VICTORIAN PLANNING AUTHORITY

JANUARY 2024

PUBLIC

CROSKELL PRECINCT STRUCTURE PLAN

BIODIVERSITY ASSESSMENT UPDATE

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Croskell Precinct Structure Plan
Biodiversity Assessment Update

Victorian Planning Authority

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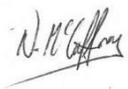
Approved by:	Nic McCaffrey	23/03/2022 08/05/2023	

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ACKNOWLEDGEMENTS

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DEECA for access to the Victorian Biodiversity Atlas (VBA) database and Biodiversity Interactive Maps.

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GLOSSARY

DELWP Advisory list	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.
CaLP Act	State *Catchment and Land Protection Act 1994*
Canopy tree	See 'Native Canopy Tree'.
CMA	Catchment Management Authority (area).
Department of Energy, Environment and Climate Action (DEECA)	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 Climate Change, Energy, the Environment and Water (DCCEEW)	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 Agriculture, Water and the Environment was previously known as: — Department of the Environment and Energy (DoEE) — Department of Sustainability, Environment, Water, Population and Communities (SEWPAC). — Department of the Environment, Water, Heritage and the Arts (DEWHA). — Department of Environment and Heritage (DEHP). — 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.
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
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 study area 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.
LGA	Local Government Authority – Casey Rural City Council
Likely	Taken to be a real chance or possibility.
Locality	The area within a 5 km radius of the study area.
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.
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.
Melbourne Strategic Assessment (MSA)	The Melbourne Strategic Assessment (Environment Mitigation Levy) Act 2020 establishes a new Victorian legislative framework for the existing Melbourne Strategic Assessment program. It imposes a levy to fund mitigation measures for impacts on biodiversity caused by the development of Melbourne's growth corridors.

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.
Offset (state)	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 (state)	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.
Project area	The areas for which planning approvals are sought as part of the project. This is also discussed as the study area in this report.
Protected species	Those species defined as protected under the *Flora and Fauna Guarantee Act 1988, Environment Protection and Biodiversity Conservation Act 1999* or DELWP Advisory Lists.

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.
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 (species)	Important, weighty or more than ordinary; typically used to describe the importance of a species or community of conservation significance at local, regional, state or federal levels.
Significant impact	As defined by DAWE: A 'significant impact' is an impact which is important, notable, or of consequence, having regard to its context or intensity.
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*
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.

REPORT SUMMARY

INTRODUCTION

The Victorian Planning Authority engaged WSP Australia Pty Limited (WSP) in 2021 to undertake an ecological Biodiversity Assessment – BA, to inform and facilitate future development of the proposed Croskell Precinct Structure Plan (PSP) Area, WSP was then again required in 2023 to assess an additional area to be included in the Croskell PSP. The focus of this BA is the 45.73 ha area of the proposed Croskell Precinct outside of the Melbourne Strategic Assessment – MSA, area, to which the clause 52.17/16 would apply.

This report includes an ecological assessment to determine the project's likely impacts and the likely implications of development under pertinent legislation including the *Environmental Protection and Biodiversity Conservation Act 1999*, (EPBC Act) the *Flora and Fauna Guarantee Act 1988* (FFG Act), and the *Planning and Environment Act 1987* (P&E Act).

METHODS

A 5 km database search and literature review were undertaken for an indication of the ecological values of the study area, and potential ecological constraints to the project. This review was used to prepare a list of threatened flora and fauna species, ecological communities, listed migratory species and any significant habitat previously recorded or predicted to occur in the study area and the broader locality (listed under the EPBC Act and FFG Act)

A site assessment was undertaken by WSP ecologists on 01 December 2021 covering the originally proposed precinct area, and again on 24 January 2023 to cover the additional area to be included in the Croskell PSP. and involved mapping native vegetation patches and scattered trees as per The *Guidelines for the removal, destruction or lopping of native vegetation* (DELWP, 2017c) (the Guidelines). Habitat Hectare assessments were undertaken as per the *Vegetation Quality Assessment Manual* (DSE, 2004), and incidental flora and fauna observations were recorded and potential fauna habitat assessed.

