the study area could protect one additional dam and should be considered.

Based on the desktop results and initial site assessment, Southern Toadlet and Brown Toadlet were both considered highly likely to occur in the area due to the number of records in the area and appropriate habitat being available. Targeted surveys were recommended to be undertaken during the Autumn calling season in the first version of this report. These surveys were undertaken on 6 and 7 May 2020. Although neither species was detected during the surveys, they could still be present in low numbers. Maintaining the recommended retention zone along Strathayre Creek will protect potential habitat if present, or for future occupation or connectivity for the toadlets and other common species. Further surveys for toadlets are recommended in the Autumn 2021 survey season to gain better certainty as to whether they are present within the study area.

As mentioned in Section 3.2.2.7 above, there is potential habitat for Striped Legless Lizard within the study area and surveys have been recommended. The potential impacts on this species cannot be assessed until after the surveys have been undertaken and their presence across the study area better understood.

1.3 POTENTIAL IMPACTS ON LISTED COMMUNITIES

No EPBC Act listed threatened ecological communities were recorded on site during the assessment. One FFG Act listed community, Western (Basalt) Plains Grassland was recorded by Biosis within the study area. This community is associated with the Plains Grassland EVC on the Victorian Volcanic Plains. The patch of Plains Grassland mapped by Biosis and considered to be part of the FFG Act listed community is 0.433 ha. However as this patch is on private land, an FFG Act permit is not required for its removal. Although this FFG Act community is associated with the EPBC Act community Natural Temperate Grasslands of the Victorian Volcanic Plains, the patch did not meet the required 50% cover of native grass species to be counted as the federally listed community.

2 MITIGATION MEASURES

The following strategies are provided to mitigate ecological impacts at the planning stage and during works.

Prior to the commencement of any development or impacts on the site, adequate briefing and induction of construction crews should occur to ensure that environmental values are given due consideration during construction.

2.1 AVOIDANCE AND MINIMISATION

To determine which vegetation should be avoided and which requires removal, priority should be made to retain vegetation with the greatest habitat value or that serves as connectivity.

A shape file of the area to be retained was provided to WSP, this retention area was 184ha and covered the majority of the large patch of remnant native vegetation along the western side of the study area. WSP propose selectively increasing this area to a total of at least 228ha to include more areas of significant vegetation, particularly large trees, Golden Sun Moth habitat and the creek-line with adjoining Swampy Riparian Woodland. Much of this area would be unsuitable for development and therefore its protection won't reduce the developable area of the precinct.

This additional 44 ha of retention will protect an additional 111 large trees within patches and 28 scattered trees. The increase in area includes one additional property to the north of the previous retention area and some small increases to the east of the retention area where large gains in the numbers of trees protected could occur with small increases in area retained. The patch of Swampy Riparian Woodland along the creek-line has also been included in the updated retention category. As the creekline is unlikely to be utilised for development, it should be formally protected during the precinct development for its habitat, connectivity and soil protection values.

A total of 15.334 ha of native vegetation remains outside the retention zone. WSP recommend workshopping with the VPA at the NVPP development phase, to further reduce this amount based on the results of this assessment and retention priorities. Key areas that should be investigated for retention include:

- the vegetation along Rowes Lane, which is of relatively high conservation value within the landscape and will contribute to connectivity
- the lower extent of Strathayre Creek which supports low quality Swampy Riparian Woodland vegetation could also be investigated for retention as it is unlikely to be suitable land for development and has good potential for habitat restoration. Improvements to the creekline will have additional benefits in enhancing the value of the creek as a corridor for fauna, improving aesthetic values of the creek and preventing further erosion
- additional large scattered trees could be selected for retention across the project area, particularly large trees. These trees should be selected based on their habitat values and ability to incorporate into the landscaping and design of the precinct.

2.2 MINIMISING DAMAGE TO TREES

Any works proposed near patches of native vegetation with trees should consider how the impact might affect the critical root zone of tree species by following the *Permitted clearing of native vegetation - Biodiversity assessment handbook* (DELWP, 2015). This recommends Tree Protection Zones (TPZs) to prevent indirect losses of native vegetation during construction activities.

To prevent detrimental impacts to trees, the Australian Standard for protection of trees on development sites (AS4970-2009) (Standards Australia, 2009) and the Australian Standard for pruning of amenity trees (AS4373-2007) (Standards Australia, 2007) should be followed during any development on site. This includes fencing off and protecting any trees to be retaining during construction works.

2.3 VEGETATION RETENTION AND PROTECTION

Construction areas should be clearly demarcated to avoid any inadvertent or unapproved clearing or damage to areas identified as 'no-go' zones. Vegetation to be retained surrounding the construction areas should be clearly defined on site to all contracting staff.

To ensure that any vegetation identified for retention is not damaged or inadvertently removed during the proposed works, the following steps should be taken into consideration:

- install temporary fencing around vegetation that is to be retained (no-go zones)
- clearly mark TPZ fencing around trees to be retained to ensure they are not damaged during construction of the access route to this site. Tree retention should be done in accordance with the Australia Standard for Tree Protection AS 4970-2009.
- when fencing the no-go zones, ensure that fencing includes the TPZs of trees to be retained (mapping provided in Appendix C does not include TPZs). The TPZ is defined for standing trees and stags (dead but upright trees) as follows:
  - live trees: an area around the trunk of the tree which has a radius of 12 x the diameter at breast height (to a maximum of 15 metres but no less than 2 metres in diameter) and/or an area sufficient to protect the Structural Root Zone as identified in consultation with an arborist; and
  - dead (stag) trees: an area around the trunk of the tree which has a radius of 15 metres from the base (DELWP, 2015)
- brief contractors regarding the protection of vegetation (including groundcover vegetation) and the purpose and importance of avoidance and minimisation
- attach temporary signage identifying areas as environmentally sensitive stating that access and other disturbances are prohibited outside of designated construction zones
- select the appropriate type and size of machine so that disturbance and impact to vegetation is minimised and the chances of successful rehabilitation (if applicable) enhanced
- adhere to any other construction mitigation requirements outlined by the consultant arborist.

No-go areas should be well defined visually in the field and be identified to all works crew as part of an induction undertaken on site. These recommendations should be included in a Construction Environmental Management Plan (CEMP), or the like, developed prior to development.

2.4 SEDIMENT AND EROSION CONTROL

There are existing significant erosion issues noticeable along the banks of Strathayre Creek. The area is covered by an Erosion Management Overlay to protect the area from inappropriate development and prevent further landslip or land degradation. The removal of vegetation should be avoided in this area as vegetation cover and root systems are important for soil protection and erosion prevention. This area could benefit from revegetation works to restore the creek banks. The area has many woody weeds and non-indigenous Eucalypts which do still function to prevent erosion. If woody weeds are removed (recommended over the medium to long term) this should be done progressively, as they are replaced with native vegetation.

Stripping the land immediately surrounding the creek of understorey vegetation during the development of the precinct can increase risk of sediment laden run off entering the creek. Clause 42 of the State Environment Protection Policy (SEPP) (Waters) requires construction works be managed to minimise the risks to beneficial uses including risks from dewatering, land disturbance, soil erosion or the discharge of sediments and other pollutants to waters. While vegetation provides the most effective form of erosion control, interim measures may be required throughout the study area. These should be in line with the Victoria EPA Principals of Best Practice Guidelines, such as Environmental Guidelines for Major Construction Sites (Environmental Protection Agency, 1996) and Construction Techniques for Sediment Pollution

Control (Environmental Protection Agency, 1991). These Best Practice Guidelines include, but are not limited to, the following measures:

- limiting machinery and earthworks to construction areas only
- limiting the exposure of disturbed soil to the shortest possible time (e.g. do not clear an area prior to a weekend if rain is forecast)
- diverting water away from exposed soil or loose material
- applying rock armouring on access tracks and roadways to prevent sediment loss
- applying temporary silt trapping techniques
- retaining the natural drainage lines of the sites as much as possible.

These recommendations should be included in a CEMP, developed prior to construction taking place.

2.5 WEED AND DISEASE MANAGEMENT

The type of disturbance associated with construction can result in a window of opportunity for weeds to establish on bare earth. One of the most common forms of introduction is from weed seeds contained within mud on vehicle tyres being deposited into disturbed areas. Without effective weed hygiene, vehicles have the potential to introduce a suite of new weeds that were not present prior to construction.

To ensure weeds and diseases are not brought onto work sites, or existing weeds and diseases (if they occur) are not spread to other sites, the following steps should be taken:

- prepare a contractor environmental hygiene manual (or follow an existing one) outlining the necessary actions required to prevent weeds and diseases entering and/or leaving the site including:
  - all machinery and vehicles should be free of weed propagules and/or material carrying potential diseases prior to commencement of work
  - if possible, begin work in areas close to native vegetation and move to areas dominated by introduced species and/or ensure machinery is thoroughly cleaned between sites
- where possible, avoid working at times of prolific seed set of noxious weeds to avoid their spread by machinery. This is spring time for most of the noxious weeds present on site.

These recommendations should be included in a CEMP prior to development.

Eight CaLP Act listed weeds were located within the study area. The landowner has legal obligation under the Act to control and minimise the spread of these weeds.

These weeds are:

- Angled Onion **Allium triquetrum*
- Saffron Thistle **Carthamus lanatus*
- Spear Thistle **Cirsium vulgare*
- Hawthorn **Crataegus monogyna*
- Flax-leaf Broom **Genista linifolia*
- Sweet Briar **Rosa rubiginosa*
- Variegated Thistle **Silybum marianum*
- Gorse **Ulex europaeus*
- Common Blackberry **Rubus anglocandicans.*

Control measures for these species should be implemented within the retention areas. The banks of Strathayre Creek particularly had high levels of weed infestation. For the land to be developed, weed management measures should focus on preventing the spread of these species during construction works, such as not stockpiling weed species on site during vegetation removal works.

2.6 FAUNA MONITORING DURING CONSTRUCTION

Terrestrial fauna is likely to occur within the proposed construction sites, particularly through areas where there is remnant vegetation or large trees. It is recommended that all construction personnel attend a project-specific induction prior to commencing site work. The inductions should include relevant information about the ecological sensitivities of the site and appropriate management measures.

As there are many large trees with hollows that could provide habitat for various common bird and mammal species, an ecologist should inspect trees prior to removal, as required by the Wildlife Act. The following guidelines should be followed to minimise harm to fauna during construction:

- Habitat clearing works are to be supervised by a qualified environmental specialist to salvage and relocate any animals disturbed during the works, if required.
- Pits and trenches should be filled in each day if possible to prevent reptiles, mammals and frogs being trapped.
- If left overnight, trenches should be checked in the morning prior to the start of works to identify trapped animals. Trapped animals should be removed before works commence through the placement of a ramp to allow animals to escape themselves.
- Salvaged fauna may need to be relocated, by a suitably qualified ecologist, to sites adjacent to the construction zone or to similar habitat from which they were found.

These recommendations should be included in a CEMP, developed prior to construction taking place.

3 LEGISLATION AND POLICY

This section addresses any permits, approvals, management plans and offset requirements that may be required for the project under federal, State and local government environmental legislation.

3.1 COMMONWEALTH

3.1.1 ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999 (EPBC ACT)

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is the Australian Government's central piece of environmental legislation. It provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places defined in the Act as matters of national environmental significance (MNES). There are nine matters of national environmental significance to which the EPBC Act applies, these are:

- World heritage sites
- National heritage places
- wetlands of international importance (often called 'Ramsar' wetlands after the international treaty under which such wetlands are listed)
- listed threatened species and ecological communities
- migratory species
- Commonwealth marine areas
- the Great Barrier Reef Marine Park
- nuclear actions (including uranium mines)
- a water resource, in relation to coal seam gas development and large coal mining development.

A 'significant impact' is defined under the EPBC Act as 'an impact that is important, notable, or of consequence, having regard to its context or intensity' (Department of the Environment, 2013). If a project is likely to have a significant impact on one of the nine Matters of National Environmental Significance (MNES), the 'action' must be referred to the Commonwealth Department of the Environment and Energy (DoEE). This 'referral' is then released to the public for comment.

A referral has already been submitted to DoEE on behalf of Crystal Creek Properties for impacts to 2.226 ha of Golden Sun Moth habitat. The referral proposed to use habitat elsewhere on the property as an offset for habitat removed. All Golden Sun Moth habitat proposed as an offset occurs within the retention zone. There will be no further impacts to EPBC Act listed species or communities from the development of the precinct if the proposed retention zone is kept and therefore no additional EPBC Act referral is warranted.

3.1.2 MELBOURNE STRATEGIC ASSESSMENT

The Melbourne Strategic Assessment (MSA) evaluated the impacts on MNES listed under the EPBC Act and established measures to mitigate those impacts within the MSA area. A small portion of the study area, approximately 13.5 ha is within the MSA area, between the Northern Highway and the Hume Highway.

The MSA established an agreement between State and Federal governments to streamline environmental assessments and requirements under the EPBC Act and Victoria's Native Vegetation Management Framework (DEPI 2013a) (recently superseded by the Biodiversity Assessment Guidelines (DEPI 2013b), and the latest policy update to the Guidelines for the removal, destruction or lopping of native vegetation (the Guidelines) (DELWP 2017d). The Biodiversity Conservation Strategy (BCS) was prepared in response to obligations arising from the MSA and is the overarching strategy for the protection of biodiversity in Melbourne's growth corridors. It sets out all the conservation measures

required for MNES and to meet state requirements. In particular, the BCS sets out the requirements to provide fees and offsets for removal of native vegetation and threatened species habitat on land suitable for urban development within the BCS area (DEPI 2013a).

All actions located inside the MSA area are subject to a Part 10 (Section 146B) EPBC Act approval. These actions do not require an additional EPBC Act referral and/or assessment by the Commonwealth Government as they have already been assessed under the MSA's Strategic Impact Assessment Report which evaluated the impacts of the Victorian Government's urban development program on MNES.

Proponents must meet MSA habitat compensation obligations, through the payment of fees to DELWP, prior to undertaking actions associated with urban development in the growth corridors. Payments per hectare of impact are payable to the DELWP MSA team in accordance with published rates as provided in Table 3.1 below.

All areas of the project that are outside this mapped MSA extent will still be subject to the normal legislative requirements with regards to the EPBC Act as per Section 3.1.1 above.

Native vegetation offsets as per the Guidelines are not considered to be required within MSA areas. Vegetation clearance within the MSA is considered accounted for by habitat compensation areas titled 'Native Vegetation'. Recent correspondence with DELWP has confirmed that habitat compensation obligations for native vegetation within MSA areas are intended to satisfy 52.17 requirements for Timestamped areas of native vegetation, triggering Habitat Compensation Payments for native vegetation.

DELWP reserves the right to determine the required Habitat Compensation Obligations. The Wallan South precinct project will need to be registered for Habitat Compensation payments through DELWP's Native Vegetation Information Management (NVIM) system. A shapefile of impact area, the project footprint, is then uploaded accompanied by supporting documentation, being this technical report, and then the required Habitat Compensation Obligation amount is returned by DELWP.

Table 3.1 MSA habitat compensation area fee prices

FEE TYPE	UNIT	PRICE (EX GST) CURRENT	NEW RATE AS OF 1 JULY 2020
Native Vegetation	Per hectare of native vegetation considered lost or removed	$95,075	$113,441
Scattered Tree	Per tree considered lost or removed	$13,218	$15,768
Growling Grass Frog	Per hectare of category 2 habitat considered lost or removed	$7,529	$7,846
Golden Sun Moth	Per hectare of habitat considered lost or removed	$7,914	$10,005
Matted Flax-lily	Per hectare habitat considered lost or removed	$11,196	$11,351

Source: https://www.msa.vic.gov.au/regulatory-requirements/habitat-compensation

According to mapping on the NVIM system, HCOs are likely to be required for Growling Grass Frog and Golden Sun Moth. However the amount will be determined through a submission to DELWP of the impact area once determined through the preparation process of the NVPP.

A new legal framework to support the MSA starts on July 1 2020. The changes include increases to the rates as provided in Table 3.1.

3.2 STATE

3.2.1 ENVIRONMENT EFFECTS ACT 1978

Under Victoria's Environmental Effects Act 1978, projects that could have a 'significant effect' on Victoria's environment can potentially require an Environmental Effect Statement. This Act applies to any public works 'reasonably considered to have or be capable of having a significant effect on the environment'. The Minister for Planning and Environment is the responsible person for assessing whether this Act applies.

Before commencing any public works to which this Act applies, the proponent must initiate an Environmental Effects Statement to be prepared and submit it to the Minister for the Minister's assessment of the environmental effects of the works.

The triggering of an Environmental Effects Statement is dependent on the extent of impact within the study area and whether the impact triggers one or more of the above criteria. A preliminary assessment based on the ecological aspects has been undertaken in accordance with the *Ministerial guidelines for assessment of environmental effects under the Environment Effects Act 1978* (Ministerial Guidelines) (DSE, 2006).

In order to undertake this assessment, a simple rating system was used to assess environmental aspects of the project against each EES Referral criterion outlined in the Ministerial Guidelines with commentary included to explain the basis for the assigned rating. The ratings were:

- **Criteria not met** – the project is unlikely to meet this criterion and would not trigger the need to submit a referral under the EES Act.
- **Uncertain** – based on current information it is unclear whether the project would meet the criteria.
- **Criteria met** – the project is likely to meet this criterion and may trigger the need for a referral.

This is based on the current retention layer proposed by WSP in this report. Further avoid and minimisation will occur at the next phase of the project, the NVPP to reduce the impacts.

Table 3.2 Individual potential environmental effects

INDIVIDUAL CRITERIA	WALLAN SOUTH PRECINCT
Potential clearing of 10 ha or more of native vegetation from an area that: — is of an Ecological Vegetation Class (EVC) identified as endangered; or — is, or is likely to be, of very high conservation significance; and — is not authorised under an approved Forest Management Plan or Fire Protection Plan.	**Criteria not met** 15.334 ha of native vegetation is outside the current retention zone and could be impacted. Of this, 9.397 ha is from an EVC that is classified as Endangered. Further efforts to retain native vegetation beyond this initial proposed retention area is recommended during further planning stages of the precinct.
Potential long-term loss of a significant proportion (e.g. 1 to 5 per cent depending on the conservation status of the species) of known remaining habitat or population of a threatened species within Victoria.	**Criteria not met** Impacts to 2.226 ha of Golden Sun Moth habitat is likely to be impacted, however this is unlikely to be considered a significant proportion of habitat
Potential long-term change to the ecological character of a wetland listed under the Ramsar Convention or in 'A Directory of Important Wetlands in Australia'.	**Criteria not met** The nearest wetlands are well beyond the study area.

INDIVIDUAL CRITERIA	WALLAN SOUTH PRECINCT
Potential extensive or major effects on the health or biodiversity of aquatic, estuarine or marine ecosystems, over the long term.	**Criteria not met** Minimal residual; impacts to aquatic habitat, no impacts to any estuarine or marine ecosystem.
Potential extensive or major effects on the health, safety or well-being of a human community, due to emissions to air or water or chemical hazards or displacement of residences.	**Uncertain – not assessed** Not assessed as part of a biodiversity assessment
Potential greenhouse gas emissions exceeding 200,000 tonnes of carbon dioxide equivalent per annum, directly attributable to the operation of the facility.	**Uncertain – not assessed** Not assessed as part of a biodiversity assessment

Table 3.3 Combined potential environmental effects

INDIVIDUAL CRITERIA	WALLAN SOUTH PRECINCT
Potential clearing of 10 ha or more of native vegetation, unless authorised under an approved Forest Management Plan or Fire Protection Plan.	**Criteria Met** 15.334 ha of native vegetation is outside the current retention zone and could be impacted.
Matters listed under the *Flora and Fauna Guarantee Act 1988* (FFG Act): — potential loss of a significant area of a listed ecological community; or — potential loss of a genetically important population of an endangered or threatened species (listed or nominated for listing), including as a result of loss or fragmentation of habitats; or — potential loss of critical habitat; or — potential significant effects on habitat values of a wetland supporting migratory bird species.	**Uncertain** There are potential losses of an FFG Act listed community, Western (Basalt) Plains Grassland, however it is not likely to be considered a significant area. There is also potentially losses of 2.226 ha of Golden Sun Moth habitat, however this is unlikely to be considered critical habitat or lead to a loss of a genetically important population.
Potential extensive or major effects on landscape values of regional importance, especially where recognised by a planning scheme overlay or within or adjoining land reserved under the *National Parks Act 1975*.	**Uncertain – not assessed**
Potential extensive or major effects on land stability, acid sulphate soils or highly erodible soils over the short or long term.	**Uncertain – not assessed**
Potential extensive or major effects on beneficial uses of water bodies over the long term due to changes in water quality, stream flows or regional groundwater levels.	**Uncertain – not assessed**

INDIVIDUAL CRITERIA	WALLAN SOUTH PRECINCT
Potential extensive or major effects on social or economic well-being due to direct or indirect displacement of non-residential land use activities.	**Uncertain – not assessed**
Potential for extensive displacement of residences or severance of residential access to community resources due to infrastructure development.	**Uncertain – not assessed**
Potential significant effects on the amenity of a substantial number of residents, due to extensive or major, long-term changes in visual, noise and traffic conditions.	**Uncertain – not assessed**
Potential exposure of a human community to severe or chronic health or safety hazards over the short or long term, due to emissions to air or water or noise or chemical hazards or associated transport.	**Uncertain – not assessed**
Potential extensive or major effects on Aboriginal cultural heritage.	**Uncertain – not assessed**
Potential extensive or major effects on cultural heritage places listed on the Heritage Register or the Archaeological Inventory under the *Heritage Act 1995*.	**Uncertain – not assessed**

The preliminary evaluation of EES criteria for some of the ecological aspects has shown that there may be at least one or more triggers affected. These triggers should be re-assessed once native vegetation impacts have been finalised during the development of the NVPP. In an EES self-assessment, no individual potential environmental triggers were met, assuming the proposed retention area is adopted. There is currently 9.397 ha of Endangered EVCs outside the retention areas. If additional native vegetation removal is required, the 10 ha trigger could be reached and an EES required.

3.2.2 FLORA AND FAUNA GUARANTEE ACT 1988

The Victorian *Flora and Fauna Guarantee Act 1988* (FFG Act) was established to provide a legal framework for enabling and promoting the conservation of all Victoria's native flora and fauna, and to enable management of potentially threatening processes. One of the main features of the Act is the listing process, whereby native species and communities of flora and fauna, and the processes that threaten native flora and fauna, are listed in the schedules of the Act. This assists in identifying those species and communities that require management to survive and identifies the processes that require management to minimise the threat to native flora and fauna species and communities within Victoria.

Under the FFG Act, a permit from DELWP is also required to 'take' (to kill, injure, disturb or collect) listed flora species that are members of protected taxa from public land (this does not apply to private land unless listed species are present, and the land is declared 'critical habitat' for the species). Protected flora are:

- plants that have been declared to be protected under section 46 of the FFG Act
- plants that are listed as threatened under section 10 of the FFG Act
- plants that belong to communities that are listed as threatened under section 10 of the FFG Act.

Eighteen species listed as Protected were recorded in the study area (See Appendix B). A 'permit to take' is required for these species if their removal is required public land, such as within the road reserves where several *Acacia* species are present.

One threatened FFG Act listed fauna species, Golden Sun Moth, was recorded in the study area. As discussed in Section 3.2.2.6, four additional FFG Act listed fauna species are considered moderately or highly likely to utilise habitat within the study area. One FFG Act listed community, Western Plains Grassland, was recorded by Biosis in the study area. The majority of the site, with the except of roadsides, is private land and therefore the FFG Act does not apply. There is no significant habitat for FFG Act listed fauna species on public land within the study area and therefore an FFG Act permit is not required.

3.2.3 GUIDELINES FOR THE REMOVAL, DESTRUCTION OR LOPPING OF NATIVE VEGETATION

The *Guidelines for the removal, destruction or lopping of native vegetation* (DELWP, 2017a) (the Guidelines) have been designed to manage the risk to Victoria's biodiversity associated with the removal of native vegetation. The Guidelines are incorporated into the Victoria Planning Provisions and all planning schemes in Victoria under the *Planning and Environment Act 1987.*

3.2.3.1 NATIVE VEGETATION

Native vegetation is defined in planning schemes as "plants that are indigenous to Victoria, including trees, shrubs, herbs and grasses". The Guidelines further classify native vegetation as a patch or a scattered tree:

A patch of native vegetation is:

- an area of vegetation where at least 25 percent of the total perennial understorey plant cover is native
- any area with three or more native canopy trees where the drip line of each tree touches the drip line of at least one other tree, forming a continuous canopy; or
- any mapped wetland included in the' Current wetlands map', available in DELWP systems and tools.

A scattered tree is a native canopy tree that does not form part of a patch.

3.2.3.2 ASSESSMENT PATHWAY

The assessment pathway determines the information that accompanies an application and the decision guidelines that are considered in determining the outcome of an application (DELWP 2017b). The assessment pathway for an application to remove native vegetation reflects its potential impact on biodiversity and is determined from the location and extent of the native vegetation to be removed. The three assessment pathways are:

1. Basic – limited impacts on biodiversity.
2. Intermediate – could impact on large trees, endangered EVCs, and sensitive wetlands and coastal areas.
3. Detailed – could impact on large trees, endangered EVCs, sensitive wetlands and coastal areas, and could significantly impact on habitat for rare or threatened species.

The assessment pathway of an application is determined in accordance with Table 3.4.

Table 3.4 Permit application pathway determination

EXTENT	LOCATION CATEGORY		
	LOCATION 1	LOCATION 2	LOCATION 3
<0.5 hectares and not including any large trees	Basic	Intermediate	Detailed
<0.5 hectares and including one or more large trees	Intermediate	Intermediate	Detailed
≥ 0.5 hectare	Detailed	Detailed	Detailed

Source: Guidelines for the removal, destruction or lopping of native vegetation (DELWP, 2017a).

ALL ASSESSMENT PATHWAYS

Application requirements for a permit to remove native vegetation (all assessment pathways) involve the following:

1. Information about the vegetation to be removed including:
   - **a** The assessment pathway and reason for the assessment pathway. This includes the location category of the native vegetation to be removed.
   - **b** A description of the native vegetation to be removed accounted for as per the Guidelines.
   - **c** The offset requirement, determined in accordance with the Guidelines
2. Topographic and land information relating to the native vegetation to be removed
3. Recent, dated photographs of the native vegetation to be removed.
4. Details of any other native vegetation approved to be removed, or that was removed without the required approvals within 5 years of the permit application.
5. An avoid and minimise statement.
6. An offset statement providing evidence that an offset that meets the offset requirements for the native vegetation to be removed has been identified and can be secured in accordance with the Guidelines.

DETAILED PATHWAYS APPLICATIONS

This project will require a detailed pathway assessment. A habitat hectare assessment is required for detailed pathway applications where site assessed site-condition scores are used to account for vegetation losses. Information regarding impacts on rare and threatened species is also required for where impact areas intersect *habitat importance mapping*.

3.2.3.3 VEGETATION CLEARANCE

Habitat hectare assessments were carried out during the site assessments on all native vegetation as per the Guidelines. Assessments were carried out against the most appropriate benchmark for the relevant bioregion. Results of habitat hectare assessments are detailed in Appendix D.

The amounts of each EVC likely to be removed and require offsets based on the current retention zone are provided in Table 3.5 below.

Table 3.5 Vegetation clearance by EVC

EVC	REMOVAL (HA)	LARGE TREES
Aquatic Herbland	0.200	0
Grassy Dry Forest	0.270	2
Herb-rich Foothill Forest	5.294	17
Plains Grassland	3.335	0
Plains Grassy Wetland	1.892	0
Swampy Riparian Wetland	4.139	0
Tall Marsh	0.203	0
Modelled wetland	41.829	0
Total	**57.162**	**19**

3.2.4 PREPARING A NATIVE VEGETATION PRECINCT PLAN

Preparing a Native Vegetation Precinct Plan (DELWP, 2017b) provides guidance for the preparation of a Native Vegetation Precinct Plan (NVPP), including when to use an NVPP, the content of an NVPP, and how to implement an NVPP.

An NVPP will be prepared to support development of the site as a part of the overall structure planning process so that decisions relating to native vegetation can inform the planning of other aspects of the precinct. The NVPP will be prepared in consultation with the VPA regarding the proposed precinct design and retention priorities identified in this assessment.

3.2.5 WILDLIFE ACT 1975

The *Wildlife Act 1975* is the primary legislation in Victoria for the protection of wildlife. The Act requires that wildlife research (i.e. fauna salvage and relocation) is regulated through a permit system, which is managed by DELWP.

Authorisation for fauna removal/relocation must be obtained under the *Wildlife Act 1975* through a licence granted by DELWP. Any persons involved in fauna removal, salvage capture or relocation of fauna during mitigation measures must hold a current Management Authorisation under the *Wildlife Act 1975*.

Any hollow bearing trees that require removal should be done so with a suitably qualified and authorised fauna handler present to remove and relocate any fauna.

3.2.6 CATCHMENT AND LAND PROTECTION ACT 1994

3.2.6.1 DECLARED NOXIOUS WEEDS

The study area supports nine weed species that are declared noxious under the *Catchment and Land Protection Act 1994* (CaLP Act). Plants occurring on this list are known to, or have the potential to, result in detrimental environmental and/or economic impact.

Under the CaLP Act, declared noxious weeds are categorised into four groups depending on their known and potential impact and specific circumstances for each region. These categories are:

- State Prohibited Weeds (S)
- Regionally Prohibited Weeds (P)
- Regionally Controlled Weeds (C)
- Restricted Weeds (R).

Regionally Controlled weeds are usually widespread, however it is important to prevent further spread. It is the responsibility of the landowner to control these weeds on their property and on adjacent roadside reserves. Restricted Weeds are considered to be a serious threat to primary production, Crown land, the environment and/or community health if they were traded in Victoria.

The field survey identified that study area supports eight regionally controlled (C) and one restricted weed (R). These weeds are listed in Table 3.6. The landholder must take all reasonable measures to prevent their spread and control these weed species both during and after construction.

Table 3.6 Declared noxious weeds occurring within the study area

SCIENTIFIC NAME	COMMON NAME	CALP ACT STATUS
Allium triquetrum	Angled Onion	R
Carthamus lanatus	Saffron Thistle	C
Cirsium vulgare	Spear Thistle	C
Crataegus monogyna	Hawthorn	C
Genista linifolia	Flax-leaf Broom	C
Rosa rubiginosa	Sweet Briar	C
Silybum marianum	Variegated Thistle	C
Ulex europaeus	Gorse	C
Rubus anglocandicans	Common Blackberry	C

3.3 LOCAL

3.3.1 MITCHELL SHIRE COUNCIL PLANNING SCHEME

The *Planning and Environment Act 1987* provides the legal framework for the operation of Victoria's planning system, commonly referred to as *the Planning Scheme*. Sections of the Mitchell Shire Council Planning Scheme of relevance to ecological matters are discussed below.

3.3.1.1 S52.17 – NATIVE VEGETATION

Section 52.17 of the Mitchell Planning Scheme requires a permit for the clearance of native vegetation as per the Guidelines, and specifically with respect to the three-step approach of avoidance, minimisation and offsetting of native vegetation clearance. See Section 3.2.3 above addressing implications of the Guidelines.

EXEMPTION FOR PLANTED VEGETATION

There are areas of planted Victorian and other Australian native species, such as Spotted Gum *Corymbia maculata*, within the study area, mainly along roadsides. There is an exemption, under Section 52.17 of the Mitchell Shire Planning Scheme for obtaining a planning permit for planted vegetation, unless it was planted using public funding.

The wording of the exemption under Section 52.17 is as follows:

> *Planted vegetation*
>
> *Native vegetation that is to be removed, destroyed or lopped that was either planted or grown as a result of direct seeding. This exemption does not apply to native vegetation planted or managed with public funding for the purpose of land protection or enhancing biodiversity unless the removal, destruction or lopping of the native vegetation is in accordance with written permission of the agency (or its successor) that provided the funding.*

Planted native street trees are generally considered to be for amenity rather than for land protection and biodiversity enhancement. Removal of these trees would not require a permit.

3.3.1.2 VEGETATION PROTECTION OVERLAY

Parts of the study area have a Vegetation Protection Overlay (VPO); Schedule 1 along Old Sydney Road and Schedule 2 along the Hume Freeway (See Appendix C for Map). The purpose of the VPO is to protect areas of significant vegetation and recognise locations of special significance, natural beauty, interest and importance. The VPO protects all vegetation, not just native vegetation.

Schedule 1 of the VPO is in place to protect significant roadside vegetation and wildlife corridors. A planning permit is not required to remove exotic vegetation within this VPO.

Schedule 2 of the VPO is in place to protect wide freeway reservations. Under this schedule, a permit is not required to remove any dead or exotic vegetation.

3.3.1.3 EROSION MANAGEMENT OVERLAY

The Erosion Management Overlay (EMO) is in place to protect areas prone to erosion, landslip or other land degradation processes by minimising land disturbance and inappropriate development. Much of the study area is covered by this overlay, including the Riparian zone (See Appendix C for Map). Under this overlay, a permit is required to remove, destroy or lop and vegetation except vegetation planted or grown via direct seeding for the purpose of crop raising or animal grazing. The riparian zone contains many planted non-indigenous woody species. A recommendation has been made to restore this area to protect the creek banks from further erosion. Under this EMO, a permit will be required if any of the planted non-indigenous species are removed for restoration purposes.

4 RECOMMENDATIONS

The following recommendations are made concerning biodiversity values identified across the study area.

- WSP recommend increasing the retention zone proposed by Biosis from 184 ha to 228 ha to protect additional Golden Sun Moth habitat, additional large and scattered trees, additional riparian areas and dams which provide habitat for a range of common species and some listed species.
- Further native vegetation protection should be investigated across the study area to further reduce the total amount impacted. This should be incorporated into the NVPP based on the proposed design of the precinct. Targets for potential retention should include large hollow bearing paddock trees, the remnant roadside vegetation along Rowes Lane and degraded Swampy Riparian Woodland vegetation along creeklines and drainage channels. Further minimisation will reduce the likelihood of an EES being triggered and reduce the required biodiversity offsets and associated costs.
- Additional surveys for Brown and Southern Toadlet could be undertaken in the Autumn 2021 survey season to provide greater certainty as to their potential presence on site.
- Targeted surveys for Striped Legless Lizard could be undertaken in areas mapped as Plains Grassland to provide greater certainty around their potential presence on site.
- Methods to restore the banks of Strathayre Creek should be considered to protect from further erosion. This could include revegetation, rabbit control and fencing to remove cattle and horses from the area.
- Several parts of the study area would benefit from revegetation works included the creekbanks and the degraded Swampy Riparian Woodland areas along drainage channels.
- Restoration of non-channelised hydrology of Hanna Swamp, protection of the swamp during development of the PSP, and reinstatement of ecological values of Hanna Swamp should be considered in consultation with Melbourne Water, relevant CMAs and community interest groups.
- Control of exotic fauna evident across the study area including deer and rabbits is recommended.
- A Construction Environmental Management Plan (CEMP) should be developed to communicate the ecological sensitivities and mitigation measures to the construction crews including sediment and erosion control, weed management, areas to be retained, protecting trees and managing fauna on site.

5 CONCLUSIONS

WSP undertook ecological field assessments at the Wallan South precinct during November and December 2019 to identify ecological values present on site. Seven EVCs were recorded within the project area for a total of 134.586 ha of native vegetation patches and 180 scattered trees. A modelled wetland of 41.829 ha is present along the southern boundary of the study area. Based on the proposed retention zone, removal of up to 15.334 ha of native vegetation and 131 scattered trees may be required, plus the modelled wetland.

No listed flora species, one listed fauna species, and one FFG Act listed community was recorded on site. A referral has been submitted to DoEE for the removal of 2.226 ha of Golden Sun Moth habitat by Crystal Creek Properties. All other Golden Sun Moth habitat is to be retained and no further impacts to this species is likely. No permit will be required for the removal of Western (Basalt) Plains Grassland as it is located on private land and the FFG Act does not apply.

Further surveys are recommended for Brown and Southern Toadlet to reduce uncertainty surrounding their presence across the study area. Targeted surveys for Striped Legless Lizard are recommended in patches of Plains Grassland EVC.

The criteria for triggering an EES self-assessment should be assessed again once the retention zone has been finalised and the impacts to FFG Act listed species and communities are finalised.

Priorities for additional native vegetation which should be protected where possible have been recommended.

The next steps will be:

1. For WSP to develop a map showing retention priorities for native vegetation and habitat across the study area.
2. Workshop the retention zone in conjunction with VPA based on the proposed precinct design and native vegetation retention priorities.
3. Develop the NVPP with final native vegetation impacts.

6 LIMITATIONS

This Report is provided by WSP Australia Pty Limited (*WSP*) for Victorian Planning Authority (*Client*) in response to specific instructions from the Client and in accordance with WSP's proposal dated 25 February 2019 and agreement with the Client dated 14 October 2019 (*Agreement*).

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APPENDIX A

LIKELIHOOD OF OCCURRENCE ASSESSMENT

A1 LIKELIHOOD OF LISTED FLORA

Table A.1 Likelihood of occurrence of listed flora species across the Wallan South Precinct

SCIENTIFIC NAME	COMMON NAME	SOURCE	EPBC ACT	FFG ACT	VIC ADV LIST	COUNT	LAST RECORD	HABITAT	LIKELIHOOD OF OCCURRENCE	LIKELIHOOD OF IMPACT
Amphibromus fluitans	River Swamp Wallaby-grass	PMST	VU					Largely confined to permanent swamps, principally along the Murray River between Wodonga and Echuca, uncommon to rare in the south (e.g. Casterton, Moe, Yarram), probably due to historic drainage of wetlands.	Low - Project area lacks the suitable habitat features required to support this species and there are no records within 5 km.	Low
Austrostipa rudis subsp. australis	Veined Spear-grass	VBA			r	1	16/01/1974	Uncommon, mostly in cool areas of southern Victoria. Usually at moderate altitude, in open-forest on sandy or sandstone-derived soils.	Low - Only a single record, no records in over 40 years.	Low
Convolvulus angustissimus subsp. omnigracilis	Slender Bindweed	VBA			k	1	24/11/2011	Apparently endemic to Victoria where found mostly around and west of Melbourne in grassland and grassy woodland on heavy clay soils.	Low - Lack of abundant and recent records.	Low
Coronidium gunnianum	Pale Swamp Everlasting	VBA			vu	25	20/06/2014	Widespread throughout the state except for the north-west and the alpine and adjacent mountainous areas, and usually at low elevations (under c. 100m) where mostly in grasslands and riverine Eucalyptus camaldulensis woodland on soils that are prone to inundation.	Low - High number of records but not detected in current or previous assessments.	Low
Cullen parvum	Small Scurf-pea	VBA		L	en	1	13/12/2000	In Victoria species is known from a few localities in north-central and south-central areas, and western suburbs of Melbourne, where it grows mainly in grassland or grassy woodland environments, often on basalt-derived soils.	Low - Species not detected in current or previous assessments.	Low
Cullen tenax	Tough Scurf-pea	VBA		L	en	3	6/11/2011	In Victoria it is usually found growing in drier parts of the state in grassland and grassy woodland environments on heavy soils.	Low - Species not detected in current or previous assessments.	Low
Dianella amoena	Matted Flax-lily	VBA	EN	L	en	20	10/10/2017	Occurs mainly in lowland grasslands, grassy woodlands, valley grassy forest and creeklines of herb-rich woodland.	Low - High number of records but not detected in current or previous assessments.	Low

SCIENTIFIC NAME	COMMON NAME	SOURCE	EPBC ACT	FFG ACT	VIC ADV LIST	COUNT	LAST RECORD	HABITAT	LIKELIHOOD OF OCCURRENCE	LIKELIHOOD OF IMPACT
Dodonaea procumbens	Trailing Hop-bush	PMST	VU		vu			Largely confined in Victoria to the south-west with outlying occurrences near Castlemaine, Avoca, Skipton, Camperdown and extraordinary disjunctions near Sale where very rare . Grows in low-lying, often winter-wet areas in woodland, low open-forest and grasslands on sands and clays.	Low - No records within 5 km	Low
Geranium solanderi var. solanderi s.s.	Austral Crane's-bill	VBA			vu	1	31/07/2008	An uncommon species of damp to dryish, usually sheltered sites in grassy woodlands, often along drainage lines or in seepage areas.	Low - Species not detected in current or previous assessments.	Low
Glycine latrobeana	Clover Glycine	PMST	VU	L	vu			Widespread but of sporadic occurrence and rarely encountered. Grows mainly in grasslands and grassy woodlands.	Low - No records within 5 km	Low
Lachnagrostis adamsonii	Adamson's Blown-grass	PMST	EN	L	vu			Occurs in and around saline depressions on the Volcanic Plain where recorded from Portarlington west almost to the South Australian border.	Low - No records within 5 km	Low
Lepidium hyssopifolium s.s.	Basalt Peppercress	VBA	EN	L	en	7	14/10/2010	In Victoria the species occurs mostly west of Melbourne within the Victorian Midlands and Victorian Volcanic Plain Bioregions. Previously it was known to occur in Eucalypt woodlands and open casuarina woodlands with grassy ground cover but recent records are from highly modified and heavily disturbed environments with open, bare ground such as road and rail verges.	Low - High number of records but not detected in current or previous assessments.	Low
Leucochrysum albicans var. tricolor	Hoary Sunray	PMST	EN					Very rare in Victoria, the only recent collections from roadside verges near Wickliffe, Willaura, Streatham, Inverleigh and Creswick. All other collections were gathered last century, from Mt Cole, the Grampians and the Port Fairy district.	Low - No records within 5 km	Low
Microseris scapigera s.s.	Plains Yam-daisy	VBA			vu	44	11/05/2015	Formerly widespread in moist depressions on the basalt plains of western Victoria, but now very rare due to loss of habitat.	Low - High number of records but not detected in current or previous assessments.	Low

SCIENTIFIC NAME	COMMON NAME	SOURCE	EPBC ACT	FFG ACT	VIC ADV LIST	COUNT	LAST RECORD	HABITAT	LIKELIHOOD OF OCCURRENCE	LIKELIHOOD OF IMPACT
Pimelea spinescens subsp. spinescens	Spiny Rice-flower	PMST	CR	L	en			Grows in grassland, open shrubland and occasionally woodland, often on basalt-derived soils. Mostly west of Melbourne (to near Horsham), but extending as far north as Echuca.	Low - no records within 5 km	Low
Poa labillardierei var. (Volcanic Plains)	Basalt Tussock-grass	VBA			k	2	15/09/2011	Commonly found throughout most of Victoria along watercourses and alluvial flats where conditions are moist. Also found in forests extending up on sheltered slopes. Rare in areas above 1500 m and in the Wimmera and Swan Hill regions.	Low - Species not detected in current or previous assessments.	Low
Pomaderris vacciniifolia	Round-leaf Pomaderris	PMST	CR	L	en			Largely confined to Damp Forest, Herb-rich Foothill Forest EVC's north-east of Melbourne in the upper catchment of the Yarra, Plenty and Yea Rivers in an area bounded by Healesville, Marysville and Whittlesea. Also occurs in the Tyers-Walhalla areas.	Low - No records within 5 km	Low
Prasophyllum frenchii	Maroon Leek-orchid	PMST	EN	L	en			Widespread across southern Victoria, but rare. Occurs in grassland, heathland and open forest on well-drained or water-retentive sand or clay loams.	Low - No records within 5 km	Low
Prasophyllum pyriforme s.s.	Silurian Leek-orchid	VBA			en	3	13/12/1983	Species occurs in hill country woodlands and open forests on well-drained clay loam soils.	Low - Species not detected in current or previous assessments.	Low
Prasophyllum validum	Sturdy Leek-orchid	PMST	VU					Occurs in drier woodland habitats, generally with a low sparse understorey. In Victoria, the species occurs in box and box-ironbark woodland with an open grassy to sparsely shrubby understorey. Soils vary from heavy clays to sandy loams.	Low - No records within 5 km	Low
Pterostylis chlorogramma	Green-striped Greenhood	PMST	VU	L	vu			Apparently localized in Victoria, but exact range uncertain due to confusion with closely allied species. Grows in moist areas of heathy and shrubby forest, on well-drained soils.	Low - No records within 5 km	Low
Rutidosis leptorrhynchoides	Button Wrinklewort	PMST	EN	L	en			In Victoria confined to basaltic grasslands between Rokewood and Melbourne where endangered due to loss of habitat (formerly occurring as far west as Casterton, and on the Gippsland Plain near Newry).	Low - No records within 5 km	Low

SCIENTIFIC NAME	COMMON NAME	SOURCE	EPBC ACT	FFG ACT	VIC ADV LIST	COUNT	LAST RECORD	HABITAT	LIKELIHOOD OF OCCURRENCE	LIKELIHOOD OF IMPACT
Rytidosperma monticola	Small-flower Wallaby-grass	VBA			r	4	7/12/2005	Mostly in dryish grassy woodland, chiefly through central and north-eastern Victoria (e.g. Ararat, Warby Range), but with isolated occurrences in the far east (e.g. Mt Delegate, upper Genoa R), but rather rare in Victoria.	Moderate – Species could have missed detection in large patches of Grassy Woodland EVC	Moderate - if species is found to be present within the study area.
Senecio campylocarpus	Floodplain Fireweed	VBA			r	1	6/06/1993	Occurs throughout central Victoria and in the north east where it is found in forests and woodland, usually in seasonally inundated areas, on loam to clay soils.	Low - Project area lacks the suitable habitat features required to support this species and there is a lack of abundant and recent records.	Low
Senecio psilocarpus	Swamp Fireweed	PMST VBA	VU		vu	21	30/10/2002	In Victoria, the species is restricted to the south of the state. It grows in high quality herb rich wetlands where tree canopy is mostly absent on volcanic clays and peaty soils.	Low - Project area lacks the suitable habitat features required to support this species.	Low
Thelymitra matthewsii	Spiral Sun-orchid	PMST	VU					Widely distributed but rare, in coastal sandy flats or slightly elevated sites (to 400 m) in well-drained soils (sandy loams to gravelly limestone soils) in open forest. Plants colonise disturbed sites and slowly disappear as these sites stabilise.	Low - No records within 5 km	Low
Xerochrysum palustre	Swamp Everlasting	PMST VBA	VU	L	vu	70	20/06/2014	Occurs in lowland swamps, usually on black cracking clay soils, scattered from near the South Australian border north-west of Portland to Bairnsdale district, but rare due to habitat depletion.	Low - High number of records but not detected in current or previous assessments.	Low