Targeted Surveys for EPBC Vulnerable Growling Grass Frog *Litoria raniformis* were undertaken on 15th December 2021 and 21st December 2021 at suitable habitat in a large dam in the west of the study area. These surveys were undertaken to determine if dispersal habitat that crosses the south of the study area in a grassy channelised drain, would be utilised by this species. Surveys were undertaken in accordance with the survey guidelines in the *Significant impact guidelines for the vulnerable growling grass frog Litoria raniformis (DEWHA, 2009)* and the *Survey guidelines for Australia's threatened frogs* (DEWHA, 2010b). Each survey consisted of call playback, spotlighting, and hand searching. Reference sites were also checked at the beginning of each survey at known locations of Growling Grass Frog.

RESULTS

The study area is, in general, highly modified from its likely condition pre-European settlement, likely to have been a biodiverse woodland most attributable to Plains Grassy Woodland EVC 55 and Heathy Woodland EVC 48. Currently, the understory is highly modified by weeds and grazing to degree that indigenous understory species are effectively absent, with the exception of a small number of opportunistic colonising species recruiting across areas reserved for the purposes of revegetation along much of the eastern boundary. Much of the remnant canopy has been cleared, canopy trees persist along the eastern boundary amongst areas of revegetation.

No Growling Grass Frogs were recorded during targeted surveys around Croskell Precinct. Due to a lack of local recent records, and an absence of Growling Grass Frogs during targeted surveys, this species is considered absent around the Study area, and is considered unlikely to utilise the shallow channelised drain crossing the study area.

POTENTIAL IMPACTS AND LEGISLATIVE IMPLICATIONS

There is considered limited value in the retention of sporadic occurrences of low quality remnant native vegetation where it occurs across the precinct. Clearance of all patches of remnant native vegetation plus a DEECA Current Wetland (wetland ID 71150), totalling 1.897 hectares, identified in the field assessment is considered required for the development of the precinct.

Environment Protection and Biodiversity Conservation (EPBC) Act 1999

Development of the precinct has been assessed as having a low likelihood of impacting EPBC Act listed Matters of National Environmental Significance – MNES. A referral to the Department of Agriculture, Water and Environment (DAWE) under the EPBC Act is therefore not recommended.

Environment Effects Act 1978

Assessing against both individual and cumulative criteria (relating to ecological matters) set out in the *Ministerial guidelines for assessment of environmental effects under the Environment Effects Act 1978* (DSE, 2006), an EES is highly unlikely to be triggered due to the small area of impact. As such an EES self-assessment and referral is not considered necessary for ecological matters.

Flora and Fauna Guarantee Act 1988 (FFG Act)

There are no potential impacts to flora or fauna species, or communities listed under the FFG Act.

There were no Protected FFG Act flora species observed within the study area will require a permit to take.

Sallow Wattle *#Acacia longifolia subsp. sophorae,* Giant Honey-myrtle #*Melaleuca armillaris subsp. armillaris* (Endangered) and Spotted Gum #*Corymbia maculata* (Vulnerable) were observed on site but these two species are considered non indigenous to the study area and therefore no permit will be required for their removal.

Guidelines for the removal, destruction or lopping of native vegetation

The offset targets to satisfy clause 52.17/16 or the planning scheme are for modest amounts of General Habitat Units per allotment only, and 0 Large Trees. General habitat units are typically readily available.

Offset requirements have been provided on a per property basis and as per table 4 of Appendix 1 to *Preparing a Native Vegetation Precinct Plan December 2017* (DELWP, 2017d) in table Table 6.5.