Key to the table - Conservation status

- ***Conservation Status in Australia (Environment Protection and Biodiversity Conservation Act 1999)***
  CR = Critically Endangered, EN = Endangered, VU = Vulnerable
- **Conservation Status in Victoria (Flora and Fauna Guarantee Act 1988)**
  L = Listed as threatened
- ***Conservation Status in Victoria (Victorian Advisory List)***
  x = presumed extinct, e = Endangered in Victoria, v = Vulnerable in Victoria, r = Rare in Victoria, k = Poorly Known in Victoria, p = All infraspecific taxa included in Advisory List, # = native but some strands may be alien

A2 LIKELIHOOD OF LISTED FAUNA

Table A.2 Likelihood of occurrence of listed fauna species across the Wallan South Precinct

COMMON NAME	SCIENTIFIC NAME	SOURCE	EPBC ACT	FFG ACT	VIC ADV LIST	COUNT	LAST RECORD	HABITAT	LIKELIHOOD OF OCCURRENCE	LIKELIHOOD OF IMPACT
Australasian Bittern	*Botaurus poiciloptilus*	VBA PMST	EN	L	en	1	22/02/1990	Occurs in shallow, vegetated freshwater or brackish swamps. Requires permanent wetlands with tall dense vegetation, particularly bulrushes and spike rushes. Whilst it can be found feeding in more open areas, the species relies on dense vegetation cover to breed and roost.	Low - Project area lacks suitable habitat features required to support this species and there is a lack of abundant and recent records.	Low
Australasian Shoveler	*Spatula rhynchotis*	VBA			vu	32	22/07/2019	Uses a wide variety of wetlands; prefers large permanent lakes or swamps that have abundant cover.	Moderate - could utilise larger dams with high cover of fringing vegetation within the study area	Low – majority of potential habitat for this species in the study area to be retained
Australian Grayling	*Prototroctes maraena*	PMST	VU	L	vu			It is a mid-water, freshwater species that occurs most commonly in clear, gravelly streams with a moderate flow. Prefers deep, slow flowing pools.	Low - Waterway is unlikely to provide the habitat features required to support this species and there have been no previous records within 5 km.	Low
Australian Painted Snipe	*Rostratula australis*	PMST	VU	L	cr			Inhabits shallow, vegetated, temporary or infrequently filled wetlands, including where there are trees such as River Red Gum, Poplar Box or shrubs such as Lignum or Samphire.	Low - No nearby records	Low
Black Falcon	*Falco subniger*	VBA		L	vu	2	25/01/2007	Found in the arid and semi arid zones. It is usually found near watercourses or utilizing patches of isolated trees. It hunts over open wooded grassland, saltbush plains, bluebush plains and other low vegetation.	Moderate - could hunt over the study area	Low - Study area unlikely to be critical habitat for this species, similar habitat abundant in surrounding landscape

COMMON NAME	SCIENTIFIC NAME	SOURCE	EPBC ACT	FFG ACT	VIC ADV LIST	COUNT	LAST RECORD	HABITAT	LIKELIHOOD OF OCCURRENCE	LIKELIHOOD OF IMPACT
Black-eared Cuckoo	*Chrysococcyx osculans*	VBA			nt	2	23/12/1988	Mainly open vegetation associations, especially open woodlands and open shrublands. Often in open woodlands dominated by Eucalyptus, particularly stunted mallee communities; Open woodlands of River Red Gum or Coolibah along rivers or round other wetlands in otherwise open grasslands.	Low - Lack of abundant and recent records.	Low
Blue-billed Duck	*Oxyura australis*	VBA		L	en	23	7/01/2019	Found on temperate, fresh to saline, terrestrial wetlands, and occupies artificial wetlands. Prefers deep permanent open water, within or near dense vegetation. Nest in rushes, sedge, Lignum, and paperbark Melaleuca.	Moderate - Could utilise larger dams with high cover of fringing vegetation within the study area	Low – majority of potential habitat for this species in the study area to be retained
Brown Toadlet	*Pseudophryne bibronii*	VBA		L	en	144	24/11/1991	Usually found singly under rocks and logs on slopes in grasslands or beside ditches. Found both in wet and dry sclerophyll forest. Breeding congregations usually occur in inundated grassy areas beside gutters, small creeks etc.	Moderate - Large number of records, could be found along creeklines and dams	Low - Impacts to waterways mainly avoided. Surveys recommended in Autumn.
Brush-tailed Phascogale	*Phascogale tapoatafa*	VBA		L	vu	1	3/05/1984	Largely arboreal it occurs in a range of habitats which have reliable rainfall (500–2000 mm), but has preference for open dry sclerophyll forest on ridges (up to 600 m alt) with little/sparse ground cover.	Low - Project area lacks suitable habitat features required to support this species and there is a lack of abundant and recent records.	Low
Common Dunnart	*Sminthopsis murina murina*	VBA			vu	1	10/06/1990	Mallee scrub, dry forests, woodlands and dry heath with sparse ground and shrub cover but dense leaf and bark litter.	Low - Project area lacks suitable habitat features required to support this species and there is a lack of abundant and recent records.	Low
Common Sandpiper	*Actitis hypoleucos*	VBA	M		vu	3	2/11/2018	The species utilises a wide range of coastal wetlands and some inland wetlands, with varying levels of salinity, and is mostly found around muddy margins or rocky shores and rarely on mudflats.	Low - Project area lacks suitable habitat features required to support this species.	Low

COMMON NAME	SCIENTIFIC NAME	SOURCE	EPBC ACT	FFG ACT	VIC ADV LIST	COUNT	LAST RECORD	HABITAT	LIKELIHOOD OF OCCURRENCE	LIKELIHOOD OF IMPACT
Curlew Sandpiper	*Calidris ferruginea*	PMST	CR M		en			Occurs in inter-tidal mudflats of estuaries, lagoons, mangrove channels and also around lakes, dams, floodwaters and flooded saltbush surrounding inland lakes.	Low - Project area lacks suitable habitat features required to support this species and there are no previous records within 5 km.	Low
Dwarf Galaxis	*Galaxiella pusilla*	PMST	VU	L	en			Occurs in slow flowing and still, shallow, permanent and temporary freshwater habitats such as swamps, drains and the backwaters of streams and creeks, often (but not always) containing dense aquatic macrophytes and emergent plants.	Low - no nearby records	Low
Eastern Bettong	*Bettongia gaimardi gaimardi*	VBA	EX	L	ex	2	01/01/1869	The Eastern Bettong (mainland) disappeared around the 1920s (Menkhorst 2008). The Eastern Bettong (mainland) was formerly distributed along the coastal areas of eastern Australia, from south-east Queensland to the south-east tip of South Australia (Wakefield 1967).	Low - extinct	Low
Eastern Curlew	*Numenius madagascariensis*	PMST	CR M		vu			Primarily coastal in distribution, commonly associated with sheltered coasts, estuaries, harbours and lagoons. Breeds in the northern hemisphere, returning to Australia for the non-breeding season.	Low - no nearby records	Low
Eastern Snake-necked Turtle	*Chelodina longicollis*	VBA			dd	1	7/03/1989	Typically inhabiting swamps, lagoons and slow-moving rivers and creeks, but often seen wandering overland far from any apparent water.	Low - Lack of abundant and recent records.	Low
Fat-tailed Dunnart	*Sminthopsis crassicaudata*	VBA			nt	1	24/11/1991	In a variety of open vegetation habitats including open woodland, low shrublands of saltbush and bluebush, tussock grasslands on clay or sandy soils, glibber plain and, in southern parts of its range, farmlands.	Low - Lack of abundant and recent records.	Low
Freckled Duck	*Stictonetta naevosa*	VBA		L	en	1	26/02/2017	In most years this species appear to be nomadic between ephemeral inland wetlands. In dry years they congregate on permanent wetlands while in wet years they breed prolifically and disperse widely, generally towards the coast.	Low - Lack of abundant and recent records.	Low

COMMON NAME	SCIENTIFIC NAME	SOURCE	EPBC ACT	FFG ACT	VIC ADV LIST	COUNT	LAST RECORD	HABITAT	LIKELIHOOD OF OCCURRENCE	LIKELIHOOD OF IMPACT
Golden Perch	*Macquaria ambigua*	VBA		X	nt	2	1/01/1981	Naturally inhabit the Murray-Darling river system (except at high elevations) and exist in the internal drainage systems of Lake Eyre and the Bulloo River. They prefer warm, slow moving, turbid streams.	Low - Lack of abundant and recent records.	Low
Golden Sun Moth	*Synemon plana*	VBA PMST	CR	L	cr	18	4/01/2017	This species occurs where wallaby grasses *Austrodanthonia* spp. dominate the understory, such as grassy Box-Gum Woodlands or Natural Temperate Grasslands, as larvae feed exclusively on the roots of wallaby grass. Bare ground separating low tussocks of wallaby grass are key microhabitat features for the Golden Sun Moth, as courting behaviour occurs here.	Recorded	High - Referral submitted
Great Egret	*Ardea alba*	VBA		L	vu	3	14/11/1989	Prefer shallow water, particularly when flowing, but may be seen on any watered area, including damp grasslands.	Low - Lack of abundant and recent records.	Low
Greater Glider	*Petauroides volans*	PMST	VU		vu			The greater glider favours forests with a diversity of eucalypt species, due to seasonal variation in its preferred tree species.	Low - No nearby records	Low
Growling Grass Frog	*Litoria raniformis*	VBA PMST	VU	L	en	5	24/11/1991	Usually found amongst emergent vegetation such as Typha, Phragmites and Eleocharis within or at the edges of still or slow-flowing water bodies such as lagoons, swamps, lakes, ponds, and farm dams. It also in occurs in irrigation channels and crops, lignum shrublands, black box and river red gum woodlands and at the periphery of rivers.	Low - Surveys were conducted within the study area by Biosis in 2017, none were recorded.	Low
Hardhead	*Aythya australis*	VBA			vu	64	22/07/2019	Ground-dwelling bird mainly inhabits tussock and hummock grasslands; also occurs in low shrublands and low open grassy woodlands; occasionally seen in pastoral and cropping country, golf courses and near dams.	High - Large number of records, could utilise larger dams within the study area	Low – impacts to waterways and riparian habitat to be reduced where possible.
Hooded Robin	*Melanodryas cucullata*	VBA		L	nt	1	10/06/1990	Found in south-eastern Australia, generally east of the Great Dividing Range. Found in eucalypt woodland and mallee and acacia shrubland.	Low - Lack of abundant and recent records.	Low

COMMON NAME	SCIENTIFIC NAME	SOURCE	EPBC ACT	FFG ACT	VIC ADV LIST	COUNT	LAST RECORD	HABITAT	LIKELIHOOD OF OCCURRENCE	LIKELIHOOD OF IMPACT
Latham's Snipe	*Gallinago hardwickii*	VBA	M		nt	11	1/12/2018	Occurs in freshwater or brackish wetlands generally near protective vegetation cover.	High - Recorded by Biosis	Low – impacts to waterways and riparian habitat to be reduced where possible.
Long-nosed Potoroo	*Potorous tridactylus tridactylus*	PMST	VU	L	nt			Occurs in a range of habitats: coastal forest and woodland with a moderately dense heathy understorey, dense coastal scrubs or heath, wet and dry sclerophyll forest and sub-tropical, warm temperate and cool temperate rainforest of the eastern slopes and highlands. Often associated with gullies and forest ecotones.	Low - No nearby records	Low
Macquarie Perch	*Macquaria australasica*	PMST	EN	L	en			Small discreet populations remain in the Murray Darling Catchment in Northern Victoria with a larger translocated population occurring in the Yarra River near Warrandyte.	Low - No nearby records	Low
Musk Duck	*Biziura lobata*	VBA			vu	26	7/01/2019	Widespread in Southeast and Southwest parts of continent, on terrestrial wetlands, estuarine habitats and sheltered inshore waters. Almost entirely aquatic; preferring deep water of large permanent swamps, lakes and estuaries, where conditions stable and aquatic flora abundant.	Moderate - Could utilise larger dams with high cover of fringing vegetation within the study area	Low – majority of potential habitat for this species in the study area to be retained
Nankeen Night-Heron	*Nycticorax caledonicus*	VBA			nt	1	2/01/2018	The Nankeen Night Heron frequents well-vegetated wetlands, and is found along shallow river margins, mangroves, floodplains, swamps, and parks and gardens.	Low - Lack of abundant and recent records.	Low
Painted Honeyeater	*Grantiella picta*	VBA PMST	VU	L	vu	1	23/12/1988	Lives in dry forests and woodlands. Primary food is the mistletoes in the genus Amyema, though it will take some nectar and insects. Its breeding distribution is dictated by presence of mistletoes which are largely restricted to older trees.	Low - Lack of abundant and recent records.	Low
Pied Cormorant	*Phalacrocorax varius*	VBA			nt	1	6/11/1977	Inhabit terrestrial wetlands and coastal waters. Inland on lakes, swamps, rivers, billabongs, pools and sewage ponds. Associated with large sheets of open water, particularly permanent freshwater lakes and reservoirs and open water in deep freshwater marshes.	High - Recorded by Biosis	Low – no direct impacts to habitat if proposed retention zone adopted

COMMON NAME	SCIENTIFIC NAME	SOURCE	EPBC ACT	FFG ACT	VIC ADV LIST	COUNT	LAST RECORD	HABITAT	LIKELIHOOD OF OCCURRENCE	LIKELIHOOD OF IMPACT
Pink-tailed Worm-lizard	*Aprasia parapulchella*	PMST	VU	L	en			In general, lizards occur in open grassland habitats that have a substantial cover of small rocks. Lizards also show a preference for sunny aspects, avoiding S facing slopes. A burrowing species, it is usually found under rocks on well-drained soil and in ant nests, occasionally with several individuals found under the same rock.	Low - No nearby records	Low
Plains-wanderer	*Pedionomus torquatus*	VBA PMST	CR	L	cr	1	1/04/1905	Sparse grasslands that have 50% bare ground, widely spaced plants up to 10 cm high and remaining standing vegetation less than 5 centimetres in height. Occasionally uses cereal stubble but cannot persist in agricultural landscape. Suitable habitat tends to be restricted to small (50-300 ha) patches that do not support dense pasture growth under any seasonal conditions.	Low - Lack of abundant and recent records.	Low
Plumed Egret	*Ardea intermedia plumifera*	VBA		L	en	4	11/12/2018	Found in freshwater wetlands, especially lake margins, billabongs and swamps with abundant emergent vegetation; also occasionally mangrove swamps, tidal mudflats.	Low - Nearby records from larger wetlands than the habitat available in study area	Low
Regent Honeyeater	*Anthochaera phrygia*	PMST	CR	L	cr			Occurs mostly in box-ironbark forests and woodland and prefers wet, fertile sites such as along creek flats, broad river valleys and foothills. Riparian forests with *Casuarina cunninghamiana* and *Amyema cambagei* are important for feeding and breeding.	Low - No nearby records	Low
Royal Spoonbill	*Platalea regia*	VBA			nt	2	22/02/1990	Found in terrestrial wetlands, sheltered marine habitats and wet grasslands; permanent and ephemeral waters used where available in arid interior. Feeds in shallow waters (less than 0.4 m) over substrate of sand, mud or clay.	Low - Nearby records from larger wetlands than the habitat available in study area	Low
Silver Perch	*Bidyanus bidyanus*	VBA	CR	L	vu	1	1/01/1981	Endemic to the Murray Darling system, but Hatchery-bred Silver Perch are also stocked out of their range in several east coast river systems. Generally a lowland species, but there are reports of upstream large-scale migrations. They prefer more open sections of waterways that are fast-flowing with rapids.	Low - Lack of abundant and recent records.	Low

COMMON NAME	SCIENTIFIC NAME	SOURCE	EPBC ACT	FFG ACT	VIC ADV LIST	COUNT	LAST RECORD	HABITAT	LIKELIHOOD OF OCCURRENCE	LIKELIHOOD OF IMPACT
Southern Toadlet	*Pseudophryne semimarmorata*	VBA			vu	90	10/06/1990	It occurs mainly to the north, east and south-east of Melbourne. It is found in forested areas, where it hides under fallen timber, rocks, etc.	Moderate - Large number of records, appropriate habitat available in study area	Low – impacts to riparian woodland reduced where possible.
Speckled Warbler	*Pyrrholaemus sagittatus*	VBA		L	vu	10	31/05/1991	Occurs in a wide range of eucalypt dominated vegetation with a grassy understorey and is often found on rocky ridges or in gullies.	Low – suitable habitat not present in study area	Low
Spot-tailed Quoll	*Dasyurus maculatus maculatus*	PMST	EN	L	en			Occurs in wide range of forest types, although appears to prefer moist sclerophyll and rainforest forest types, and riparian habitat. Most common in large unfragmented patches of forest. It has also been recorded from dry sclerophyll forest, open woodland and coastal heathland, and despite its occurrence in riparian areas, it also ranges over dry ridges.	Low - No nearby records	Low
Spotted Harrier	*Circus assimilis*	VBA			nt	2	4/03/1999	Found in open grasslands, woodland including mallee country, inland riparian woodland and shrubland particularly in arid and semi-arid areas.	Low - Lack of abundant and recent records.	Low
Spotted Quail-thrush	*Cinclosoma punctatum*	VBA			nt	2	10/06/1990	Subtropical, tropical and temperate dry forests. Range extends from South east Queensland along the south east coast and through most of Southern and Eastern Victoria.	Low - Lack of abundant and recent records.	Low
Striped Legless Lizard	*Delma impar*	VBA PMST	VU	L	en	1	28/05/1991	Inhabit both native and exotic dominant grasslands including secondary/derived grasslands.	Low - Lack of abundant and recent records.	Low
Swift Parrot	*Lathamus discolor*	VBA PMST	CR	L	en	3	23/05/1991	In mainland Australia is semi-nomadic, foraging in flowering eucalypts in eucalypt associations, particularly box-ironbark forests and woodlands. Preference for sites with highly fertile soils where large trees have high nectar production, including along drainage lines and isolated rural or urban remnants, and for sites with flowering *Acacia pycnantha*.	Low - study area lacking in winter flowering Eucalypt species to provide forage for this species.	Low

COMMON NAME	SCIENTIFIC NAME	SOURCE	EPBC ACT	FFG ACT	VIC ADV LIST	COUNT	LAST RECORD	HABITAT	LIKELIHOOD OF OCCURRENCE	LIKELIHOOD OF IMPACT
Tussock Skink	*Pseudemoia pagenstecheri*	VBA			vu	1	18/10/1988	Found in the Grampians in the west through the basalt plains west of Melbourne to the North-east Victoria. Among medium to long grass tussocks in open grasslands where trees are absent or sparse.	Low - Lack of abundant and recent records.	Low
Whiskered Tern	*Chlidonias hybrida*	VBA			nt	5	11/10/2018	Prefer shallow terrestrial freshwater wetlands, either permanent or ephemeral, including lakes swamps, billabongs, river pools, reservoirs, large dams, sewage ponds, flooded saltmarsh and farmland; often round floodwaters. Usually in wetlands with much submerged and emergent vegetation, such as grass, sedges, reeds and rushes, occasionally also in swamps of lignum, bluebush, canegrass or saltmarsh.	Moderate - could utilise larger dams with high cover of fringing vegetation within the study area	Low – majority of potential habitat for this species in the study area to be retained
White-throated Needletail	*Hirundapus caudacutus*	VBA PMST	VU M	L	vu	3	2/03/2018	Occurs in airspace over forests, woodlands, farmlands, plains, lakes, coasts and towns.	Low	Low

Key to the table - Conservation status

- **Conservation Status in Australia (Environment Protection and Biodiversity Conservation Act 1999)**
  CR = Critically Endangered, EN = Endangered, VU = Vulnerable, M = Migratory
- **Conservation Status in Victoria (Flora and Fauna Guarantee Act 1988)**
  L = listed as threatened, N = Nominated for listing as threatened
- **Conservation Status in Victoria (Victorian Advisory List)**
  cr = Critically Endangered, en = Endangered, vu = Vulnerable, nt = near threatened, dd = Data Deficient

APPENDIX B

FLORA AND FAUNA OBSERVED ON SITE

B1 FLORA

Table B.1 Flora species observed on site

SCIENTIFIC NAME	COMMON NAME	STATUS	ORIGIN	CALP ACT	FFG ACT PROTECTED SPECIES
Acacia aculeatissima	Thin-leaf Wattle			-	P
Acacia baileyana	Cootamundra Wattle		*	-	
Acacia howittii	Sticky Wattle	Rare	#	-	P
Acacia mearnsii	Black Wattle			-	P
Acacia melanoxylon	Blackwood			-	
Acacia mucronata subsp. longifolia	Narrow-leaf Wattle			-	P
Acacia paradoxa	Hedge Wattle			-	
Acaena echinata	Sheep's Burr			-	
Acaena novae-zelandiae	Bidgee-widgee			-	
Acetosella vulgaris	Sheep Sorrel		*	-	
Acrotriche serrulata	Honey-pots			-	P
Adiantum aethiopicum	Common Maidenhair			-	
Agrostis capillaris	Brown-top Bent		*	-	
Aira elegantissima	Delicate Hair-grass		*	-	
Aira spp.	Hair Grass		*	-	
Allium triquetrum	Angled Onion		*	R	
Amphibromus neesii	Southern Swamp Wallaby-grass			-	
Amyema miquelii	Box Mistletoe			-	
Amyema pendula	Drooping Mistletoe			-	
Anthosachne scabra s.l.	Common Wheat-grass			-	
Anthoxanthum odoratum	Sweet Vernal-grass		*	-	
Arctotheca calendula	Cape weed		*	-	
Arthropodium strictum s.l.	Chocolate Lily			-	
Astroloma humifusum	Cranberry Heath			-	P
Austrostipa mollis	Supple Spear-grass			-	
Austrostipa oligostachya	Fine-head Spear-grass			-	
Austrostipa rudis subsp. rudis	Veined Spear-grass			-	

SCIENTIFIC NAME	COMMON NAME	STATUS	ORIGIN	CALP ACT	FFG ACT PROTECTED SPECIES
Bossiaea prostrata	Creeping Bossiaea			-	
Briza maxima	Large Quaking-grass		*	-	
Briza minor	Lesser Quaking-grass		*	-	
Bromus catharticus	Prairie Grass		*	-	
Brunonia australis	Blue Pincushion			-	P
Burchardia umbellata	Milkmaids			-	
Bursaria spinosa	Sweet Bursaria			-	
Carex appressa	Tall Sedge			-	
Carex iynx	Tussock Sedge			-	
Carex tereticaulis	Poong'ort			-	
Carthamus lanatus	Saffron Thistle		*	C	
Cassinia arcuata	Desert Cassinia			-	
Cassinia longifolia	Shiny Cassinia			-	P
Chamaecytisus palmensis	Tree Lucerne		*	-	
Cirsium vulgare	Spear Thistle		*	C	
Clematis microphylla s.l.	Small-leaved Clematis			-	
Coronidium scorpioides s.s.	Button Everlasting			-	
Correa reflexa	Common Correa			-	P
Corymbia maculata	Spotted Gum	Vulnerable	#	-	
Crassula helmsii	Swamp Crassula			-	
Crataegus monogyna	Hawthorn		*	C	
Cynara cardunculus subsp. flavescens	Artichoke Thistle		*	-	
Cynosurus echinatus	Rough Dog's-tail		*	-	
Dactylis glomerata	Cocksfoot		*	-	
Delairea odorata	Cape Ivy		*	-	
Dianella admixta	Black-anther Flax-lily			-	
Dichondra repens	Kidney-weed			-	
Disa bracteata	South African Orchid		*	-	
Ehrharta erecta	Panic Veldt-grass		*	-	
Ehrharta longiflora	Annual Veldt-grass		*	-	
Eleocharis acuta	Common Spike-sedge			-	

SCIENTIFIC NAME	COMMON NAME	STATUS	ORIGIN	CALP ACT	FFG ACT PROTECTED SPECIES
Eryngium ovinum	Blue Devil			-	
Eucalyptus cladocalyx	Sugar Gum		*	-	
Eucalyptus dives	Broad-leaf Peppermint			-	
Eucalyptus globulus subsp. globulus	Southern Blue-gum	Rare	#	-	
Eucalyptus goniocalyx s.l.	Bundy			-	
Eucalyptus leucoxylon	Yellow Gum		#	-	
Eucalyptus obliqua	Messmate Stringybark			-	
Eucalyptus occidentalis	Swamp Yate		*	-	
Eucalyptus ovata	Swamp Gum			-	
Eucalyptus radiata	Narrow-leaf Peppermint			-	
Eucalyptus rubida subsp. rubida	Candlebark			-	
Eucalyptus tricarpa	Red Ironbark			-	
Eucalyptus viminalis	Manna Gum			-	
Exocarpos cupressiformis	Cherry Ballart			-	
Festuca arundinacea	Tall Fescue		*	-	
Fraxinus angustifolia	Desert Ash		*	-	
Fumaria bastardii	Bastard's Fumitory		*	-	
Fumaria capreolata	White Fumitory		*	-	
Galenia pubescens var. pubescens	Galenia		*	-	
Galium aparine	Cleavers		*	-	
Genista linifolia	Flax-leaf Broom		*	C	
Geranium homeanum	Rainforest Crane's-bill			-	
Geranium retrorsum s.l.	Grassland Crane's-bill			-	
Geranium sp. 2	Variable Crane's-bill			-	
Gonocarpus tetragynus	Common Raspwort			-	
Goodenia geniculata	Bent Goodenia			-	
Helichrysum leucopsideum	Satin Everlasting			-	P
Holcus lanatus	Yorkshire Fog		*	-	
Hordeum leporinum	Barley-grass		*	-	
Hypericum gramineum	Small St John's Wort			-	

SCIENTIFIC NAME	COMMON NAME	STATUS	ORIGIN	CALP ACT	FFG ACT PROTECTED SPECIES
Hypochaeris radicata	Flatweed		*	-	
Iris germanica	German Iris		*	-	
Juncus acutus subsp. acutus	Spiny Rush		*	-	
Juncus amabilis	Hollow Rush			-	
Juncus flavidus	Gold Rush			-	
Juncus pallidus	Pale Rush			-	
Juncus procerus	Tall Rush			-	
Juncus subsecundus	Finger Rush			-	
Lachnagrostis filiformis s.l.	Common Blown-grass			-	
Leptorhynchos squamatus	Scaly Buttons			-	P
Leucopogon virgatus	Common Beard-heath			-	P
Lolium perenne	Perennial Rye-grass		*	-	
Lomandra filiformis subsp. coriacea	Wattle Mat-rush			-	
Melaleuca armillaris subsp. armillaris	Giant Honey-myrtle	Rare	#	-	
Melicytus dentatus s.l.	Tree Violet			-	
Microlaena stipoides var. stipoides	Weeping Grass			-	
Opercularia ovata	Broad-leaf Stinkweed			-	
Oxalis perennans	Grassland Wood-sorrel			-	
Ozothamnus obcordatus	Grey Everlasting			-	P
Paspalum distichum	Water Couch		*	-	
Pimelea curviflora s.l.	Curved Rice-flower			-	
Pimelea humilis	Common Rice-flower			-	
Pinus radiata	Radiata Pine		*	-	
Pittosporum undulatum	Sweet Pittosporum		#	-	
Plantago gaudichaudii	Narrow Plantain			-	
Plantago lanceolata	Ribwort		*	-	
Plantago varia	Variable Plantain			-	
Poa labillardierei	Common Tussock-grass			-	
Poa morrisii	Soft Tussock-grass			-	

SCIENTIFIC NAME	COMMON NAME	STATUS	ORIGIN	CALP ACT	FFG ACT PROTECTED SPECIES
Poa sieberiana	Grey Tussock-grass			-	
Polypogon monspeliensis	Annual Beard-grass		*	-	
Populus alba	White Poplar		*	-	
Populus tremula	Aspen		*	-	
Potamogeton cheesemanii	Red Pondweed			-	
Pteridium esculentum subsp. esculentum	Austral Bracken			-	
Rosa rubiginosa	Sweet Briar		*	C	
Rubus anglocandicans	Common Blackberry		*	C	
Rumex brownii	Slender Dock			-	
Rumex crispus	Curled Dock		*	-	
Rytidosperma duttonianum	Brown-back Wallaby-grass			-	
Rytidosperma erianthum	Hill Wallaby-grass			-	
Rytidosperma geniculatum	Kneed Wallaby-grass			-	
Rytidosperma pallidum	Silvertop Wallaby-grass			-	
Rytidosperma racemosum var. racemosum	Slender Wallaby-grass			-	
Rytidosperma setaceum	Bristly Wallaby-grass			-	
Senecio glomeratus	Annual Fireweed			-	P
Senecio hispidulus s.l.	Rough Fireweed			-	
Senecio phelleus	Stony Fireweed			-	P
Senecio quadridentatus	Cotton Fireweed			-	P
Silybum marianum	Variegated Thistle		*	C	
Solanum aviculare	Kangaroo Apple			-	
Stylidium graminifolium s.l.	Grass Triggerplant			-	P
Themeda triandra	Kangaroo Grass			-	
Tricoryne elatior	Yellow Rush-lily			-	
Trifolium angustifolium var. angustifolium	Narrow-leaf Clover		*	-	
Trifolium arvense var. arvense	Hare's-foot Clover		*	-	
Typha domingensis	Narrow-leaf Cumbungi			-	

SCIENTIFIC NAME	COMMON NAME	STATUS	ORIGIN	CALP ACT	FFG ACT PROTECTED SPECIES
Ulex europaeus	Gorse		*	C	
Veronica gracilis	Slender Speedwell			-	
Veronica plebeia	Trailing Speedwell			-	
Vulpia bromoides	Squirrel-tail Fescue		*	-	
Wahlenbergia gracilenta s.l.	Annual Bluebell			-	
Wahlenbergia stricta subsp. stricta	Tall Bluebell			-	
Xerochrysum viscosum	Shiny Everlasting			-	P

** – introduced species*

 # – non-indigenous native

C – Regionally Controlled Weed

R – Restricted Weed

P – Protected under the FFG Act

B2 FAUNA

Table B.2 Fauna species observed onsite

COMMON NAME	SCIENTIFIC NAME	LISTING	ORIGIN
Australian Magpie	*Gymnorhina tibicen*		
Australian Wood Duck	*Chenonetta jubata*		
Bare-nosed Wombat	*Vombatus ursinus*		
Black-tailed Wallaby	*Wallabia bicolor*		
Common Froglet	*Crinia signifera*		
Common Myna	*Acridotheres tristis*		*
Common Starling	*Sturnus vulgaris*		*
Crimson Rosella	*Platycercus elegans*		
Eastern Blue-tongue Lizard	*Tiliqua scincoides*		
Eastern Grey Kangaroo	*Macropus giganteus*		
Eastern Rosella	*Platycercus eximius*		
Eastern Spinebill	*Acanthorhynchus tenuirostris*		
Eurasian Coot	*Fulica atra*		
European Brown Hare	*Lepus europaeus*		*
European Rabbit	*Oryctolagus cuniculus*		*
Galah	*Eolophus roseicapilla*		
Golden Sun Moth	*Synemon plana*	CR cr L	
Grey Butcherbird	*Cracticus torquatus*		
Grey Fantail	*Rhipidura albiscapa*		
Laughing Kookaburra	*Dacelo novaeguineae*		
Little Pied Cormorant	*Microcarbo melanoleucos*		
Little Raven	*Corvus mellori*		
Pacific Black Duck	*Anas superciliosa*		
Peregrine Falcon	*Falco peregrinus*		
Red Fox	*Vulpes vulpes*		*
Sambar Deer	*Rusa unicolor*		*
Short-beaked Echidna	*Tachyglossus aculeatus*		
Striated Pardalote	*Pardalotus striatus*		
Sulphur-crested Cockatoo	*Cacatua galerita*		

COMMON NAME	SCIENTIFIC NAME	LISTING	ORIGIN
Superb Fairy-wren	*Malurus cyaneus*		
Tiger Snake	*Notechis scutatus*		
Tree Dragon	*Amphibolurus muricatus*		
Welcome Swallow	*Hirundo neoxena*		
White-faced Heron	*Egretta novaehollandiae*		
White-winged Chough	*Corcorax melanorhamphos*		

***-** *introduced species*

CR – Critically Endangered under the EPBC Act

cr - Critically Endangered under the Victorian Advisory Lists

L – Listed under the Flora and Fauna Act

APPENDIX C

MAPPING

APPENDIX C-1
LOCATION MAP

WANDONG
HEATHCOTE JUNCTION
YABAMAC
DARRAWEIT GUIM
DARRAWEIT ROAD
STRATHAIRD CREEK
WALLAN CREEK
NORTHERN HIGHWAY
NIYAGONG CREEK
MERRI CREEK
WALLAN
WALLAN EAST
WATSON STREET
EPPING-KILMORE ROAD
UPPER PLENTY
DEEP CREEK
WALLAN SOUTH
TAYLORS CREEK
OLD SYDNEY ROAD
O'HEARS CREEK
HUME FREEWAY
BEVERIDGE
MERRIANG

C:\Users\AUTW500241\WSP O365\AU-WKG - Geospatial - AIS - Projects\PS117377_Wallan_South_and\Mxd\PS117377_F001_LocationMapWallanSouth_r1v2.mxd

wsp

Wallan South PSP
Biodiversity Assessment

Figure 1
Site location - Wallan South

Legend
- Project Boundary
- Train station
- Railway
- Watercourse

MELBOURNE

0 1,000 2,000 Metres

Coordinate system: GDA 1994 MGA Zone 55

Scale ratio correct when printed at A3

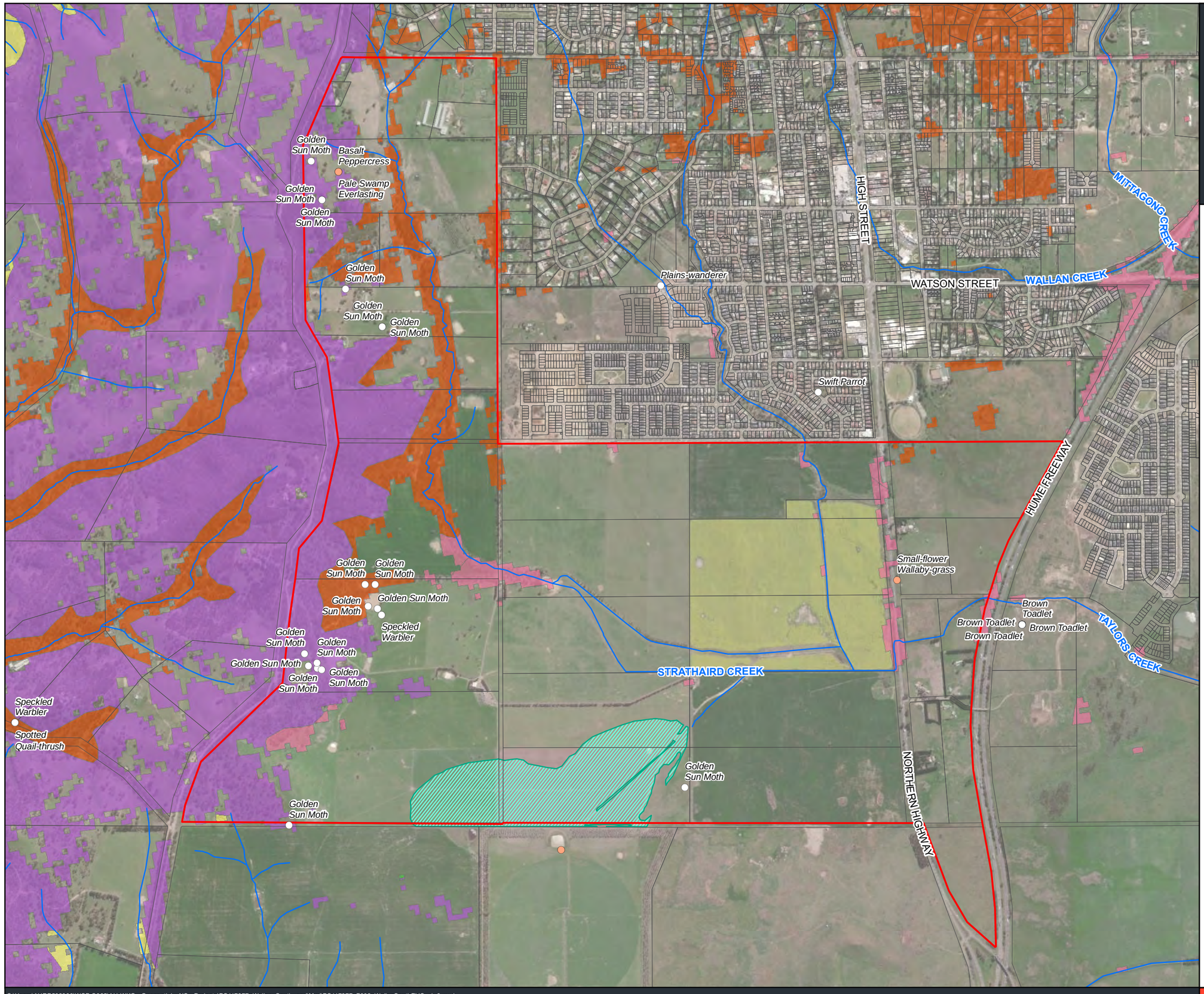
1:60,000 Date: 17/06/20

Data sources: - DELWP, Geoscience Australia
Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

APPENDIX C-2
EVC MAP

Wallan South PSP
Biodiversity Assessment

Figure 2
Modelled EVCs and VBA Records



Legend

- Project Boundary
- VBA threatened flora
- VBA threatened fauna
- Train station
- Railway
- Watercourse
- Cadastral Boundary

Ecological Vegetation Classes - Extant (2005) modelling

- Grassy Dry Forest
- Grassy Woodland
- Herb-rich Foothill Forest
- Swampy Riparian Complex
- Valley Grassy Forest

0 500 1,000 Metres

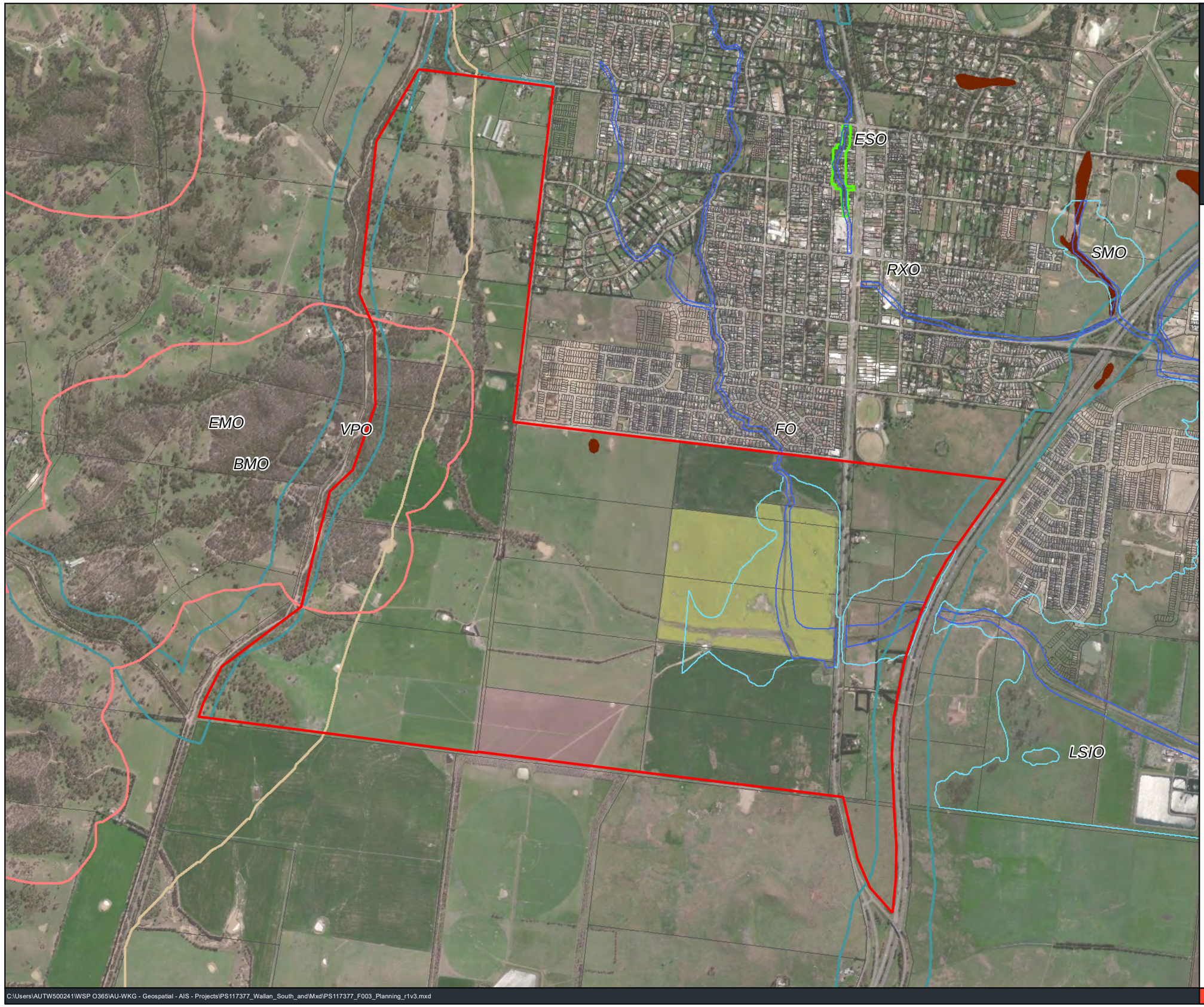
Coordinate system: GDA 1994 MGA Zone 55

Scale ratio correct when printed at A3

1:17,500 Date: 8/19/2020

Data sources: - DELWP, Geoscience Australia
Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

APPENDIX C-3
PLANNING MAP



Wallan South PSP
Biodiversity Assessment

Figure 3
Planning Overlays

Legend

- Project Boundary
- Cadastral Boundary

Environment and Landscape

- ESO - Environmental Significance Overlay
- VPO - Vegetation Protection Overlay

Land Managment

- EMO - Erosion Managment Overlay
- FO - Floodway Overlay
- LSIO - Land Subject to Inundation overlay
- SMO - Salinity Management Overlay
- BMO - Bushfire Management Overlay

0 250 500
Metres

Coordinate system: GDA 1994 MGA Zone 55

Scale ratio correct when printed at A3

1:20,000 Date: 17/06/20

Data sources: - DELWP, Geoscience Australia
Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

APPENDIX C-4
ECOLOGICAL VALUES

wsp

Wallan South PSP
Biodiversity Assessment

Figure 4
Wallan South Ecological Values
Sheet 1 of 3

STRATHAIRD CREEK

No Land Access

Legend

- Large Trees
- Scattered Trees with ID
- Watercourse
- Cadastral Boundary
- Area recommended for retention – WSP 2020
- Project Boundary
- No Land Access
- Revegetation

Ecological Vegetation Class

- Aquatic Herbland
- Grassy Dry Forest
- Herb-rich Foothill Forest
- Swampy Riparian Woodland
- Tall Marsh

0 80 160 240 320 400 Metres

Coordinate system: GDA 1994 MGA Zone 55

Scale ratio correct when printed at A3

1:7,500 Date: 8/19/2020

Wallan South PSP
Biodiversity Assessment

Figure 4
Wallan South Ecological Values
Sheet 2 of 3

Legend

- Large Trees
- Scattered Trees with ID
- Watercourse
- Cadastral Boundary
- Area recommended for retention – WSP 2020
- Project Boundary
- Melbourne Strategic Assessment Area
- Revegetation
- DELWP Current Wetlands

Ecological Vegetation Class

- Grassy Dry Forest
- Herb-rich Foothill Forest
- Plains Grassy Wetland
- Swampy Riparian Woodland

STRATHAIRD CREEK

Melbourne Strategic Assessment Area

Coordinate system: GDA 1994 MGA Zone 55

Scale ratio correct when printed at A3

1:7,500 Date: 8/19/2020

Wallan South PSP
Biodiversity Assessment

Figure 4
Wallan South Ecological Values
Sheet 3 of 3

Legend

- Large Trees
- Scattered Trees with ID
- Watercourse
- Cadastral Boundary
- Area recommended for retention – WSP 2020
- Project Boundary
- Melbourne Strategic Assessment Area
- Revegetation
- DELWP Current Wetlands

Ecological Vegetation Class

- Aquatic Herbland
- Herb-rich Foothill Forest
- Plains Grassland
- Plains Grassy Wetland
- Swampy Riparian Woodland
- Tall Marsh

0 110 220 330 440 550 Metres

Coordinate system: GDA 1994 MGA Zone 55
Scale ratio correct when printed at A3
1:10,000 Date: 8/19/2020

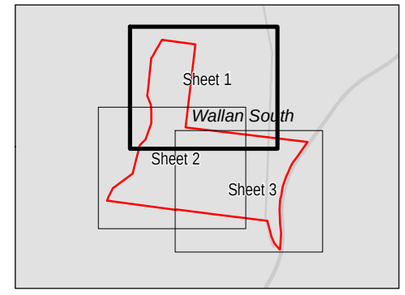
APPENDIX C-5
GOLDEN SUN MOTH

Wallan South PSP
Biodiversity Assessment

Figure 5
Golden Sun Moth Habitat and Records
Sheet 1 of 3

Legend

- Project Boundary
- Golden Sun Moth - WSP
- Golden Sun Moth – VBA
- Watercourse
- WSP revised confirmed habitat
- WSP revised unconfirmed habitat
- WSP Surveyed, GSM absent
- Biosis confirmed habitat
- Biosis unconfirmed habitat
- Cadastral Boundary



0 100 200 300 400 500 Metres

Coordinate system: GDA 1994 MGA Zone 55

Scale ratio correct when printed at A3

1:12,696 Date: 17/06/20

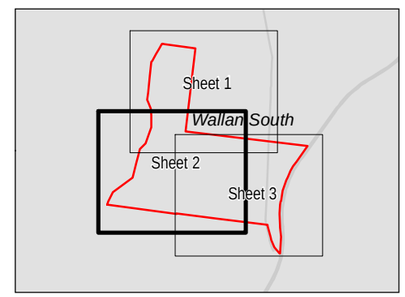
Wallan South PSP
Biodiversity Assessment