RECOMMENDATIONS

The following recommendations are provided to further avoid or reduce impacts to ecological values:

1 Further efforts should be made to avoid and minimise impacts to native vegetation:

- **a)** Reduction of impacts to Scattered Trees surrounding the project area by developers is recommended where possible.
- **b)** Reduction of impacts to native vegetation across the wider precinct to the west within the MSA is recommended.
- **c)** It is recommended that new roads to access to the development be minimised, and that access for construction be via existing routes to avoid impacts to native vegetation supported by roadsides

2 Revegetation of the modified watercourse and large dam in the west of the study area with indigenous species would provide a habitat resource for small native species local to the study area such as reptiles, birds and frogs. Revegetation of canopy using indigenous species throughout the precinct would also provide a refuge and foraging resource for birds dispersing throughout the landscape, as well as opportunities for residents to connect with nature.

It is recommended that the Current Wetland (wetland ID 71150) be retained, and apart of revegetation efforts.

3 In considering minimising impacts to native vegetation across the precinct it is recommended that consideration be given to tree canopy and shrub percentage covers detailed as Action 2.1 in *Living Melbourne; our metropolitan urban forest* (The Nature Conservancy and Resilient Melbourne, 2019), and Table 2 therein. Table 2 details tree % canopy targets of 30% to be achieved by 2050. The retention of indigenous trees across the wider precinct would assist in achieving this target.

4 It is recommended that native vegetation mapping, and offset requirements are incorporated into a Precinct Structure Plan – PSP. The PSP to include the mapped areas shown in appendix C-2 to indicate where a permit will be required for the removal of native vegetation.

5 It is recommended an arborist be consulted regarding the retention of indigenous trees within the MSA where possible to inform precinct design.

1 INTRODUCTION

The Victorian Planning Authority engaged WSP Australia Pty Limited (WSP) to undertake an ecological Biodiversity Assessment – BA, to inform and facilitate future development of the Croskell Precinct Structure Plan (PSP) Area. The focus of this BA is the area of the proposed Croskell Precinct outside of the Melbourne Strategic Assessment – MSA, area, to which the clause 52.17/16 would apply.

This report includes an ecological assessment to determine the projects likely impacts and the likely implications of development under pertinent legislation including the *Environmental Protection and Biodiversity Conservation Act 1999*, (EPBC Act) the *Flora and Fauna Guarantee Act 1988* (FFG Act), and the *Planning and Environment Act 1987* (P&E Act).

1.1 PROJECT SCOPE

The following scope of work was defined for this biodiversity assessment:

- Complete a desktop review of flora and fauna databases, aerial imagery, and relevant biodiversity policies and legislation
- Identify, assess, and map native vegetation and habitat in the precinct area, including a determination of conservation significance.
- Collect data at sufficient detail and standard to inform a Biodiversity Assessment and potentially a NVPP to be developed, in accordance with *Preparing a Native Vegetation Precinct Plan December 2017* (DELWP, 2017d).
- Collect and present information about biodiversity values to allow integration with the planning and development of the precinct.
- 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.
- Identify areas of degraded vegetation which may be suitable for regeneration.

A report update requested in November 2022 added to this scope to cover the addition of the remainder of 1450 Thompsons Road into the PSP area:

- Collecting additional site data for the additional study in the same manner as above
- Updated all the necessary components of this report to include these findings.

1.2 PROJECT AREA

The project area for this assessment is the proposed Croskell Precinct outside of the MSA area, and is located between Pitfield Avenue and Thompsons Road, Cranbourne East, Victoria. The study area is within Casey Local Government Area (LGA), the Port Phillip Catchment Management Authority (CMA) region and the Gippsland Plain Bioregion (DELWP, 2022).

1.3 STUDY AREA

The boundary of the study area for this assessment is a buffer of 20 meters (m) surrounding the proposed project area, and additional areas included to allow for access, which are not shown on the design but are likely to be required – See Appendix C-2. A 20 m buffer is used to capture any large trees and associated tree protection zones that may be impacted due to the proposed works. The 20 m buffer also provides for the capture of fauna habitats contiguous with possible

impact areas within the project area. The proposed precinct covers approximately 317.71 ha total. 271.98 ha of this is inside the Melbourne Strategic Assessment (MSA) and does not require a biodiversity assessment. Of the proposed precinct, 45.73 ha of this is outside the MSA and therefore requires a biodiversity assessment and will be the study area for this report. The study area is zoned Farming Zone 2 – FZ2, under the Casey Planning Scheme. The additional 2023 study area to include the remainder of 1450 Thompsons Road within the Croskell PSP (an area of approximately 13.17 ha) is zoned as General Residential Zone – GRZ1 under the Casey Planning Scheme.

The project area and study area are shown on Figure 1.1 below.

wsp

Croskell Precinct Structure Plan

Figure 1.1
Study Area

Legend

- Study Area 2024 – Additional PSP Inclusion
- Study Area 2022
- Total Precinct Area
- Melbourne Strategic Assessment
- Cadastre

0 130 260
Meters

Coordinate system: GDA2020 MGA Zone 55

Scale ratio correct when printed at A3

1:12,500 Date: 25/01/2024

Data sources: DELWP 2022, WSP 2022, Nearmap

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2 METHODOLOGY

2.1 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 ecological 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 (km) radial buffer of the study area.

This review was used to prepare a list of threatened flora and fauna species, ecological communities, listed migratory species and any significant habitat previously recorded or predicted to occur in the study area and the broader locality. The following sources of information were consulted:

- the Department of Environment, Land, Water and Planning (DELWP) NatureKit online tool (DELWP, 2021b)
- the Victorian Biodiversity Atlas – 5 km buffer of the study area (DELWP, 2021c)
- Commonwealth EPBC Act Protected Matters Search Tool (PMST) – 5 kilometre buffer of the study area (DAWE, 2021)
- The *Guidelines for the removal, destruction or lopping of native vegetation* (DELWP, 2017c)
- Assessor's Handbook Applications to remove destroy or lop native vegetation (DELWP, 2018a)
- Biodiversity Information Tools used in Victoria's Native Vegetation Permitted Clearing Regulations and the Native Vegetation Information Management System (DELWP, 2021a)
- Vegetation Quality Assessment Manual (DSE, 2004)
- Preparing a Native Vegetation Precinct Plan (DELWP, 2017d)
- aerial imagery to determine habitat extents and linkages
- relevant legislation, government policy and strategies.

2.2 SITE ASSESSMENT

A site assessment was undertaken by WSP ecologists on 1 December 2021 and again to cover the additional study area on the 24 January 2023. Results of this assessment are provided in Section 3. The following sections detail the methodology of this site assessment.

2.2.1 CATEGORISING VEGETATION WITHIN THE STUDY AREA

Field validation (or ground-truthing) of extant vegetation modelling (DEPI, 2009) was undertaken to map and assess native vegetation as per the Guidelines (DELWP, 2017c).

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 as follows.

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'(DELWP, 2019).

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 if they did not meet the criteria for a remnant patch.

2.2.2 HABITAT HECTARE ASSESSMENTS

Habitat hectare assessments were undertaken on a remnant patches of native vegetation to determine the condition of the vegetation in the context of the local area and the relevant bioregion (Gippsland Plain). 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 Ecological Vegetation Class (EVC). Each EVC has a benchmark of optimal values which are found on DEECAs website (DELWP, 2021a). 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 in the Melbourne area, 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.

Habitat hectare assessments were undertaken on 1 December 2021 by one ecologist – Justin Pegg, who is a DEECA (now called DEECA) accredited Vegetation Quality Assessor. Assessments were also undertaken on the 24th January 2023 by one ecologist – Pat Monarca, who is also a DEECA accredited Vegetation Quality Assessor.

2.2.3 REVEGETATION CATEGORISATION

Revegetation is extensive at some sites and can have different implications and exemptions under local planning laws under the local Council Planning Scheme. For the purposes of categorising vegetation in the study area, the following categories are used.