Figure 5
Golden Sun Moth Habitat and Records
Sheet 2 of 3

STRATHAIRD CREEK

Legend

- Project Boundary
- Golden Sun Moth - WSP
- Golden Sun Moth – VBA
- Watercourse
- WSP revised confirmed habitat
- WSP revised unconfirmed habitat
- WSP Surveyed, GSM absent
- Biosis confirmed habitat
- Biosis unconfirmed habitat
- Cadastral Boundary



0 100 200 300 400 500
Metres

Coordinate system: GDA 1994 MGA Zone 55

Scale ratio correct when printed at A3

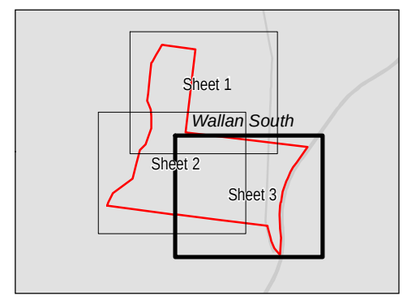
1:12,696 Date: 17/06/20

Wallan South PSP
Biodiversity Assessment

Figure 5
Golden Sun Moth Habitat and Records
Sheet 3 of 3

Legend

- Project Boundary
- Golden Sun Moth - WSP
- Golden Sun Moth – VBA
- Watercourse
- WSP revised confirmed habitat
- WSP revised unconfirmed habitat
- WSP Surveyed, GSM absent
- Biosis confirmed habitat
- Biosis unconfirmed habitat
- Cadastral Boundary



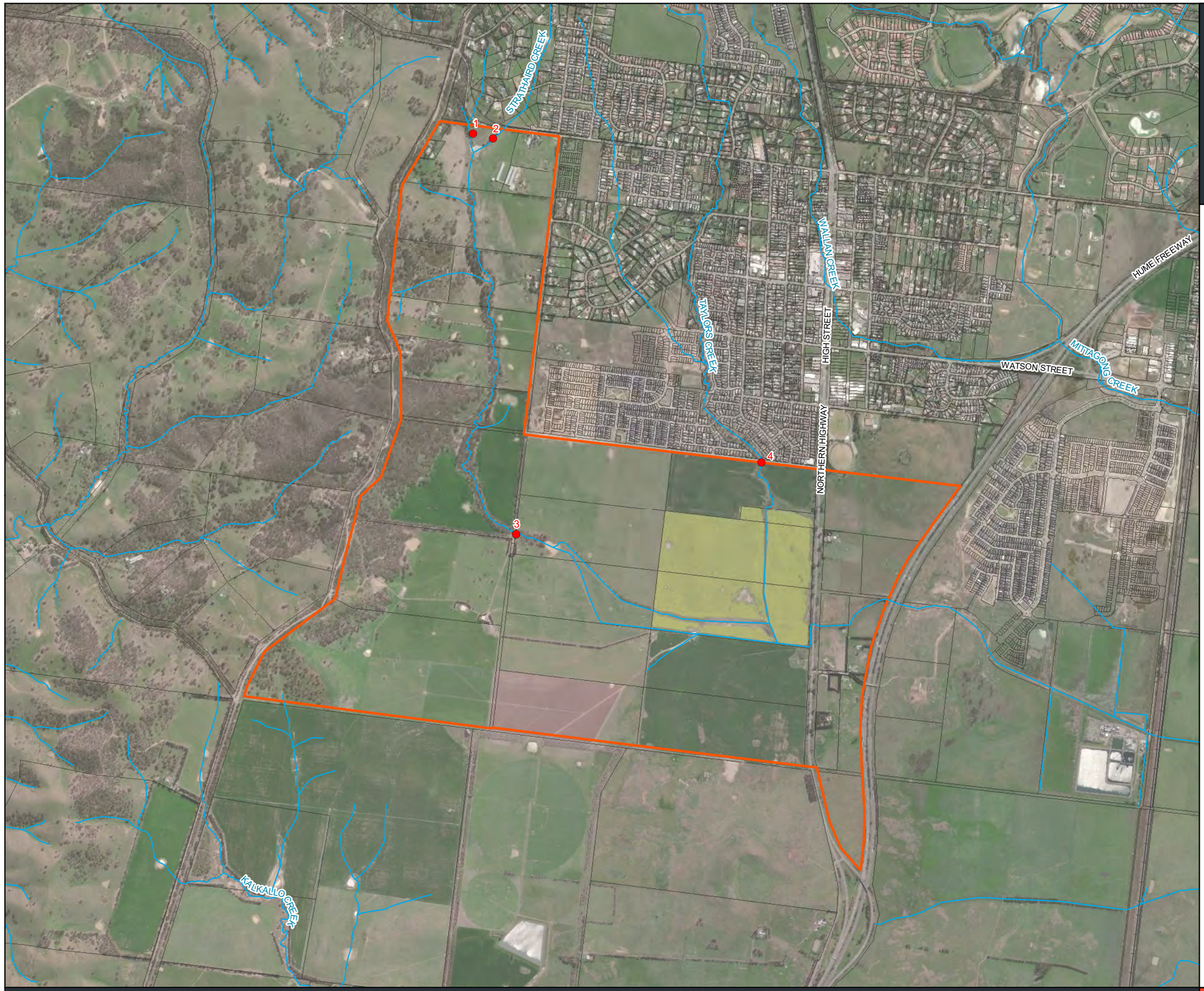
0 100 200 300 400 500 Metres

Coordinate system: GDA 1994 MGA Zone 55

Scale ratio correct when printed at A3

1:12,696 Date: 17/06/20

APPENDIX C-6
TOADLET SURVEYS



Wallan South PSP
Biodiversity Assessment

Figure 6
Brown Toadlet and Southern Toadlet Targeted Surveys

Legend

- Survey Sites
- Railway
- Waterways
- Cadastre
- Project Boundary

0 450 900
Metres

Coordinate system: GDA 1994 MGA Zone 55

Scale ratio correct when printed at A3

1:22,500 Date: 8/20/2020

APPENDIX D

HABITAT HECTARE SCORE

Table D.1 Habitat hectare scores

PATCH ID	EVC	BIOREGION	CONSERVATION STATUS	LARGE TREE SCORE	CANOPY	WEEDS	UNDERSTORY	RECRUITMEN	LITTER	LOGS	SITE SCORE	STANDARDISER	TOTAL	PATCHSIZE	NEIGHBOURH	DISTANCE	LANDSCAPE TOTAL	HABITAT SCORE	AREAS	HABITAT HA	LARGE TREE COUNT	RETENTION
3	Aquatic Herbland	CVU	V	0	0	2	5	2	3	0	12	1.36	16	1	2	3	6	22	0.077	0.017	0	Remove
4	Aquatic Herbland	CVU	V	0	0	2	5	2	3	0	12	1.36	16	1	2	3	6	22	0.056	0.012	0	Retain
30	Aquatic Herbland	CVU	V	NA	NA	9	15	3	2	NA	29	1.36	39.44	8	3	4	15	54.44	0.371	0.202	0	Retain
45	Aquatic Herbland	CVU	V	NA	NA	9	10	3	3	NA	25	1.36	34	1	4	3	8	42	0.323	0.136	0	Retain
62	Aquatic Herbland	VVP	E	NA	NA	7	15	3	5	NA	30	1.36	40.8	1	2	3	6	46.8	0.030	0.014	0	Remove
74	Aquatic Herbland	CVU	V	NA	NA	9	15	3	2	NA	29	1.36	39.44	8	3	4	15	54.44	0.093	0.051	0	Remove
99	Aquatic Herbland	CVU	V	0	0	4	5	3	3	0	15	1.36	20	1	2	3	6	26	0.011	0.003	0	Retain
101	Aquatic Herbland	CVU	V	0	0	2	5	2	3	0	12	1.36	16	1	2	3	6	22	0.029	0.006	0	Retain
13	Grassy Dry Forest	CVU	LC	4	4	9	15	3	5	3	43	NA	43	8	4	4	16	59	3.139	1.852	20	Retain
14	Grassy Dry Forest	CVU	LC	4	4	4	5	0	5	2	24	NA	24	8	4	4	16	40	1.082	0.433	9	Retain
15	Grassy Dry Forest	CVU	LC	0	4	4	5	0	5	2	20	NA	20	8	4	4	16	36	0.046	0.017	0	Retain
16	Grassy Dry Forest	CVU	LC	0	4	4	5	0	5	2	20	NA	20	8	4	4	16	36	0.332	0.120	0	Retain

PATCH ID	EVC	BIOREGION	CONSERVATION STATUS	LARGE TREE SCORE	CANOPY	WEEDS	UNDERSTORY	RECRUITMEN	LITTER	LOGS	SITE SCORE	STANDARDISER	TOTAL	PATCHSIZE	NEIGHBOURH	DISTANCE	LANDSCAPE TOTAL	HABITAT SCORE	AREAS	HABITAT HA	LARGE TREE COUNT	RETENTION
17	Grassy Dry Forest	CVU	LC	4	4	2	5	5	3	2	25	NA	25	8	4	4	16	41	0.155	0.063	1	Retain
19	Grassy Dry Forest	CVU	LC	0	4	2	5	5	3	2	21	NA	21	8	4	4	16	37	0.021	0.008	0	Retain
20	Grassy Dry Forest	CVU	LC	4	4	2	5	5	3	2	25	NA	25	8	4	4	16	41	0.041	0.017	1	Retain
22	Grassy Dry Forest	CVU	LC	0	3	7	10	0	3	0	23	NA	23	8	4	4	16	39	2.162	0.843	0	Retain
23	Grassy Dry Forest	CVU	LC	0	3	7	10	0	3	0	23	NA	23	8	4	4	16	39	0.534	0.208	0	Retain
24	Grassy Dry Forest	CVU	LC	3	0	2	10	0	3	0	18	NA	18	8	4	4	16	34	3.447	1.172	3	Retain
25	Grassy Dry Forest	CVU	LC	8	4	11	15	6	5	2	49	NA	49	8	3	4	15	64	5.002	3.202	20	Retain
26	Grassy Dry Forest	CVU	LC	0	4	9	10	0	3	2	28	NA	28	8	4	4	16	44	0.259	0.114	0	Retain
28	Grassy Dry Forest	CVU	LC	8	4	11	15	6	5	0	49	NA	49	8	3	4	15	64	0.460	0.294	5	Retain
29	Grassy Dry Forest	CVU	LC	9	4	2	5	0	5	3	28	NA	28	8	3	4	15	43	1.501	0.646	20	Retain
34	Grassy Dry Forest	CVU	LC	9	4	0	5	0	5	5	28	NA	28	8	3	4	15	43	0.270	0.116	2	Remove
47	Grassy Dry Forest	CVU	LC	0	4	4	5	5	5	2	25	NA	25	8	4	4	16	41	0.030	0.012	0	Retain
48	Grassy Dry Forest	CVU	LC	3	4	9	15	5	5	2	43	NA	43	8	4	4	16	59	7.222	4.261	6	Retain

PATCH ID	EVC	BIOREGION	CONSERVATION STATUS	LARGE TREE SCORE	CANOPY	WEEDS	UNDERSTORY	RECRUITMEN	LITTER	LOGS	SITE SCORE	STANDARDISER	TOTAL	PATCHSIZE	NEIGHBOURH	DISTANCE	LANDSCAPE TOTAL	HABITAT SCORE	AREAS	HABITAT HA	LARGE TREE COUNT	RETENTION
49	Grassy Dry Forest	CVU	LC	0	4	9	10	0	3	2	28	NA	28	8	4	4	16	44	0.276	0.121	0	Retain
50	Grassy Dry Forest	CVU	LC	0	4	9	10	0	3	2	28	NA	28	8	4	4	16	44	0.736	0.324	0	Retain
51	Grassy Dry Forest	CVU	LC	0	4	9	10	0	3	2	28	NA	28	8	4	4	16	44	0.423	0.186	0	Retain
52	Grassy Dry Forest	CVU	LC	0	4	9	10	0	3	2	28	NA	28	8	4	4	16	44	1.082	0.476	0	Retain
54	Grassy Dry Forest	CVU	LC	0	4	9	10	0	3	2	28	NA	28	8	4	4	16	44	0.484	0.213	0	Retain
59	Grassy Dry Forest	CVU	LC	0	4	9	10	0	3	2	28	NA	28	8	4	4	16	44	0.105	0.046	0	Retain
61	Grassy Dry Forest	CVU	LC	4	4	4	5	0	5	2	24	NA	24	8	4	4	16	40	0.044	0.018	1	Retain
63	Grassy Dry Forest	CVU	LC	0	4	4	5	0	5	2	20	NA	20	8	4	4	16	36	0.072	0.026	0	Retain
64	Grassy Dry Forest	CVU	LC	0	4	4	5	0	5	2	20	NA	20	8	4	4	16	36	0.029	0.010	0	Retain
67	Grassy Dry Forest	CVU	LC	3	4	9	15	5	5	2	43	NA	43	8	4	4	16	59	0.983	0.580	11	Retain
69	Grassy Dry Forest	CVU	LC	3	4	9	10	0	3	2	31	NA	31	8	4	4	16	47	1.065	0.500	1	Retain
70	Grassy Dry Forest	CVU	LC	4	4	9	20	5	5	6	53	NA	53	8	4	4	16	69	13.354	9.214	66	Retain
72	Grassy Dry Forest	CVU	LC	0	4	9	10	0	3	2	28	NA	28	8	4	4	16	44	2.704	1.190	0	Retain

PATCH ID	EVC	BIOREGION	CONSERVATION STATUS	LARGE TREE SCORE	CANOPY	WEEDS	UNDERSTORY	RECRUITMEN	LITTER	LOGS	SITE SCORE	STANDARDISER	TOTAL	PATCHSIZE	NEIGHBOURH	DISTANCE	LANDSCAPE TOTAL	HABITAT SCORE	AREAS	HABITAT HA	LARGE TREE COUNT	RETENTION
73	Grassy Dry Forest	CVU	LC	0	0	11	15	3	5	0	34	NA	34	8	3	4	15	49	0.078	0.038	0	Retain
76	Grassy Dry Forest	CVU	LC	3	0	11	15	3	5	0	37	NA	37	8	3	4	15	52	5.406	2.811	1	Retain
102	Grassy Dry Forest	CVU	LC	0	4	4	5	0	5	2	20	NA	20	8	4	4	16	36	0.401	0.144	0	Retain
104	Grassy Dry Forest	CVU	LC	0	3	7	10	0	3	0	23	NA	23	8	4	4	16	39	0.270	0.105	0	Retain
1	Herb-rich Foothill Forest	CVU	D	0	4	2	5	0	3	0	14		14	1	1	3	5	19	0.045	0.009	0	Remove
2	Herb-rich Foothill Forest	CVU	D	0	0	2	5	0	3	2	12		12	1	1	3	5	17	0.013	0.002	0	Remove
5	Herb-rich Foothill Forest	CVU	D	3	4	4	15	5	3	6	40		40	8	4	4	16	56	0.500	0.300	3	Remove
7	Herb-rich Foothill Forest	CVU	D	5	4	9	15	6	5	2	46	NA	46	8	4	4	16	62	11.320	7.019	112	Retain
8	Herb-rich Foothill Forest	CVU	D	3	4	9	15	5	5	6	47	NA	47	8	4	4	16	63	0.642	0.404	4	Remove
10	Herb-rich Foothill Forest	CVU	D	3	4	4	15	5	3	6	40		40	8	4	4	16	56	19.115	11.469	92	Retain
11	Herb-rich Foothill Forest	CVU	D	3	4	2	15	5	3	5	37	NA	37	8	3	4	15	52	12.207	6.347	24	Retain
12	Herb-rich Foothill Forest	CVU	D	3	4	4	5	5	5	2	28	NA	28	8	4	4	16	44	0.452	0.199	1	Retain
18	Herb-rich Foothill Forest	CVU	D	0	0	2	5	0	5	0	12	NA	12	8	4	4	16	28	0.660	0.185	0	Retain

PATCH ID	EVC	BIOREGION	CONSERVATION STATUS	LARGE TREE SCORE	CANOPY	WEEDS	UNDERSTORY	RECRUITMEN	LITTER	LOGS	SITE SCORE	STANDARDISER	TOTAL	PATCHSIZE	NEIGHBOURH	DISTANCE	LANDSCAPE TOTAL	HABITAT SCORE	AREAS	HABITAT HA	LARGE TREE COUNT	RETENTION
21	Herb-rich Foothill Forest	CVU	D	0	0	2	5	0	5	0	12	NA	12	8	4	4	16	28	0.519	0.145	0	Retain
27	Herb-rich Foothill Forest	CVU	D	3	4	9	15	5	5	6	47	NA	47	8	4	4	16	63	16.571	10.440	116	Retain
31	Herb-rich Foothill Forest	CVU	D	0	0	7	5	0	4	0	16	NA	16	8	3	4	15	31	0.328	0.102	0	Remove
32	Herb-rich Foothill Forest	CVU	D	0	0	7	5	0	4	0	16	NA	16	8	3	4	15	31	0.403	0.125	0	Remove
35	Herb-rich Foothill Forest	CVU	D	9	5	0	15	1	5	2	37	NA	37	8	3	4	15	52	0.653	0.340	3	Remove
36	Herb-rich Foothill Forest	CVU	D	0	4	9	15	6	5	2	41	NA	41	1	4	4	9	50	0.435	0.218	0	Retain
37	Herb-rich Foothill Forest	CVU	D	4	3	9	5	0	5	2	28	NA	28	8	4	4	16	44	2.380	1.047	19	Retain
38	Herb-rich Foothill Forest	CVU	D	0	0	9	5	0	2	0	16	NA	16	8	3	4	15	31	1.034	0.321	0	Remove
46	Herb-rich Foothill Forest	CVU	D	0	2	0	5	1	5	5	18		18	8	3	4	15	33	0.149	0.049	0	Remove
75	Herb-rich Foothill Forest	CVU	D	6	4	9	15	5	5	2	46	NA	46	8	4	4	16	62	1.505	0.933	15	Retain
79	Herb-rich Foothill Forest	CVU	D	0	0	2	5	0	2	0	9		9	1	1	3	5	14	0.008	0.001	0	Remove
80	Herb-rich Foothill Forest	CVU	D	0	0	2	5	0	2	2	11		11	1	1	3	5	16	0.003	0.001	0	Remove
81	Herb-rich Foothill Forest	CVU	D	0	0	2	5	0	3	1	11		11	1	1	3	5	16	0.010	0.002	0	Remove

PATCH ID	EVC	BIOREGION	CONSERVATION STATUS	LARGE TREE SCORE	CANOPY	WEEDS	UNDERSTORY	RECRUITMEN	LITTER	LOGS	SITE SCORE	STANDARDISER	TOTAL	PATCHSIZE	NEIGHBOURH	DISTANCE	LANDSCAPE TOTAL	HABITAT SCORE	AREAS	HABITAT HA	LARGE TREE COUNT	RETENTION
82	Herb-rich Foothill Forest	CVU	D	0	0	2	5	0	3	0	10		10	1	1	3	5	15	0.001	0.000	0	Remove
83	Herb-rich Foothill Forest	CVU	D	0	4	2	5	0	2	3	14		14	1	1	3	5	19	0.049	0.009	0	Remove
84	Herb-rich Foothill Forest	CVU	D	0	0	2	5	5	2	2	14		14	1	1	3	5	19	0.010	0.002	0	Remove
85	Herb-rich Foothill Forest	VVP	V	0	0	2	5	5	2	1	13		13	1	1	3	5	18	0.063	0.011	0	Remove
86	Herb-rich Foothill Forest	CVU	D	0	0	2	5	0	2	2	9		9	1	1	3	5	14	0.008	0.001	0	Remove
87	Herb-rich Foothill Forest	VVP	V	0	0	2	5	0	2	2	9		9	1	1	3	5	14	0.027	0.004	0	Remove
88	Herb-rich Foothill Forest	VVP	V	0	0	2	5	0	2	2	9		9	1	1	3	5	14	0.018	0.003	0	Remove
89	Herb-rich Foothill Forest	VVP	V	0	0	2	5	0	2	0	7		7	1	1	3	5	12	0.018	0.002	0	Remove
90	Herb-rich Foothill Forest	VVP	V	0	0	2	5	0	2	0	7		7	1	1	3	5	12	0.003	0.000	0	Remove
91	Herb-rich Foothill Forest	CVU	D	3	4	2	15	5	3	2	34		34	1	1	3	5	39	0.745	0.290	3	Remove
92	Herb-rich Foothill Forest	VVP	V	0	0	2	5	0	2	0	7		7	1	1	3	5	12	0.002	0.000	0	Remove
93	Herb-rich Foothill Forest	CVU	D	5	4	2	5	5	3	3	27		27	1	1	3	5	32	0.319	0.102	3	Remove
94	Herb-rich Foothill Forest	CVU	D	0	4	2	5	0	3	3	17		17	1	1	3	5	22	0.038	0.008	0	Remove

PATCH ID	EVC	BIOREGION	CONSERVATION STATUS	LARGE TREE SCORE	CANOPY	WEEDS	UNDERSTORY	RECRUITMEN	LITTER	LOGS	SITE SCORE	STANDARDISER	TOTAL	PATCHSIZE	NEIGHBOURH	DISTANCE	LANDSCAPE TOTAL	HABITAT SCORE	AREAS	HABITAT HA	LARGE TREE COUNT	RETENTION
95	Herb-rich Foothill Forest	CVU	D	5	4	6	5	5	3	2	30		30	1	1	3	5	35	0.111	0.039	1	Remove
96	Herb-rich Foothill Forest	CVU	D	0	4	2	5	3	3	2	19		19	1	1	3	5	24	0.065	0.016	0	Remove
98	Herb-rich Foothill Forest	CVU	D	0	4	2	5	0	3	2	16		16	1	1	3	5	21	0.024	0.005	0	Remove
100	Herb-rich Foothill Forest	CVU	D	9	4	6	5	0	3	0	27		27	1	1	3	5	32	0.051	0.016	1	Retain
103	Herb-rich Foothill Forest	CVU	D	0	0	2	5	0	3	0	10		10	1	1	3	5	15	0.006	0.001	0	Remove
43	Plains Grassland	VVP	E	NA	NA	4	5	3	2	0	14	1.36	19	1	2	3	6	25	0.865	0.216	0	Remove
57	Plains Grassland	VVP	E	NA	NA	0	10	3	4	0	17	1.36	23.12	1	4	3	8	31.12	0.404	0.126	0	Remove
58	Plains Grassland	VVP	E	NA	NA	0	10	3	4	0	17	1.36	23.12	1	4	3	8	31.12	0.987	0.307	0	Remove
77	Plains Grassland	VVP	E	NA	NA	4	5	3	2	0	14	1.36	19	1	2	3	6	25	0.666	0.167	0	Remove
78	Plains Grassland	VVP	E	NA	NA	4	5	3	2	0	14	1.36	19	1	2	3	6	25	0.175	0.044	0	Remove
97	Plains Grassland	VVP	E	NA	NA	4	5	3	2	0	14	1.36	19	1	2	3	6	25	0.238	0.060	0	Remove
33	Plains Grassy Wetland	VVP	E	NA	NA	4	10	3	5	NA	22	1.36	29.92	2	4	3	9	38.92	1.705	0.664	0	Remove
60	Plains Grassy Wetland	VVP	E	NA	NA	4	10	3	5	NA	22	1.36	29.92	2	4	3	9	38.92	0.188	0.073	0	Remove

PATCH ID	EVC	BIOREGION	CONSERVATION STATUS	LARGE TREE SCORE	CANOPY	WEEDS	UNDERSTORY	RECRUITMEN	LITTER	LOGS	SITE SCORE	STANDARDISER	TOTAL	PATCHSIZE	NEIGHBOURH	DISTANCE	LANDSCAPE TOTAL	HABITAT SCORE	AREAS	HABITAT HA	LARGE TREE COUNT	RETENTION
9	Swampy Riparian Woodland	CVU	E	3	5	6	15	5	2	5	41	NA	41	8	4	4	16	57	9.410	5.363	46	Retain
39	Swampy Riparian Woodland	VVP	E	0	0	2	5	3	5	0	15	0	15	2	4	3	9	24	0.158	0.038	0	Remove
40	Swampy Riparian Woodland	VVP	E	0	0	2	5	3	5	0	15	0	15	2	4	3	9	24	0.702	0.168	0	Remove
41	Swampy Riparian Woodland	VVP	E	0	0	9	10	3	3	0	25	0	25	1	4	3	8	33	0.316	0.104	0	Remove
42	Swampy Riparian Woodland	VVP	E	0	0	2	5	3	3	0	13	0	13	2	4	3	9	22	1.601	0.352	0	Remove
44	Swampy Riparian Woodland	VVP	E	0	3	9	10	0	4	5	31	NA	31	8	4	4	16	47	0.448	0.211	0	Remove
53	Swampy Riparian Woodland	VVP	E	0	0	2	5	3	5	0	15	0	15	2	4	3	9	24	0.144	0.035	0	Remove
55	Swampy Riparian Woodland	VVP	E	0	0	9	10	3	3	0	25	0	25	1	4	3	8	33	0.109	0.033	0	Remove
56	Swampy Riparian Woodland	VVP	E	0	0	9	5	3	3	0	20	0	20	1	4	3	8	28	0.340	0.095	0	Remove

PATCH ID	EVC	BIOREGION	CONSERVATION STATUS	LARGE TREE SCORE	CANOPY	WEEDS	UNDERSTORY	RECRUITMEN	LITTER	LOGS	SITE SCORE	STANDARDISER	TOTAL	PATCHSIZE	NEIGHBOURH	DISTANCE	LANDSCAPE TOTAL	HABITAT SCORE	AREAS	HABITAT HA	LARGE TREE COUNT	RETENTION
66	Swampy Riparian Woodland	CVU	E	0	3	2	5	3	2	5	20	NA	20	8	4	4	16	36	0.599	0.216	0	Retain
68	Swampy Riparian Woodland	VVP	E	0	0	9	5	3	3	0	20	0	20	1	4	3	8	28	0.321	0.090	0	Remove
65	Tall Marsh	VVP		NA	NA	9	10	3	2	NA	24	1.36	32.64	1	3	3	7	39.64	0.178	0.070	0	Remove
71	Tall Marsh	VVP		NA	NA	9	15	3	2	NA	29	1.36	39.44	1	3	3	7	46.44	0.025	0.012	0	Remove
6	Modelled Wetland																		41.830			Remove

APPENDIX E

TREE DATA

APPENDIX E-1
SCATTERED TREES

Table E.1 Scattered tree data

TREE #	SPECIES	COMM_NAME	DBH	TPZ_RAD_M	HABITAT	RETENTION
98		Dead Stag	10	2.00		retain
62		Dead Stag	11	2.00		retain
33		Dead Stag	14	2.00		retain
64		Dead Stag	15	2.00		retain
102		Dead Stag	18	2.14		retain
61		Dead Stag	30	3.59		retain
75	*Eucalyptus camaldulensis*	River Red Gum	11	2.00		remove
14	*Eucalyptus camaldulensis*	River Red Gum	14	2.00		remove
132	*Eucalyptus camaldulensis*	River Red Gum	14	2.00		remove
74	*Eucalyptus camaldulensis*	River Red Gum	18	2.18		remove
72	*Eucalyptus camaldulensis*	River Red Gum	27	3.24		remove
118	*Eucalyptus dives*	Broad-leaved Peppermint	5	2.00		retain
122	*Eucalyptus dives*	Broad-leaved Peppermint	10	2.00		retain
123	*Eucalyptus dives*	Broad-leaved Peppermint	12	2.00		retain
119	*Eucalyptus dives*	Broad-leaved Peppermint	19	2.25		retain
44	*Eucalyptus goniocalyx*	Long-leaved Box	24	2.90		retain
19	*Eucalyptus goniocalyx*	Long-leaved Box	66	7.92		remove
111	*Eucalyptus goniocalyx*	Long-leaved Box	77	9.29		retain
15	*Eucalyptus goniocalyx*	Long-leaved Box	91	10.89		retain
16	*Eucalyptus macrorhyncha*	Red Stringybark	15	2.00		remove
81	*Eucalyptus melliodora*	Yellow Box	12	2.00		remove
88	*Eucalyptus melliodora*	Yellow Box	16	2.00		remove
56	*Eucalyptus melliodora*	Yellow Box	18	2.10		remove
65	*Eucalyptus melliodora*	Yellow Box	31	3.67		retain
24	*Eucalyptus melliodora*	Yellow Box	96	11.52		retain
77	*Eucalyptus microcarpa*	Grey Box	9	2.00		remove
48	*Eucalyptus obliqua*	Messmate Stringybark	8	2.00		retain
46	*Eucalyptus obliqua*	Messmate Stringybark	12	2.00		retain
66	*Eucalyptus obliqua*	Messmate Stringybark	14	2.00		retain
5	*Eucalyptus obliqua*	Messmate Stringybark	17	2.06		retain
121	*Eucalyptus obliqua*	Messmate Stringybark	20	2.41		retain
10	*Eucalyptus obliqua*	Messmate Stringybark	33	4.01		retain
78	*Eucalyptus obliqua*	Messmate Stringybark	33	4.01		retain
27	*Eucalyptus obliqua*	Messmate Stringybark	35	4.20		retain
80	*Eucalyptus obliqua*	Messmate Stringybark	36	4.28		retain
37	*Eucalyptus obliqua*	Messmate Stringybark	38	4.58		retain
39	*Eucalyptus obliqua*	Messmate Stringybark	45	5.35		retain
104	*Eucalyptus obliqua*	Messmate Stringybark	75	9.00		retain

TREE #	SPECIES	COMM_NAME	DBH	TPZ_RAD_M	HABITAT	RETENTION
17	*Eucalyptus obliqua*	Messmate Stringybark	92	11.04	MedHollows	retain
105	*Eucalyptus obliqua*	Messmate Stringybark	115	13.80		retain
9	*Eucalyptus ovata*	Swamp Gum	13	2.00		retain
90	*Eucalyptus ovata*	Swamp Gum	15	2.00		remove
87	*Eucalyptus ovata*	Swamp Gum	21	2.52		remove
93	*Eucalyptus ovata*	Swamp Gum	22	2.67		retain
85	*Eucalyptus ovata*	Swamp Gum	25	3.02		remove
59	*Eucalyptus ovata*	Swamp Gum	28	3.36		remove
47	*Eucalyptus ovata*	Swamp Gum	28	3.40		remove
131	*Eucalyptus ovata*	Swamp Gum	29	3.44		remove
4	*Eucalyptus ovata*	Swamp Gum	31	3.71		remove
83	*Eucalyptus ovata*	Swamp Gum	31	3.74		remove
133	*Eucalyptus ovata*	Swamp Gum	32	3.78		remove
51	*Eucalyptus ovata*	Swamp Gum	32	3.82		remove
134	*Eucalyptus ovata*	Swamp Gum	32	3.82		remove
60	*Eucalyptus ovata*	Swamp Gum	33	3.97		remove
86	*Eucalyptus ovata*	Swamp Gum	33	3.97		remove
76	*Eucalyptus ovata*	Swamp Gum	33	4.01		remove
95	*Eucalyptus ovata*	Swamp Gum	34	4.05		remove
130	*Eucalyptus ovata*	Swamp Gum	41	4.97		remove
29	*Eucalyptus ovata*	Swamp Gum	87	10.44		retain
13	*Eucalyptus radiata*	Narrow-leaved Peppermint	6	2.00		remove
35	*Eucalyptus rubida*	Candlebark	11	2.00		remove
63	*Eucalyptus rubida*	Candlebark	20	2.41		remove
50	*Eucalyptus rubida*	Candlebark	21	2.56		remove
49	*Eucalyptus rubida*	Candlebark	22	2.67		remove
68	*Eucalyptus rubida*	Candlebark	25	3.06		remove
135	*Eucalyptus rubida*	Candlebark	26	3.09		remove
136	*Eucalyptus rubida*	Candlebark	28	3.32		remove
41	*Eucalyptus rubida*	Candlebark	29	3.44		remove
125	*Eucalyptus rubida*	Candlebark	29	3.44		remove
126	*Eucalyptus rubida*	Candlebark	29	3.44		remove
42	*Eucalyptus rubida*	Candlebark	30	3.63		remove
97	*Eucalyptus rubida*	Candlebark	30	3.63		remove
40	*Eucalyptus rubida*	Candlebark	31	3.71		remove
38	*Eucalyptus rubida*	Candlebark	31	3.74		remove
137	*Eucalyptus rubida*	Candlebark	32	3.82		remove
67	*Eucalyptus rubida*	Candlebark	33	3.97		remove

TREE #	SPECIES	COMM_NAME	DBH	TPZ_RAD_M	HABITAT	RETENTION
70	*Eucalyptus rubida*	Candlebark	33	4.01		remove
128	*Eucalyptus rubida*	Candlebark	34	4.05		remove
3	*Eucalyptus rubida*	Candlebark	34	4.09		remove
103	*Eucalyptus rubida*	Candlebark	35	4.16		remove
1	*Eucalyptus rubida*	Candlebark	36	4.28		remove
69	*Eucalyptus rubida*	Candlebark	36	4.28		remove
92	*Eucalyptus rubida*	Candlebark	36	4.28		remove
43	*Eucalyptus rubida*	Candlebark	37	4.47		remove
82	*Eucalyptus rubida*	Candlebark	39	4.66		remove
34	*Eucalyptus rubida*	Candlebark	41	4.97		remove
45	*Eucalyptus rubida*	Candlebark	41	4.97		remove
96	*Eucalyptus rubida*	Candlebark	42	5.00		remove
84	*Eucalyptus rubida*	Candlebark	42	5.08		remove
89	*Eucalyptus rubida*	Candlebark	44	5.23		remove
100	*Eucalyptus rubida*	Candlebark	45	5.35		remove
2	*Eucalyptus rubida*	Candlebark	47	5.69		remove
94	*Eucalyptus rubida*	Candlebark	51	6.15		remove
114	*Eucalyptus rubida*	Candlebark	111	13.30	LargeHollows	remove
116	*Eucalyptus rubida*	Candlebark	168	15.00	LargeHollows	remove
8	*Eucalyptus saligna*	Sydney Blue Gum	17	2.06		retain
79	*Eucalyptus sp.*	Gum Tree	19	2.29		remove
57	*Eucalyptus sp.*	Gum Tree	21	2.48		remove
58	*Eucalyptus sp.*	Gum Tree	36	4.28		remove
117	*Eucalyptus sp.*	Gum Tree	70	8.40	MedHollows	retain
110	*Eucalyptus sp.*	Gum Tree	90	10.85	SmallHollows	retain
73	*Eucalyptus sp.*	Gum Tree	130	15.00		retain
12	*Eucalyptus viminalis*	Manna Gum	5	2.00		remove
32	*Eucalyptus viminalis*	Manna Gum	9	2.00		retain
25	*Eucalyptus viminalis*	Manna Gum	12	2.00		remove
31	*Eucalyptus viminalis*	Manna Gum	12	2.00		retain
28	*Eucalyptus viminalis*	Manna Gum	15	2.00		retain
30	*Eucalyptus viminalis*	Manna Gum	15	2.00		retain
6	*Eucalyptus viminalis*	Manna Gum	16	2.00		retain
120	*Eucalyptus viminalis*	Manna Gum	16	2.00		retain
11	*Eucalyptus viminalis*	Manna Gum	18	2.10		remove
36	*Eucalyptus viminalis*	Manna Gum	20	2.37		remove
7	*Eucalyptus viminalis*	Manna Gum	21	2.48		remove
127	*Eucalyptus viminalis*	Manna Gum	22	2.67		remove

TREE #	SPECIES	COMM_NAME	DBH	TPZ_RAD_M	HABITAT	RETENTION
52	*Eucalyptus viminalis*	Manna Gum	23	2.79		retain
91	*Eucalyptus viminalis*	Manna Gum	24	2.86		remove
21	*Eucalyptus viminalis*	Manna Gum	25	3.00		remove
55	*Eucalyptus viminalis*	Manna Gum	29	3.44		retain
124	*Eucalyptus viminalis*	Manna Gum	30	3.63		remove
18	*Eucalyptus viminalis*	Manna Gum	32	3.84		remove
53	*Eucalyptus viminalis*	Manna Gum	32	3.90		retain
99	*Eucalyptus viminalis*	Manna Gum	33	4.01		remove
129	*Eucalyptus viminalis*	Manna Gum	34	4.09		remove
101	*Eucalyptus viminalis*	Manna Gum	38	4.58		remove
109	*Eucalyptus viminalis*	Manna Gum	42	5.04		remove
54	*Eucalyptus viminalis*	Manna Gum	42	5.08		remove
26	*Eucalyptus viminalis*	Manna Gum	45	5.40		remove
115	*Eucalyptus viminalis*	Manna Gum	52	6.24		remove
106	*Eucalyptus viminalis*	Manna Gum	56	6.72		remove
107	*Eucalyptus viminalis*	Manna Gum	56	6.72		remove
113	*Eucalyptus viminalis*	Manna Gum	92	11.04		retain
108	*Eucalyptus viminalis*	Manna Gum	93	11.16		retain
22	*Eucalyptus viminalis*	Manna Gum	100	12.00		remove
71	*Eucalyptus viminalis*	Manna Gum	100	12.00	MedHollows	retain
112	*Eucalyptus viminalis*	Manna Gum	103	12.42		retain
20	*Eucalyptus viminalis*	Manna Gum	105	12.60		remove
23	*Eucalyptus viminalis*	Manna Gum	110	13.20		remove

APPENDIX E-2
LARGE TREES IN PATCHES

Table E.2 Large tree in patch data

TREE ID	SCIENTIFIC NAME	COMMON NAME	DBH	NOTES	HABITAT	RETENTION
90	*Eucalypt sp.*	Eucalypt	71	Non-indigenous		retain
128	*Eucalyptus camaldulensis*	River Red-gum	105			retain
653	*Eucalyptus camaldulensis*	River Red-gum	74			retain
652	*Eucalyptus camaldulensis*	River Red-gum	101			retain
141	*Eucalyptus dives*	Broad-leaf Peppermint	94			retain
138	*Eucalyptus dives*	Broad-leaf Peppermint	94			retain
150	*Eucalyptus dives*	Broad-leaf Peppermint	91			retain
396	*Eucalyptus dives*	Broad-leaf Peppermint	114			retain
432	*Eucalyptus dives*	Broad-leaf Peppermint	113		LargeHollows	retain
434	*Eucalyptus dives*	Broad-leaf Peppermint	77		MedHollows	retain
441	*Eucalyptus dives*	Broad-leaf Peppermint	120	Estimated*	LargeHollows	retain
329	*Eucalyptus dives*	Broad-leaf Peppermint	97			retain
578	*Eucalyptus dives*	Broad-leaf Peppermint	127		MedHollows	retain
600	*Eucalyptus dives*	Broad-leaf Peppermint	80			retain
629	*Eucalyptus dives*	Broad-leaf Peppermint	84		MedHollows	retain
627	*Eucalyptus dives*	Broad-leaf Peppermint	120	Estimated		retain
515	*Eucalyptus dives*	Broad-leaf Peppermint	75			retain
528	*Eucalyptus dives*	Broad-leaf Peppermint	70			retain
530	*Eucalyptus dives*	Broad-leaf Peppermint	80			retain
531	*Eucalyptus dives*	Broad-leaf Peppermint	79			retain
532	*Eucalyptus dives*	Broad-leaf Peppermint	78			retain
247	*Eucalyptus goniocalyx s.l.*	Bundy	88		MedHollows	retain
249	*Eucalyptus goniocalyx s.l.*	Bundy	82			retain
143	*Eucalyptus goniocalyx s.l.*	Bundy	83			retain
137	*Eucalyptus goniocalyx s.l.*	Bundy	89			retain
149	*Eucalyptus goniocalyx s.l.*	Bundy	121			retain
145	*Eucalyptus goniocalyx s.l.*	Bundy	97			retain
147	*Eucalyptus goniocalyx s.l.*	Bundy	104			retain
158	*Eucalyptus goniocalyx s.l.*	Bundy	81			retain
159	*Eucalyptus goniocalyx s.l.*	Bundy	99			retain
166	*Eucalyptus goniocalyx s.l.*	Bundy	88			retain
167	*Eucalyptus goniocalyx s.l.*	Bundy	77	Dead	MedHollows	retain
168	*Eucalyptus goniocalyx s.l.*	Bundy	70			retain
169	*Eucalyptus goniocalyx s.l.*	Bundy	73			remove
170	*Eucalyptus goniocalyx s.l.*	Bundy	74			retain
171	*Eucalyptus goniocalyx s.l.*	Bundy	85			retain
177	*Eucalyptus goniocalyx s.l.*	Bundy	71			retain

TREE ID	SCIENTIFIC NAME	COMMON NAME	DBH	NOTES	HABITAT	RETENTION
179	*Eucalyptus goniocalyx s.l.*	Bundy	80	Dead	MedHollows	retain
180	*Eucalyptus goniocalyx s.l.*	Bundy	72			retain
77	*Eucalyptus goniocalyx s.l.*	Bundy	104			retain
79	*Eucalyptus goniocalyx s.l.*	Bundy	80			retain
85	*Eucalyptus goniocalyx s.l.*	Bundy	131		LargeHollows	retain
83	*Eucalyptus goniocalyx s.l.*	Bundy	96		SmallHollows	retain
95	*Eucalyptus goniocalyx s.l.*	Bundy	80	Estimated		retain
96	*Eucalyptus goniocalyx s.l.*	Bundy	79			retain
101	*Eucalyptus goniocalyx s.l.*	Bundy	83			retain
102	*Eucalyptus goniocalyx s.l.*	Bundy	91			retain
103	*Eucalyptus goniocalyx s.l.*	Bundy	89			retain
97	*Eucalyptus goniocalyx s.l.*	Bundy	94			retain
100	*Eucalyptus goniocalyx s.l.*	Bundy	74			retain
109	*Eucalyptus goniocalyx s.l.*	Bundy	79			retain
110	*Eucalyptus goniocalyx s.l.*	Bundy	72			retain
105	*Eucalyptus goniocalyx s.l.*	Bundy	73			retain
113	*Eucalyptus goniocalyx s.l.*	Bundy	75			retain
8	*Eucalyptus goniocalyx s.l.*	Bundy	75	Estimated		retain
13	*Eucalyptus goniocalyx s.l.*	Bundy	83			retain
14	*Eucalyptus goniocalyx s.l.*	Bundy	73	Dead	MedHollows	retain
15	*Eucalyptus goniocalyx s.l.*	Bundy	86	Dead	MedHollows	retain
22	*Eucalyptus goniocalyx s.l.*	Bundy	70			retain
30	*Eucalyptus goniocalyx s.l.*	Bundy	90			retain
32	*Eucalyptus goniocalyx s.l.*	Bundy	75			retain
25	*Eucalyptus goniocalyx s.l.*	Bundy	98			retain
26	*Eucalyptus goniocalyx s.l.*	Bundy	94			retain
27	*Eucalyptus goniocalyx s.l.*	Bundy	100			retain
28	*Eucalyptus goniocalyx s.l.*	Bundy	94		MedHollows	retain
37	*Eucalyptus goniocalyx s.l.*	Bundy	74			retain
45	*Eucalyptus goniocalyx s.l.*	Bundy	84	Dead	SmallHollows	retain
46	*Eucalyptus goniocalyx s.l.*	Bundy	82		MedHollows	retain
41	*Eucalyptus goniocalyx s.l.*	Bundy	77			retain
43	*Eucalyptus goniocalyx s.l.*	Bundy	88	Dead	MedHollows	retain
44	*Eucalyptus goniocalyx s.l.*	Bundy	78		LargeHollows	retain
49	*Eucalyptus goniocalyx s.l.*	Bundy	88			retain
50	*Eucalyptus goniocalyx s.l.*	Bundy	88			retain
58	*Eucalyptus goniocalyx s.l.*	Bundy	72			retain
473	*Eucalyptus goniocalyx s.l.*	Bundy	75	Estimated	MedHollows	retain

TREE ID	SCIENTIFIC NAME	COMMON NAME	DBH	NOTES	HABITAT	RETENTION
474	*Eucalyptus goniocalyx s.l.*	Bundy	76			retain
476	*Eucalyptus goniocalyx s.l.*	Bundy	83			retain
407	*Eucalyptus goniocalyx s.l.*	Bundy	70			retain
414	*Eucalyptus goniocalyx s.l.*	Bundy	98			retain
416	*Eucalyptus goniocalyx s.l.*	Bundy	78			retain
412	*Eucalyptus goniocalyx s.l.*	Bundy	123			retain
418	*Eucalyptus goniocalyx s.l.*	Bundy	78			retain
436	*Eucalyptus goniocalyx s.l.*	Bundy	74			retain
274	*Eucalyptus goniocalyx s.l.*	Bundy	96		SmallHollows	retain
286	*Eucalyptus goniocalyx s.l.*	Bundy	111		SmallHollows	retain
296	*Eucalyptus goniocalyx s.l.*	Bundy	80		SmallHollows	retain
647	*Eucalyptus goniocalyx s.l.*	Bundy	89			retain
644	*Eucalyptus goniocalyx s.l.*	Bundy	98			retain
613	*Eucalyptus goniocalyx s.l.*	Bundy	98		LargeHollows	retain
621	*Eucalyptus goniocalyx s.l.*	Bundy	106			retain
624	*Eucalyptus goniocalyx s.l.*	Bundy	85	Dead		retain
626	*Eucalyptus goniocalyx s.l.*	Bundy	112		SmallHollows	retain
640	*Eucalyptus goniocalyx s.l.*	Bundy	125	Estimated	SmallHollows	retain
633	*Eucalyptus goniocalyx s.l.*	Bundy	115		MedHollows	retain
634	*Eucalyptus goniocalyx s.l.*	Bundy	90			retain
635	*Eucalyptus goniocalyx s.l.*	Bundy	90			retain
525	*Eucalyptus goniocalyx s.l.*	Bundy	70			retain
201	*Eucalyptus goniocalyx s.s.*	Bundy	82			retain
224	*Eucalyptus goniocalyx s.s.*	Bundy	72			retain
144	*Eucalyptus goniocalyx s.s.*	Bundy	110			retain
87	*Eucalyptus goniocalyx s.s.*	Bundy	76			retain
82	*Eucalyptus goniocalyx s.s.*	Bundy	93			retain
84	*Eucalyptus goniocalyx s.s.*	Bundy	79			retain
106	*Eucalyptus goniocalyx s.s.*	Bundy	89			retain
108	*Eucalyptus goniocalyx s.s.*	Bundy	103			retain
120	*Eucalyptus goniocalyx s.s.*	Bundy	85			retain
61	*Eucalyptus goniocalyx s.s.*	Bundy	138			retain
484	*Eucalyptus goniocalyx s.s.*	Bundy	101			retain
399	*Eucalyptus goniocalyx s.s.*	Bundy	72			retain
400	*Eucalyptus goniocalyx s.s.*	Bundy	130			retain
406	*Eucalyptus goniocalyx s.s.*	Bundy	72			retain
408	*Eucalyptus goniocalyx s.s.*	Bundy	101			retain
402	*Eucalyptus goniocalyx s.s.*	Bundy	140			retain