Table 2.1 Revegetation categories used for mapping

REVEGETATION / PLANTING MAPPING CATEGORY	DESCRIPTION	PLANNING IMPLICATIONS
Indigenous	Indigenous to a local area. Described by Pysek et al (2004) and adopted by Royal Botanic Gardens Melbourne (2016), defined as 'taxa that have originated in a given area without human involvement or that have arrived there without intentional or unintentional intervention of humans from an area in which they are native'.	There are certain exemptions under all Victorian Planning Schemes, Clause 52.17/16 'planted vegetation', particularly if the vegetation has been planted for aesthetic or amenity purposes.
Native to Victoria	Non-indigenous to the local area but native to Victoria (e.g. Bangalay *#Eucalyptus botryoides*, Giant Honey-myrtle *#Melaleuca armillaris*). Defined in Victorian Planning Provisions – Definitions – Clause 72 as *'Plants that are indigenous to Victoria, including trees, shrubs, herbs, and grasses'.*	If vegetation is not exempt as above, it may require a permit for removal.
Native to Australia	Non-indigenous Australian native plants or vegetation (non-indigenous to Victoria) (e.g. Sugar Gums *#Eucalyptus cladocalyx*).	Usually do not require a permit for removal but are identified to show these have not been overlooked.
Exotic	Exotic plants evolving/originating oversees (e.g. Monterey Cypress * *Hesperocyparis macrocarpa*).	Do not require a permit for removal for ecology related matters. These are identified to show these have not been overlooked.

2.2.4 FAUNA 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. Fauna habitat assessments were undertaken during the site assessment on 1 December 2021.

2.2.4.1 TARGETED SURVEYS FOR EPBC LISTED GROWLING GRASS FROG *LITORIA RANIFORMIS*

Targeted Surveys for EPBC Vulnerable Growling Grass Frog *Litoria raniformis* were undertaken on 15th December 2021 and 21st December 2021 at suitable habitat in a large dam in the west of the study area. these surveys were undertaken to determine if dispersal habitat that crosses the south of the study area in a grassy channelised drain, would be utilised by this species.

Surveys were undertaken in accordance with the survey guidelines in the *Significant impact guidelines for the vulnerable growling grass frog (Litoria raniformis)* (DEWHA, 2009) and the *Survey guidelines for Australia's threatened frogs* (DEWHA, 2010b). It was considered acceptable for the purposes of a presence or absence determination undertaking the surveys on 15th December 2021 and 21st December 2021 as conditions were as per these survey guidelines. Temperatures were above the suggested minimum being day time temperatures of 15℃ and night time temperatures of 12℃. Wind speed at the time of survey was also within ranges specified, of 'moderate to no wind' with speeds recorded between 3 - 9 km/hr. Each survey consisted of call playback, spotlighting, and hand searching.

Reference sites (call playback only) were also checked at the beginning of each survey at locations where Growling Grass Frogs were detected in December 2021 (DELWP, 2018b). The reference location was in Koo Wee Rup VIC 3981 just south of the South Gippsland Highway between Lyalls Inlet and Cardinia Creek near Western Port Bay (38°12'48.1"S 145°25'52.0"E)

Table 2.2 Growling Grass Frog survey details

DATE	SURVEY POINT	TEMP	WIND (KM/H)	DIRECTION	TIME START	TIME FINISH	HUMIDITY (%)
Survey 1							
15/12/2021	Ref check 1	16.5ºC	6	SSW	20:22	20:29	60
	Croskell Dam check 1	18.2ºC	3	S	21:28	22:07	40
Survey 2							
21/12/2021	Ref check 2	16.1ºC	9	SSW	21:16	21:50	79
	Croskell Dam check 2	17.2ºC	7	S	22:45	23:15	45

2.3 LIKELIHOOD OF OCCURRENCE

The 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 2.3 below. This method uses the habitat requirements of the species, outcomes of an on-site 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 2.3 Likelihood of occurrence criteria for threatened flora and fauna species in Croskell Study Area

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.
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.

LIKELIHOOD	DESCRIPTION
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 study area during regular seasonal movements or migration.
Recorded	Recorded/observed during field surveys.

2.4 PLANT IDENTIFICATION

Flora species that could not be identified to species in the field were recorded to the nearest likely 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.

2.5 LEGISLATION AND POLICY

The project was assessed against the following key biodiversity-relevant legislation and policy including:

- *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).
- *Flora and Fauna Guarantee Act 1988* (FFG Act), and the *Flora and Fauna Guarantee Amendment Act 2019* (the Amendment Act).
- *Planning and Environment Act 1987* (P&E Act) in relation to the Casey Planning Scheme (Planning Scheme).
  - Clause 52.17/16 – *Guidelines for the removal, destruction or lopping of native vegetation* (Guidelines).
- *Melbourne Strategic Assessment (Environmental Mitigation Levy) Act 2020* (MSA Act).
- *Catchment and Land Protection Act 1994* (CaLP Act).
- *Wildlife Act 1975*.
- *Environmental Effects Act 1978* (EE Act).

This legislation and policy is described in detail in Section 6.

The FFG Act Amendment Act 2019 came into effect on 1 June 2020. As part of the amendments, all taxa of flora and fauna listed under the FFG Act, along with all taxa on the DEECA Advisory lists were given new conservation status. The Amendment also replaces the DEECA Advisory lists. Species listed under the DEECA Advisory Lists are still included within this report and conservation status provided for species recorded during the site assessment. However, implications of the Advisory Lists are not described further in this assessment.

2.6 LIMITATIONS

A common limitation of ecological surveys is the short time period over which they are undertaken and the lack of seasonal sampling, which can lead to lack of detection of some species. Site conditions, including the presence of threatened species and extent of threatened communities, can change with time. The results are indicative of the environmental conditions at the time of assessment, including the presence or otherwise of species.

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 is known to occur regionally.

Targeted surveys for Growling Grass Frog were undertaken on warmer evenings in December 16-18 ºC and these weather parameters matched Federal Guidelines for this species (DEWHA, 2009, DEWHA, 2010a). these surveys are considered adequate for determining presence/or absence of this species, and is not considered a limitation of this assessment.

2.7 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 (03.13) 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 AERIAL IMAGERY

Much of the surrounding lands appear to be predominantly cleared and utilised for agricultural purposes (Google, 2021). Vegetation within the study area appears to consist of revegetation associated with the north-eastern portion of the study area. The northern section of the study area appears to be cultivated for agricultural purposes. The middle and southern section of the site appear an open grassland with few trees. The western border of the study area supports woody vegetation. Surrounding the study area are farm-style dams, agricultural pastures and residential housing.

Additionally, aerial imagery indicates significant barriers to fauna movement surround the study area, including urban development mostly surrounding the study area, with openings facilitating the passage of powerlines.

3.1.2 VBA AND PMST SEARCH RESULTS

The VBA and PMST were searched on 22 November 2021 for records of species of state and/or national conservation significance within a 5 km radius of the study area. The results are summarised in the paragraphs below. The full likelihood of occurrence assessment is provided as Appendix B.

3.1.2.1 FLORA SPECIES

VBA and PMST searches retuned a total of 29 significant flora species recorded, or predicted to occur, within 5 kms of the study area. Of these, 4 species are listed under the EPBC Act and 25 are listed under the FFG Act only. Consideration of significant flora species returned by database searches is done with reference to the habitat values of the study area. Summaries of species considered likely to occur are provided in Sections 3.2.2.2.

3.1.2.2 FAUNA SPECIES

VBA and PMST searches retuned a total of 63 significant fauna species recorded, or predicted to occur, within 5 kms of the study area. Of these, 14 species are listed under the EPBC Act as threatened, 13 species are listed under the EPBC Act as migratory but without a threatened conservation significance, and 36 species are listed under the FFG Act only. Consideration of significant fauna species returned by database searches is done with reference to the habitat values of the study area. Summaries of species considered likely to occur are provided in Section 3.2.3.4.

3.1.3 EXTANT VEGETATION MODELLING

Within the study area, extant vegetation modelling (DEPI, 2009) indicated the scattered and fragmented presence of 0.56 ha of Plains Grassland EVC 132 and Plains Grassy Woodland Mosaic EVC 55 mosaic and 0.98 ha of Heathy Woodland EVC 48. EVCs 132 and 55 are considered endangered and EVC 48 is considered Least Concern within the Gippsland Plain bioregion. A map of the modelled EVCs is provided in Appendix C-1.