TREE ID	SCIENTIFIC NAME	COMMON NAME	DBH	NOTES	HABITAT	RETENTION
421	*Eucalyptus goniocalyx s.s.*	Bundy	95			retain
422	*Eucalyptus goniocalyx s.s.*	Bundy	165			retain
420	*Eucalyptus goniocalyx s.s.*	Bundy	76			retain
426	*Eucalyptus goniocalyx s.s.*	Bundy	96			retain
427	*Eucalyptus goniocalyx s.s.*	Bundy	85			retain
438	*Eucalyptus goniocalyx s.s.*	Bundy	130	Estimated	MedHollows	retain
283	*Eucalyptus goniocalyx s.s.*	Bundy	83			retain
220	*Eucalyptus goniocalyx x viminalis*	Bundy x Manna Gum hybrid	155			retain
447	*Eucalyptus goniocalyx x viminalis*	Bundy x Manna Gum hybrid	75			retain
203	*Eucalyptus macrorhyncha*	Red Stringybark	78			retain
226	*Eucalyptus macrorhyncha*	Red Stringybark	78			retain
245	*Eucalyptus macrorhyncha*	Red Stringybark	91			retain
76	*Eucalyptus macrorhyncha*	Red Stringybark	72			retain
99	*Eucalyptus macrorhyncha*	Red Stringybark	83			retain
119	*Eucalyptus macrorhyncha*	Red Stringybark	74			retain
114	*Eucalyptus macrorhyncha*	Red Stringybark	84			retain
62	*Eucalyptus macrorhyncha*	Red Stringybark	120			remove
410	*Eucalyptus macrorhyncha*	Red Stringybark	71			retain
340	*Eucalyptus macrorhyncha*	Red Stringybark	120			retain
267	*Eucalyptus macrorhyncha*	Red Stringybark	74			retain
268	*Eucalyptus macrorhyncha*	Red Stringybark	76			retain
277	*Eucalyptus macrorhyncha*	Red Stringybark	90		MedHollows	retain
302	*Eucalyptus macrorhyncha*	Red Stringybark	98	Dead		retain
299	*Eucalyptus macrorhyncha*	Red Stringybark	151			retain
227	*Eucalyptus melliodora*	Yellow Box	75			retain
139	*Eucalyptus melliodora*	Yellow Box	88			retain
140	*Eucalyptus melliodora*	Yellow Box	156			retain
65	*Eucalyptus melliodora*	Yellow Box	85		SmallHollows	retain
104	*Eucalyptus melliodora*	Yellow Box	111			retain
121	*Eucalyptus melliodora*	Yellow Box	85			retain
60	*Eucalyptus melliodora*	Yellow Box	98		MedHollows	retain
483	*Eucalyptus melliodora*	Yellow Box	77		MedHollows	retain
415	*Eucalyptus melliodora*	Yellow Box	85			retain
409	*Eucalyptus melliodora*	Yellow Box	83			retain
411	*Eucalyptus melliodora*	Yellow Box	83			retain
211	*Eucalyptus obliqua*	Messmate Stringybark	104			retain
231	*Eucalyptus obliqua*	Messmate Stringybark	92			retain

TREE ID	SCIENTIFIC NAME	COMMON NAME	DBH	NOTES	HABITAT	RETENTION
225	*Eucalyptus obliqua*	Messmate Stringybark	119	Dead	MedHollows	retain
228	*Eucalyptus obliqua*	Messmate Stringybark	120	Dead Estimated	LargeHollows	retain
234	*Eucalyptus obliqua*	Messmate Stringybark	70			retain
241	*Eucalyptus obliqua*	Messmate Stringybark	85			retain
243	*Eucalyptus obliqua*	Messmate Stringybark	95			retain
244	*Eucalyptus obliqua*	Messmate Stringybark	75	Estimated		retain
133	*Eucalyptus obliqua*	Messmate Stringybark	117			retain
134	*Eucalyptus obliqua*	Messmate Stringybark	94			retain
135	*Eucalyptus obliqua*	Messmate Stringybark	111	Dead		retain
136	*Eucalyptus obliqua*	Messmate Stringybark	84			retain
131	*Eucalyptus obliqua*	Messmate Stringybark	127			retain
176	*Eucalyptus obliqua*	Messmate Stringybark	106			retain
172	*Eucalyptus obliqua*	Messmate Stringybark	91			retain
183	*Eucalyptus obliqua*	Messmate Stringybark	73			retain
189	*Eucalyptus obliqua*	Messmate Stringybark	150	Estimated	MedHollows	retain
69	*Eucalyptus obliqua*	Messmate Stringybark	70			retain
71	*Eucalyptus obliqua*	Messmate Stringybark	109		SmallHollows	retain
67	*Eucalyptus obliqua*	Messmate Stringybark	145		SmallHollows	retain
68	*Eucalyptus obliqua*	Messmate Stringybark	92	Dead	MedHollows	retain
80	*Eucalyptus obliqua*	Messmate Stringybark	105		SmallHollows	retain
74	*Eucalyptus obliqua*	Messmate Stringybark	93		MedHollows	retain
75	*Eucalyptus obliqua*	Messmate Stringybark	86	Dead	LargeHollows	retain
86	*Eucalyptus obliqua*	Messmate Stringybark	97			retain
92	*Eucalyptus obliqua*	Messmate Stringybark	110	Dead Estimated	SmallHollows	retain
98	*Eucalyptus obliqua*	Messmate Stringybark	93	Dead		retain
117	*Eucalyptus obliqua*	Messmate Stringybark	121		MedHollows	retain
115	*Eucalyptus obliqua*	Messmate Stringybark	96	Dead	MedHollows	retain
116	*Eucalyptus obliqua*	Messmate Stringybark	99	Dead	LargeHollows	retain
23	*Eucalyptus obliqua*	Messmate Stringybark	127			retain
29	*Eucalyptus obliqua*	Messmate Stringybark	96		SmallHollows	retain
31	*Eucalyptus obliqua*	Messmate Stringybark	93			retain
38	*Eucalyptus obliqua*	Messmate Stringybark	77			retain
39	*Eucalyptus obliqua*	Messmate Stringybark	71			retain
40	*Eucalyptus obliqua*	Messmate Stringybark	77			retain
35	*Eucalyptus obliqua*	Messmate Stringybark	82			retain
36	*Eucalyptus obliqua*	Messmate Stringybark	84			retain
48	*Eucalyptus obliqua*	Messmate Stringybark	120			retain
42	*Eucalyptus obliqua*	Messmate Stringybark	78			retain

TREE ID	SCIENTIFIC NAME	COMMON NAME	DBH	NOTES	HABITAT	RETENTION
53	*Eucalyptus obliqua*	Messmate Stringybark	81			retain
54	*Eucalyptus obliqua*	Messmate Stringybark	77			retain
55	*Eucalyptus obliqua*	Messmate Stringybark	72			retain
56	*Eucalyptus obliqua*	Messmate Stringybark	121			retain
51	*Eucalyptus obliqua*	Messmate Stringybark	91			retain
52	*Eucalyptus obliqua*	Messmate Stringybark	79			retain
64	*Eucalyptus obliqua*	Messmate Stringybark	145			remove
57	*Eucalyptus obliqua*	Messmate Stringybark	115			retain
59	*Eucalyptus obliqua*	Messmate Stringybark	71			retain
453	*Eucalyptus obliqua*	Messmate Stringybark	72			retain
454	*Eucalyptus obliqua*	Messmate Stringybark	110			retain
456	*Eucalyptus obliqua*	Messmate Stringybark	140	Estimated	SmallHollows	retain
449	*Eucalyptus obliqua*	Messmate Stringybark	116		MedHollows	retain
450	*Eucalyptus obliqua*	Messmate Stringybark	135	Estimated		retain
461	*Eucalyptus obliqua*	Messmate Stringybark	95	Dead Estimated	SmallHollows	retain
462	*Eucalyptus obliqua*	Messmate Stringybark	113	Dead	MedHollows	retain
463	*Eucalyptus obliqua*	Messmate Stringybark	120	Dead Estimated	SmallHollows	retain
481	*Eucalyptus obliqua*	Messmate Stringybark	135	Estimated	LargeHollows	retain
491	*Eucalyptus obliqua*	Messmate Stringybark	141			retain
512	*Eucalyptus obliqua*	Messmate Stringybark	83			retain
505	*Eucalyptus obliqua*	Messmate Stringybark	89		SmallHollows	retain
397	*Eucalyptus obliqua*	Messmate Stringybark	106	Dead		retain
398	*Eucalyptus obliqua*	Messmate Stringybark	98			retain
401	*Eucalyptus obliqua*	Messmate Stringybark	80	Estimated		retain
403	*Eucalyptus obliqua*	Messmate Stringybark	105	Estimated		retain
423	*Eucalyptus obliqua*	Messmate Stringybark	75			retain
424	*Eucalyptus obliqua*	Messmate Stringybark	75	Dead Estimated	SmallHollows	retain
429	*Eucalyptus obliqua*	Messmate Stringybark	90	Dead		retain
431	*Eucalyptus obliqua*	Messmate Stringybark	82	Dead		retain
425	*Eucalyptus obliqua*	Messmate Stringybark	70	Dead Estimated		retain
428	*Eucalyptus obliqua*	Messmate Stringybark	87	Dead		retain
439	*Eucalyptus obliqua*	Messmate Stringybark	80	Dead		retain
440	*Eucalyptus obliqua*	Messmate Stringybark	73			retain
433	*Eucalyptus obliqua*	Messmate Stringybark	105	Dead		retain
435	*Eucalyptus obliqua*	Messmate Stringybark	90			retain
446	*Eucalyptus obliqua*	Messmate Stringybark	70		SmallHollows	retain
448	*Eucalyptus obliqua*	Messmate Stringybark	81			retain
442	*Eucalyptus obliqua*	Messmate Stringybark	88		SmallHollows	retain

TREE ID	SCIENTIFIC NAME	COMMON NAME	DBH	NOTES	HABITAT	RETENTION
443	*Eucalyptus obliqua*	Messmate Stringybark	99		SmallHollows	retain
325	*Eucalyptus obliqua*	Messmate Stringybark	82			retain
326	*Eucalyptus obliqua*	Messmate Stringybark	83			retain
327	*Eucalyptus obliqua*	Messmate Stringybark	120		LooseBark	retain
328	*Eucalyptus obliqua*	Messmate Stringybark	75			retain
324	*Eucalyptus obliqua*	Messmate Stringybark	75			retain
330	*Eucalyptus obliqua*	Messmate Stringybark	72			retain
331	*Eucalyptus obliqua*	Messmate Stringybark	78			retain
349	*Eucalyptus obliqua*	Messmate Stringybark	100			retain
293	*Eucalyptus obliqua*	Messmate Stringybark	76			retain
294	*Eucalyptus obliqua*	Messmate Stringybark	102			retain
295	*Eucalyptus obliqua*	Messmate Stringybark	76			retain
289	*Eucalyptus obliqua*	Messmate Stringybark	80		SmallHollows	retain
290	*Eucalyptus obliqua*	Messmate Stringybark	81			retain
303	*Eucalyptus obliqua*	Messmate Stringybark	92			retain
304	*Eucalyptus obliqua*	Messmate Stringybark	108			retain
298	*Eucalyptus obliqua*	Messmate Stringybark	71			retain
311	*Eucalyptus obliqua*	Messmate Stringybark	90		MedHollows	retain
305	*Eucalyptus obliqua*	Messmate Stringybark	81			retain
307	*Eucalyptus obliqua*	Messmate Stringybark	82			retain
308	*Eucalyptus obliqua*	Messmate Stringybark	96			retain
313	*Eucalyptus obliqua*	Messmate Stringybark	80			retain
314	*Eucalyptus obliqua*	Messmate Stringybark	71	Dead		retain
315	*Eucalyptus obliqua*	Messmate Stringybark	80	Dead		retain
316	*Eucalyptus obliqua*	Messmate Stringybark	85		MedHollows	retain
645	*Eucalyptus obliqua*	Messmate Stringybark	114		MedHollows	retain
646	*Eucalyptus obliqua*	Messmate Stringybark	103			retain
648	*Eucalyptus obliqua*	Messmate Stringybark	93		MedHollows	retain
641	*Eucalyptus obliqua*	Messmate Stringybark	97	Dead		retain
642	*Eucalyptus obliqua*	Messmate Stringybark	126			retain
643	*Eucalyptus obliqua*	Messmate Stringybark	79	Dead		retain
649	*Eucalyptus obliqua*	Messmate Stringybark	130	Estimated		retain
650	*Eucalyptus obliqua*	Messmate Stringybark	97		SmallHollows	retain
651	*Eucalyptus obliqua*	Messmate Stringybark	76			retain
581	*Eucalyptus obliqua*	Messmate Stringybark	129		MedHollows	retain
582	*Eucalyptus obliqua*	Messmate Stringybark	76			retain
583	*Eucalyptus obliqua*	Messmate Stringybark	70	Dead Estimated	SmallHollows	retain
584	*Eucalyptus obliqua*	Messmate Stringybark	79		MedHollows	retain

TREE ID	SCIENTIFIC NAME	COMMON NAME	DBH	NOTES	HABITAT	RETENTION
579	*Eucalyptus obliqua*	Messmate Stringybark	103		MedHollows	retain
590	*Eucalyptus obliqua*	Messmate Stringybark	97			retain
591	*Eucalyptus obliqua*	Messmate Stringybark	121		MedHollows	retain
592	*Eucalyptus obliqua*	Messmate Stringybark	77			retain
585	*Eucalyptus obliqua*	Messmate Stringybark	70	Estimated		retain
586	*Eucalyptus obliqua*	Messmate Stringybark	101		MedHollows	retain
597	*Eucalyptus obliqua*	Messmate Stringybark	109		MedHollows	retain
598	*Eucalyptus obliqua*	Messmate Stringybark	100		MedHollows	retain
599	*Eucalyptus obliqua*	Messmate Stringybark	82			retain
595	*Eucalyptus obliqua*	Messmate Stringybark	95	Estimated		retain
605	*Eucalyptus obliqua*	Messmate Stringybark	116			retain
606	*Eucalyptus obliqua*	Messmate Stringybark	114			retain
607	*Eucalyptus obliqua*	Messmate Stringybark	130		MedHollows	retain
608	*Eucalyptus obliqua*	Messmate Stringybark	98			retain
601	*Eucalyptus obliqua*	Messmate Stringybark	107			retain
602	*Eucalyptus obliqua*	Messmate Stringybark	122		MedHollows	retain
603	*Eucalyptus obliqua*	Messmate Stringybark	70	Dead		retain
604	*Eucalyptus obliqua*	Messmate Stringybark	110			retain
614	*Eucalyptus obliqua*	Messmate Stringybark	90			retain
616	*Eucalyptus obliqua*	Messmate Stringybark	80	Estimated	Nest	retain
609	*Eucalyptus obliqua*	Messmate Stringybark	117		MedHollows	retain
610	*Eucalyptus obliqua*	Messmate Stringybark	90			retain
611	*Eucalyptus obliqua*	Messmate Stringybark	95	Estimated	LargeHollows	retain
612	*Eucalyptus obliqua*	Messmate Stringybark	79			retain
617	*Eucalyptus obliqua*	Messmate Stringybark	82		SmallHollows	retain
618	*Eucalyptus obliqua*	Messmate Stringybark	138		MedHollows	retain
619	*Eucalyptus obliqua*	Messmate Stringybark	79			retain
631	*Eucalyptus obliqua*	Messmate Stringybark	130	Estimated	MedHollows	retain
628	*Eucalyptus obliqua*	Messmate Stringybark	71		SmallHollows	retain
637	*Eucalyptus obliqua*	Messmate Stringybark	80			retain
638	*Eucalyptus obliqua*	Messmate Stringybark	78	Dead, snapped at 4m high		retain
639	*Eucalyptus obliqua*	Messmate Stringybark	116		Cracks	retain
636	*Eucalyptus obliqua*	Messmate Stringybark	78		MedHollows	retain
517	*Eucalyptus obliqua*	Messmate Stringybark	80	Dead	MedHollows	retain
526	*Eucalyptus obliqua*	Messmate Stringybark	82			retain
521	*Eucalyptus obliqua*	Messmate Stringybark	103		MedHollows	retain
523	*Eucalyptus obliqua*	Messmate Stringybark	70	Dead		retain

TREE ID	SCIENTIFIC NAME	COMMON NAME	DBH	NOTES	HABITAT	RETENTION
529	*Eucalyptus obliqua*	Messmate Stringybark	100	Dead Estimated	SmallHollows	retain
541	*Eucalyptus obliqua*	Messmate Stringybark	140	Estimated	LooseBark	retain
544	*Eucalyptus obliqua*	Messmate Stringybark	75	Estimated		retain
539	*Eucalyptus obliqua*	Messmate Stringybark	130	Dead Estimated	MedHollows	retain
551	*Eucalyptus obliqua*	Messmate Stringybark	81			retain
552	*Eucalyptus obliqua*	Messmate Stringybark	89			retain
547	*Eucalyptus obliqua*	Messmate Stringybark	117		MedHollows	retain
548	*Eucalyptus obliqua*	Messmate Stringybark	86			retain
557	*Eucalyptus obliqua*	Messmate Stringybark	120		MedHollows	retain
559	*Eucalyptus obliqua*	Messmate Stringybark	145	Dead Estimated	MedHollows	retain
560	*Eucalyptus obliqua*	Messmate Stringybark	79			retain
553	*Eucalyptus obliqua*	Messmate Stringybark	125		MedHollows	retain
555	*Eucalyptus obliqua*	Messmate Stringybark	81		MedHollows	retain
556	*Eucalyptus obliqua*	Messmate Stringybark	101			retain
566	*Eucalyptus obliqua*	Messmate Stringybark	119		MedHollows	retain
567	*Eucalyptus obliqua*	Messmate Stringybark	77		SmallHollows	retain
561	*Eucalyptus obliqua*	Messmate Stringybark	83			retain
562	*Eucalyptus obliqua*	Messmate Stringybark	100	Dead Estimated		retain
563	*Eucalyptus obliqua*	Messmate Stringybark	77		SmallHollows	retain
564	*Eucalyptus obliqua*	Messmate Stringybark	91		SmallHollows	retain
574	*Eucalyptus obliqua*	Messmate Stringybark	124		MedHollows	retain
576	*Eucalyptus obliqua*	Messmate Stringybark	75			retain
569	*Eucalyptus obliqua*	Messmate Stringybark	101		MedHollows	retain
570	*Eucalyptus obliqua*	Messmate Stringybark	77			retain
571	*Eucalyptus obliqua*	Messmate Stringybark	97			retain
572	*Eucalyptus obliqua*	Messmate Stringybark	100	Dead Estimated		retain
198	*Eucalyptus obliqua*	Messmate Stringybark	96			retain
129	*Eucalyptus ovata*	Swamp Gum	75	Dead Estimated	MedHollows	retain
173	*Eucalyptus ovata*	Swamp Gum	110	Estimated	MedHollows	retain
174	*Eucalyptus ovata*	Swamp Gum	88			retain
312	*Eucalyptus ovata*	Swamp Gum	75			retain
320	*Eucalyptus ovata*	Swamp Gum	76			remove
322	*Eucalyptus ovata*	Swamp Gum	79			remove
146	*Eucalyptus radiata s.l.*	Narrow-leaf Peppermint	81			retain
148	*Eucalyptus radiata s.l.*	Narrow-leaf Peppermint	89	Dead	SmallHollows	retain
126	*Eucalyptus radiata s.l.*	Narrow-leaf Peppermint	96			retain
503	*Eucalyptus radiata s.l.*	Narrow-leaf Peppermint	80			retain
333	*Eucalyptus radiata s.l.*	Narrow-leaf Peppermint	74			retain

TREE ID	SCIENTIFIC NAME	COMMON NAME	DBH	NOTES	HABITAT	RETENTION
332	*Eucalyptus radiata s.l.*	Narrow-leaf Peppermint	71			retain
318	*Eucalyptus radiata s.l.*	Narrow-leaf Peppermint	118			remove
391	*Eucalyptus radiata subsp. radiata*	Narrow-leaf Peppermint	125	Dead Estimated	SmallHollows	retain
527	*Eucalyptus radiata subsp. radiata*	Narrow-leaf Peppermint	85		LargeHollows	retain
213	*Eucalyptus rubida*	Candlebark	83			retain
214	*Eucalyptus rubida*	Candlebark	82			retain
230	*Eucalyptus rubida*	Candlebark	72			retain
460	*Eucalyptus rubida*	Candlebark	71			retain
472	*Eucalyptus rubida*	Candlebark	100		LargeHollows	retain
475	*Eucalyptus rubida*	Candlebark	100	Estimated	SmallHollows	remove
389	*Eucalyptus rubida*	Candlebark	85	Estimated		retain
321	*Eucalyptus rubida*	Candlebark	93			remove
370	*Eucalyptus rubida*	Candlebark	89			retain
261	*Eucalyptus rubida*	Candlebark	106		MedHollows	retain
317	*Eucalyptus rubida*	Candlebark	75			remove
1	*Eucalyptus sp.*	Eucalypt	100			retain
2	*Eucalyptus sp.*	Eucalypt	110			retain
9	*Eucalyptus sp.*	Eucalypt	120		MedHollows	retain
10	*Eucalyptus sp.*	Eucalypt	75			retain
11	*Eucalyptus sp.*	Eucalypt	100			retain
12	*Eucalyptus sp.*	Eucalypt	100			retain
195	*Eucalyptus sp.*	Eucalypt	122	Dead	SmallHollows	retain
196	*Eucalyptus sp.*	Eucalypt	80	Dead	Cracks	retain
215	*Eucalyptus sp.*	Eucalypt	113	Dead		retain
216	*Eucalyptus sp.*	Eucalypt	107	Dead		retain
209	*Eucalyptus sp.*	Eucalypt	98	Dead		retain
212	*Eucalyptus sp.*	Eucalypt	130	Dead	LargeHollows	retain
221	*Eucalyptus sp.*	Eucalypt	105	Dead Estimated	Cracks	retain
222	*Eucalyptus sp.*	Eucalypt	78	Dead		retain
223	*Eucalyptus sp.*	Eucalypt	105	Dead	MedHollows	retain
217	*Eucalyptus sp.*	Eucalypt	80	Dead		retain
219	*Eucalyptus sp.*	Eucalypt	97	Dead		retain
229	*Eucalyptus sp.*	Eucalypt	95	Dead Estimated	Cracks	retain
237	*Eucalyptus sp.*	Eucalypt	75	Dead	LargeHollows	retain
239	*Eucalyptus sp.*	Eucalypt	70	Dead		retain
235	*Eucalyptus sp.*	Eucalypt	94	Dead	LargeHollows	retain
246	*Eucalyptus sp.*	Eucalypt	140	Dead		retain