3.1.4 ECOLOGICAL COMMUNITIES

EPBC ACT LISTED THREATENED ECOLOGICAL COMMUNITIES

The PMST identified three threatened ecological communities (TECs), listed under the EPBC Act that are likely to occur within the study area. These are listed in Table 3.1 below.

No EVCs modelled within the study area are synonymous with any of the TEC’s returned by the PMST query.

Table 3.1 EPBC listed communities likely to occur in the Croskell study area

COMMUNITY NAME	LISTING	PRESENCE
Natural Damp Grassland	Critically Endangered	Does not occur
Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains	Critically Endangered	Does not occur
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Does not occur

3.1.4.1 FFG ACT LISTED THREATENED COMMUNITIES

No remnant vegetation on site aligns with the description of any FFG ACT Threatened Communities.

3.2 SITE ASSESSMENT RESULTS

3.2.1 GENERAL SITE CONDITION

The study area is, in general, highly modified from its condition pre-European settlement. Prior to colonial settlement the study area would have been a biodiverse grassy woodland. Currently, within the proposed study area the remnant understory is highly modified by weeds and agricultural utilisation to a degree that indigenous understory species are effectively absent, with the exception of some opportunistic colonising species recruiting across areas reserved for the purposes of revegetation along much of the eastern boundary of the study area. Much of the remnant canopy has been cleared.

Woody vegetation on site is primarily of Australian native or exotic revegetation, or indigenous revegetation that may be attributable to Plains Grassy Woodland *EVC 55*. Otherwise, a few small patches of low quality remnant vegetation persists attributable to Heathy Woodland *EVC 48*, Swamp Shrub *EVC 53* and Plains Grassy Woodland *EVC 55* along the eastern and northern borders of the study area. Low quality patches of Aquatic Herbland *EVC 653* could be seen surrounding the dam as well as a small patch of Tall Marsh *EVC 821* and two very small patches Plains Grassy Woodland *EVC 55*.

A large farm-style dam is situated within the study area (now included in the broader study area 2023), a highly modified weedy watercourse runs from this dam, south-east across the study area.

3.2.2 FLORA

A total of 57 vascular plant species were recorded across the study area during the site assessments, of which 17 were indigenous, 34 were introduced species and five were non-indigenous native species. A list of the species recorded can be located in Appendix A.

3.2.2.1 VEGETATION DESCRIPTIONS

Vegetated supported by the study area are best described by being either:

- modified exotic understory
- woody revegetation
- remnant patches
- scattered trees

These vegetation types are represented across the study area and are discussed below.

MODIFIED EXOTIC UNDERSTORY

Understory over much of the study area is dominated by exotic herbs and grasses typical of land modified by a long history of agricultural use. These areas support a suite of opportunistic colonising species, the majority being exotic. Sporadic and scattered occurrences of indigenous species are present at low (below 25%) coverage.

Exotic graminoids observed include Toowoomba Canary-grass **Phalaris aquatica,* Yorkshire Fog * *Holcus lanatus,* Barley-grass **Hordeum leporinum,* Brown-top Bent * *Agrostis capillaris,* Sweet Vernal-grass * *Anthoxanthum odoratum,* Prairie Grass **Bromus Catharticus,* Toowoomba Canary-grass **Phalaris aquatica* and Lesser Canary-grass **Phalaris minor.*

Exotic herbs observed in these areas include Annual Rye Grass **Lolium perenne,* Ribwort **Plantago lanceolata,* Cat's Ear **Hypochoeris radicata,* Cape weed * *Arctotheca calendula,* Sheep Sorrel **Acetosella vulgaris, Brassica fruticulosa* *Twiggy Turnip, *Cenchrus clandestinus* *Kikuyu, *Cirsium vulgare* * Spear Thistle, Ox-tongue **Helminthotheca echioides,* Hairy Bird's-foot Trefoil * *Lotus subbiflorus,* Red-ink Weed **Phytolacca octandra,* Wireweed **Polygonum arenastrum,* Prostrate Knotweed **Polygonum aviculare s.l.,* Curled Dock **Rumex crispus,* Common Sow-thistle **Sonchus oleraceus* and Garden Dandelion **Taraxacum bracteatum.*

Opportunistic colonising indigenous species occur sporadically amongst exotic species in these areas. Coverage of indigenous understory species occurring amongst modified exotic understory is patchy, sporadic and below 25% of vegetative cover (the % required to form a patch).