TREE ID	SCIENTIFIC NAME	COMMON NAME	DBH	NOTES	HABITAT	RETENTION
248	*Eucalyptus sp.*	Eucalypt	79	Dead	SmallHollows	retain
242	*Eucalyptus sp.*	Eucalypt	110	Dead	MedHollows	retain
253	*Eucalyptus sp.*	Eucalypt	174	Dead		retain
254	*Eucalyptus sp.*	Eucalypt	70		SmallHollows	retain
255	*Eucalyptus sp.*	Eucalypt	70	Dead	MedHollows	retain
256	*Eucalyptus sp.*	Eucalypt	97	Dead		retain
250	*Eucalyptus sp.*	Eucalypt	140	Dead Estimated		retain
251	*Eucalyptus sp.*	Eucalypt	95		Cracks	retain
252	*Eucalyptus sp.*	Eucalypt	93	Dead		retain
132	*Eucalyptus sp.*	Eucalypt	74			retain
181	*Eucalyptus sp.*	Eucalypt	105	Dead	Basal	retain
184	*Eucalyptus sp.*	Eucalypt	110	Dead	LargeHollows	retain
178	*Eucalyptus sp.*	Eucalypt	92		LargeHollows	retain
190	*Eucalyptus sp.*	Eucalypt	133	Dead		retain
191	*Eucalyptus sp.*	Eucalypt	110	Dead Estimated		retain
72	*Eucalyptus sp.*	Eucalypt	75	Dead Estimated		retain
66	*Eucalyptus sp.*	Eucalypt	110	Dead		retain
73	*Eucalyptus sp.*	Eucalypt	120	Dead		retain
93	*Eucalyptus sp.*	Eucalypt	90	Dead Estimated	SmallHollows	retain
91	*Eucalyptus sp.*	Eucalypt	110	Dead Estimated		retain
107	*Eucalyptus sp.*	Eucalypt	105		LargeHollows	retain
118	*Eucalyptus sp.*	Eucalypt	74			retain
124	*Eucalyptus sp.*	Eucalypt	74	Dead		retain
16	*Eucalyptus sp.*	Eucalypt	88			remove
17	*Eucalyptus sp.*	Eucalypt	70			remove
33	*Eucalyptus sp.*	Eucalypt	80		LargeHollows	retain
34	*Eucalyptus sp.*	Eucalypt	86	In decline	LargeHollows	retain
47	*Eucalyptus sp.*	Eucalypt	120	Dead		retain
63	*Eucalyptus sp.*	Eucalypt	100	Dead	SmallHollows	retain
451	*Eucalyptus sp.*	Eucalypt	125	Dead	MedHollows	retain
469	*Eucalyptus sp.*	Eucalypt	97	Dead	LooseBark	retain
470	*Eucalyptus sp.*	Eucalypt	87	Dead		retain
465	*Eucalyptus sp.*	Eucalypt	100		MedHollows	retain
466	*Eucalyptus sp.*	Eucalypt	120	Dead Estimated	LargeHollows	retain
467	*Eucalyptus sp.*	Eucalypt	100	Dead Estimated	LargeHollows	retain
468	*Eucalyptus sp.*	Eucalypt	120	Dead		retain
477	*Eucalyptus sp.*	Eucalypt	79	Dead		retain
478	*Eucalyptus sp.*	Eucalypt	120	Dead Estimated	Cracks	retain

TREE ID	SCIENTIFIC NAME	COMMON NAME	DBH	NOTES	HABITAT	RETENTION
479	*Eucalyptus sp.*	Eucalypt	92	Dead		retain
480	*Eucalyptus sp.*	Eucalypt	134	Dead		retain
485	*Eucalyptus sp.*	Eucalypt	75	Dead		retain
486	*Eucalyptus sp.*	Eucalypt	75	Dead Estimated	SmallHollows	retain
487	*Eucalyptus sp.*	Eucalypt	79	Dead		retain
488	*Eucalyptus sp.*	Eucalypt	75	Dead	Cracks	retain
489	*Eucalyptus sp.*	Eucalypt	73			retain
490	*Eucalyptus sp.*	Eucalypt	80	Dead Estimated	Cracks	retain
501	*Eucalyptus sp.*	Eucalypt	85	Dead Estimated	LargeHollows	retain
502	*Eucalyptus sp.*	Eucalypt	93	Dead		retain
504	*Eucalyptus sp.*	Eucalypt	88	Dead		retain
498	*Eucalyptus sp.*	Eucalypt	130	Dead		retain
499	*Eucalyptus sp.*	Eucalypt	96	Dead		retain
500	*Eucalyptus sp.*	Eucalypt	70	Dead Estimated	LargeHollows	retain
509	*Eucalyptus sp.*	Eucalypt	71	Dead		retain
510	*Eucalyptus sp.*	Eucalypt	71	Dead		retain
511	*Eucalyptus sp.*	Eucalypt	71	Dead		retain
506	*Eucalyptus sp.*	Eucalypt	110	Dead Estimated	MedHollows	retain
507	*Eucalyptus sp.*	Eucalypt	96	Dead		retain
508	*Eucalyptus sp.*	Eucalypt	85	Dead		retain
390	*Eucalyptus sp.*	Eucalypt	105	Dead		retain
385	*Eucalyptus sp.*	Eucalypt	75	Dead estimated		retain
394	*Eucalyptus sp.*	Eucalypt	98	Dead		retain
395	*Eucalyptus sp.*	Eucalypt	98	Dead		retain
405	*Eucalyptus sp.*	Eucalypt	92	Dead		retain
404	*Eucalyptus sp.*	Eucalypt	83	Dead		retain
413	*Eucalyptus sp.*	Eucalypt	88			retain
417	*Eucalyptus sp.*	Eucalypt	91			retain
419	*Eucalyptus sp.*	Eucalypt	120	Dead		retain
430	*Eucalyptus sp.*	Eucalypt	71	Dead	MedHollows	retain
437	*Eucalyptus sp.*	Eucalypt	105	Dead Estimated		retain
445	*Eucalyptus sp.*	Eucalypt	70	Estimated		retain
335	*Eucalyptus sp.*	Eucalypt	150	Dead		remove
336	*Eucalyptus sp.*	Eucalypt	72	Dead		remove
338	*Eucalyptus sp.*	Eucalypt	87	Dead		retain
339	*Eucalyptus sp.*	Eucalypt	92	Dead		retain
350	*Eucalyptus sp.*	Eucalypt	112	Dead	Cracks	retain
351	*Eucalyptus sp.*	Eucalypt	83			retain

TREE ID	SCIENTIFIC NAME	COMMON NAME	DBH	NOTES	HABITAT	RETENTION
352	*Eucalyptus sp.*	Eucalypt	70	Dead		retain
346	*Eucalyptus sp.*	Eucalypt	125	Dead		retain
348	*Eucalyptus sp.*	Eucalypt	120			retain
353	*Eucalyptus sp.*	Eucalypt	125	Dead		retain
354	*Eucalyptus sp.*	Eucalypt	101	Dead	MedHollows	retain
356	*Eucalyptus sp.*	Eucalypt	80	planted pryoriana ?		retain
365	*Eucalyptus sp.*	Eucalypt	100	Dead	MedHollows	retain
367	*Eucalyptus sp.*	Eucalypt	120	Dead	LargeHollows	retain
368	*Eucalyptus sp.*	Eucalypt	78	Dead		retain
364	*Eucalyptus sp.*	Eucalypt	110	Dead	MedHollows	retain
373	*Eucalyptus sp.*	Eucalypt	130	Dead		retain
374	*Eucalyptus sp.*	Eucalypt	78	Dead		retain
375	*Eucalyptus sp.*	Eucalypt	86	Dead		retain
369	*Eucalyptus sp.*	Eucalypt	92	Dead	SmallHollows	retain
371	*Eucalyptus sp.*	Eucalypt	129	Dead	MedHollows	retain
372	*Eucalyptus sp.*	Eucalypt	75	Dead		retain
382	*Eucalyptus sp.*	Eucalypt	117	Dead	MedHollows	retain
378	*Eucalyptus sp.*	Eucalypt	75	Dead		retain
379	*Eucalyptus sp.*	Eucalypt	75	Dead		retain
262	*Eucalyptus sp.*	Eucalypt	112	Dead		retain
263	*Eucalyptus sp.*	Eucalypt	135	Dead		retain
264	*Eucalyptus sp.*	Eucalypt	121	Dead		retain
257	*Eucalyptus sp.*	Eucalypt	136	Dead		retain
258	*Eucalyptus sp.*	Eucalypt	100	Dead		retain
259	*Eucalyptus sp.*	Eucalypt	130	Dead Estimated	LargeHollows	retain
260	*Eucalyptus sp.*	Eucalypt	97	Dead		retain
269	*Eucalyptus sp.*	Eucalypt	85	Dead		retain
270	*Eucalyptus sp.*	Eucalypt	76	Dead	MedHollows	retain
271	*Eucalyptus sp.*	Eucalypt	103	Dead		retain
272	*Eucalyptus sp.*	Eucalypt	92	Dead		retain
265	*Eucalyptus sp.*	Eucalypt	75	Dead Estimated	Cracks	retain
266	*Eucalyptus sp.*	Eucalypt	82	Dead		retain
278	*Eucalyptus sp.*	Eucalypt	76	Dead		retain
279	*Eucalyptus sp.*	Eucalypt	73	Dead	SmallHollows	retain
280	*Eucalyptus sp.*	Eucalypt	103	Dead		retain
273	*Eucalyptus sp.*	Eucalypt	96	Dead		retain
275	*Eucalyptus sp.*	Eucalypt	106	Dead		retain
276	*Eucalyptus sp.*	Eucalypt	83	Dead		retain

TREE ID	SCIENTIFIC NAME	COMMON NAME	DBH	NOTES	HABITAT	RETENTION
285	*Eucalyptus sp.*	Eucalypt	76	Dead		retain
287	*Eucalyptus sp.*	Eucalypt	98	Dead		retain
288	*Eucalyptus sp.*	Eucalypt	108	Dead		retain
281	*Eucalyptus sp.*	Eucalypt	78	Dead		retain
282	*Eucalyptus sp.*	Eucalypt	91	Dead		retain
284	*Eucalyptus sp.*	Eucalypt	70	Dead		retain
291	*Eucalyptus sp.*	Eucalypt	96	Dead		retain
292	*Eucalyptus sp.*	Eucalypt	100		MedHollows	retain
301	*Eucalyptus sp.*	Eucalypt	82	Dead	LargeHollows	retain
297	*Eucalyptus sp.*	Eucalypt	76	Dead		retain
300	*Eucalyptus sp.*	Eucalypt	99	Dead	MedHollows	retain
306	*Eucalyptus sp.*	Eucalypt	76	Dead		retain
577	*Eucalyptus sp.*	Eucalypt	101	Dead		retain
580	*Eucalyptus sp.*	Eucalypt	75	Dead Estimated	SmallHollows	retain
589	*Eucalyptus sp.*	Eucalypt	120	Dead Estimated		retain
587	*Eucalyptus sp.*	Eucalypt	140	Dead Estimated	MedHollows	retain
588	*Eucalyptus sp.*	Eucalypt	80	Dead Estimated		retain
593	*Eucalyptus sp.*	Eucalypt	87	Estimated		retain
594	*Eucalyptus sp.*	Eucalypt	100	Dead Estimated	SmallHollows	retain
596	*Eucalyptus sp.*	Eucalypt	85	Dead Estimated		retain
623	*Eucalyptus sp.*	Eucalypt	80	Dead Estimated	Cracks	retain
620	*Eucalyptus sp.*	Eucalypt	75	Dead Estimated	Cracks	retain
625	*Eucalyptus sp.*	Eucalypt	100	Dead Estimated	Cracks	retain
518	*Eucalyptus sp.*	Eucalypt	115	Dead	MedHollows	retain
519	*Eucalyptus sp.*	Eucalypt	74	Dead		retain
520	*Eucalyptus sp.*	Eucalypt	74	Dead		retain
513	*Eucalyptus sp.*	Eucalypt	100	Dead Estimated	MedHollows	retain
514	*Eucalyptus sp.*	Eucalypt	120	Dead		retain
516	*Eucalyptus sp.*	Eucalypt	70	Dead		retain
522	*Eucalyptus sp.*	Eucalypt	83	Dead		retain
524	*Eucalyptus sp.*	Eucalypt	86	Dead		retain
533	*Eucalyptus sp.*	Eucalypt	120	Dead Estimated	Cracks	retain
534	*Eucalyptus sp.*	Eucalypt	80	Dead Estimated	LooseBark	retain
535	*Eucalyptus sp.*	Eucalypt	80	Dead Estimated		retain
536	*Eucalyptus sp.*	Eucalypt	80	Dead Estimated	LooseBark	retain
542	*Eucalyptus sp.*	Eucalypt	156	Dead		retain
543	*Eucalyptus sp.*	Eucalypt	89	Dead		retain
537	*Eucalyptus sp.*	Eucalypt	100	Dead Estimated		retain

TREE ID	SCIENTIFIC NAME	COMMON NAME	DBH	NOTES	HABITAT	RETENTION
538	*Eucalyptus sp.*	Eucalypt	90	Dead Estimated	MedHollows	retain
540	*Eucalyptus sp.*	Eucalypt	75	Dead		retain
550	*Eucalyptus sp.*	Eucalypt	100	Dead Estimated	SmallHollows	retain
558	*Eucalyptus sp.*	Eucalypt	90	Dead Estimated	SmallHollows	retain
554	*Eucalyptus sp.*	Eucalypt	124			retain
565	*Eucalyptus sp.*	Eucalypt	95	Dead Estimated	MedHollows	retain
568	*Eucalyptus sp.*	Eucalypt	77			retain
573	*Eucalyptus sp.*	Eucalypt	80	Dead Estimated	MedHollows	retain
575	*Eucalyptus sp.*	Eucalypt	80	Dead Estimated	SmallHollows	retain
197	*Eucalyptus sp.*	Eucalypt	125	Dead	SmallHollows	retain
200	*Eucalyptus sp.*	Eucalypt	115	Dead	SmallHollows	retain
194	*Eucalyptus sp.*	Eucalypt	110	Dead Estimated		retain
6	*Eucalyptus viminalis*	Manna Gum	100	Estimated	MedHollows	retain
123	*Eucalyptus viminalis*	Manna-gum	102			retain
205	*Eucalyptus viminalis*	Manna Gum	102			retain
206	*Eucalyptus viminalis*	Manna Gum	89			retain
207	*Eucalyptus viminalis*	Manna Gum	77			retain
208	*Eucalyptus viminalis*	Manna Gum	103			retain
202	*Eucalyptus viminalis*	Manna Gum	95			retain
204	*Eucalyptus viminalis*	Manna Gum	75			retain
210	*Eucalyptus viminalis*	Manna Gum	105			retain
218	*Eucalyptus viminalis*	Manna Gum	99			retain
232	*Eucalyptus viminalis*	Manna Gum	127			retain
238	*Eucalyptus viminalis*	Manna Gum	100			retain
240	*Eucalyptus viminalis*	Manna Gum	83			retain
233	*Eucalyptus viminalis*	Manna Gum	102			retain
236	*Eucalyptus viminalis*	Manna Gum	127			retain
130	*Eucalyptus viminalis*	Manna Gum	80			retain
142	*Eucalyptus viminalis*	Manna Gum	114			retain
151	*Eucalyptus viminalis*	Manna Gum	109			retain
152	*Eucalyptus viminalis*	Manna Gum	161			retain
157	*Eucalyptus viminalis*	Manna Gum	160		MedHollows	retain
160	*Eucalyptus viminalis*	Manna Gum	129			retain
153	*Eucalyptus viminalis*	Manna Gum	74			retain
154	*Eucalyptus viminalis*	Manna Gum	83			retain
155	*Eucalyptus viminalis*	Manna Gum	116			retain
156	*Eucalyptus viminalis*	Manna Gum	127			retain
165	*Eucalyptus viminalis*	Manna Gum	98			retain

TREE ID	SCIENTIFIC NAME	COMMON NAME	DBH	NOTES	HABITAT	RETENTION
161	*Eucalyptus viminalis*	Manna Gum	140			retain
162	*Eucalyptus viminalis*	Manna Gum	162			retain
163	*Eucalyptus viminalis*	Manna Gum	134			retain
164	*Eucalyptus viminalis*	Manna Gum	82			retain
175	*Eucalyptus viminalis*	Manna Gum	100	Estimated	MedHollows	retain
182	*Eucalyptus viminalis*	Manna Gum	72			retain
192	*Eucalyptus viminalis*	Manna Gum	153			retain
185	*Eucalyptus viminalis*	Manna Gum	85			retain
186	*Eucalyptus viminalis*	Manna Gum	103			retain
187	*Eucalyptus viminalis*	Manna Gum	145			retain
188	*Eucalyptus viminalis*	Manna Gum	138			retain
70	*Eucalyptus viminalis*	Manna Gum	98			retain
78	*Eucalyptus viminalis*	Manna Gum	70			retain
88	*Eucalyptus viminalis*	Manna Gum	120	Estimated		retain
81	*Eucalyptus viminalis*	Manna Gum	85		SmallHollows	retain
94	*Eucalyptus viminalis*	Manna Gum	75	Estimated		retain
89	*Eucalyptus viminalis*	Manna Gum	89			retain
111	*Eucalyptus viminalis*	Manna Gum	105			retain
112	*Eucalyptus viminalis*	Manna Gum	103		SmallHollows	retain
125	*Eucalyptus viminalis*	Manna Gum	109			retain
127	*Eucalyptus viminalis*	Manna Gum	85			retain
122	*Eucalyptus viminalis*	Manna Gum	101			retain
5	*Eucalyptus viminalis*	Manna Gum	90	Estimated		retain
7	*Eucalyptus viminalis*	Manna Gum	70	Estimated		retain
3	*Eucalyptus viminalis*	Manna Gum	70			retain
4	*Eucalyptus viminalis*	Manna Gum	85	Estimated		retain
21	*Eucalyptus viminalis*	Manna Gum	80			retain
24	*Eucalyptus viminalis*	Manna Gum	99		MedHollows	retain
18	*Eucalyptus viminalis*	Manna Gum	110			remove
19	*Eucalyptus viminalis*	Manna Gum	99		MedHollows	retain
20	*Eucalyptus viminalis*	Manna Gum	115	Dead Estimated		retain
455	*Eucalyptus viminalis*	Manna Gum	87			retain
452	*Eucalyptus viminalis*	Manna Gum	107			retain
464	*Eucalyptus viminalis*	Manna Gum	74			retain
457	*Eucalyptus viminalis*	Manna Gum	102			retain
458	*Eucalyptus viminalis*	Manna Gum	81			retain
459	*Eucalyptus viminalis*	Manna Gum	73			retain
471	*Eucalyptus viminalis*	Manna Gum	76			retain

TREE ID	SCIENTIFIC NAME	COMMON NAME	DBH	NOTES	HABITAT	RETENTION
482	*Eucalyptus viminalis*	Manna Gum	95			retain
493	*Eucalyptus viminalis*	Manna Gum	71			retain
494	*Eucalyptus viminalis*	Manna Gum	113			retain
495	*Eucalyptus viminalis*	Manna Gum	77			retain
496	*Eucalyptus viminalis*	Manna Gum	93			retain
492	*Eucalyptus viminalis*	Manna Gum	118		Cracks	retain
497	*Eucalyptus viminalis*	Manna Gum	119			retain
392	*Eucalyptus viminalis*	Manna Gum	85			retain
386	*Eucalyptus viminalis*	Manna Gum	120			retain
387	*Eucalyptus viminalis*	Manna Gum	75			retain
388	*Eucalyptus viminalis*	Manna Gum	78			retain
393	*Eucalyptus viminalis*	Manna Gum	83			retain
444	*Eucalyptus viminalis*	Manna Gum	85			retain
323	*Eucalyptus viminalis*	Manna Gum	115			remove
334	*Eucalyptus viminalis*	Manna Gum	70			remove
341	*Eucalyptus viminalis*	Manna Gum	99			retain
342	*Eucalyptus viminalis*	Manna Gum	92			retain
343	*Eucalyptus viminalis*	Manna Gum	78			retain
344	*Eucalyptus viminalis*	Manna Gum	77			retain
337	*Eucalyptus viminalis*	Manna Gum	82			remove
345	*Eucalyptus viminalis*	Manna Gum	90			retain
347	*Eucalyptus viminalis*	Manna Gum	94			retain
357	*Eucalyptus viminalis*	Manna Gum	73			retain
358	*Eucalyptus viminalis*	Manna Gum	90		LooseBark	retain
359	*Eucalyptus viminalis*	Manna Gum	137			retain
360	*Eucalyptus viminalis*	Manna Gum	112			retain
355	*Eucalyptus viminalis*	Manna Gum	75			retain
366	*Eucalyptus viminalis*	Manna Gum	102			retain
361	*Eucalyptus viminalis*	Manna Gum	78			retain
362	*Eucalyptus viminalis*	Manna Gum	74			retain
363	*Eucalyptus viminalis*	Manna Gum	86			retain
376	*Eucalyptus viminalis*	Manna Gum	106			retain
381	*Eucalyptus viminalis*	Manna Gum	80			retain
383	*Eucalyptus viminalis*	Manna Gum	88			retain
384	*Eucalyptus viminalis*	Manna Gum	75	Estimated		retain
377	*Eucalyptus viminalis*	Manna Gum	93			retain
380	*Eucalyptus viminalis*	Manna Gum	106			retain
309	*Eucalyptus viminalis*	Manna Gum	103			remove

TREE ID	SCIENTIFIC NAME	COMMON NAME	DBH	NOTES	HABITAT	RETENTION
310	*Eucalyptus viminalis*	Manna Gum	88			remove
319	*Eucalyptus viminalis*	Manna Gum	80			remove
615	*Eucalyptus viminalis*	Manna Gum	78			retain
622	*Eucalyptus viminalis*	Manna Gum	87			retain
630	*Eucalyptus viminalis*	Manna Gum	70			retain
632	*Eucalyptus viminalis*	Manna Gum	72	Dead		retain
549	*Eucalyptus viminalis*	Manna Gum	90			retain
545	*Eucalyptus viminalis*	Manna Gum	94			retain
546	*Eucalyptus viminalis*	Manna Gum	91			retain
199	*Eucalyptus viminalis*	Manna Gum	107			Retain
193	*Eucalyptus viminalis*	Manna Gum	127			retain

*Tree DBH was estimated when dead overhanging branches made measuring unsafe

ABOUT US

WSP is one of the world's leading engineering professional services consulting firms. We are dedicated to our local communities and propelled by international brainpower. We are technical experts and strategic advisors including engineers, technicians, scientists, planners, surveyors, environmental specialists, as well as other design, program and construction management professionals. We design lasting Property & Buildings, Transportation & Infrastructure, Resources (including Mining and Industry), Water, Power and Environmental solutions, as well as provide project delivery and strategic consulting services. With approximately 48,000 talented people globally, we engineer projects that will help societies grow for lifetimes to come.