PLANTED WOODY SPECIES

Exotic woody species have been planted sporadically around the residential dwelling in the centre of the sown crop paddocks. Five patches exotic revegetation including species such as: Kohuhu **Pittosporum tenuifolium* surround the dwelling. There is a large Ornamental Pear **Pyrus calleryana* in the centre of the paddock south of the sown paddocks. Castlewellan Golds **Cupressocyparis leylandii* line either side of the driveway at the north of the site (entrance Thompson Road).

A 1.1 ha patch of exotic revegetation surrounds the property situated in the north-east of the study area. On the western side of the properties that lay here sit two patches (totalling 0.03ha) of Australian Native Vegetation.

At the southern boundary of 1450 Thompsons Road where it meets the driveway of 350 Narre Warren Road Cranbourne East 0.2ha of Victorian native revegetation consisting of Bog Gum *Eucalyptus #kitsoniana* as well as 0.4ha of exotic revegetation consisting of Monterey Cypress **Hesperocyparis macrocarpa* (See Appendix C-2)

REMNANT PATCHES

Patches of native vegetation were identified in proximity to the project area boundary. This native vegetation is most attributable to three EVCs. Eight separate patches were mapped across the study area, combining to a total area of 0.67 ha. A summary of EVCs mapped is provided in Table 3.2 below. The extents of each EVC mapped are shown in Appendix C-2.

Table 3.2 Patches of native vegetation as attributed to Ecological Vegetation Classes mapped within the study area

EVC NUMBER	ECOLOGICAL VEGETATION CLASS	BIOREGION	BIOREGION CONSERVATION STATUS	AREA MAPPED (HA)
48	Heathy Woodland	Gippsland Plain (GipP)	Least Concern	0.020
55	Plains Grassy Woodland	Gippsland Plain (GipP)	Endangered	0.669
53	Swamp Scrub	Gippsland Plain (GipP)	Endangered	0.007
653	Aquatic Herbland	Gippsland Plain (GipP)	Endangered	0.200
821	Tall Marsh	Gippsland Plain (GipP)	Least Concern	0.009

PLAINS GRASSY WOODLAND

Most of the remnant vegetation supported by the study area is most attributable to Three patches of Plains Grassy Woodland EVC 55 were mapped within the study area. Plains Grassy Woodland is defined as:

'An open, eucalypt woodland to 15 m tall. Occupies poorly drained, fertile soils on flat or gently undulating plains at low elevations. The understorey consists of a few sparse shrubs over a species-rich grassy and herbaceous ground layer. This variant occupies areas receiving approximately 500 – 700 mm annual rainfall.' (DELWP, 2016)

Patches of Plains Grassy Woodland within the study area were predominantly due to River Red Gum *Eucalyptus camaldulensis* canopy. These three remnant patches are a highly modified example of this EVC with low understory species diversity.

EVC 55 Plains Grassy Woodland

Indigenous species present were common and opportunistic, such as Common Wallaby-grass *Rytidosperma caespitosum*, Copper-awned Wallaby-grass *Rytidosperma fulvum*, Slender Wallaby-grass *Rytidosperma racemosum* var. *racemosum*, and *Chloris truncata*, with few indigenous herbs that are typical of this EVC.

Weeds found in the patches were mainly common pasture grasses, such as **Bromus catharticus*, and Perennial Rye-grass **Lolium perenne*.

Two small patches consisting of only Blackwood *Acacia melanoxylon* were mapped surrounding the dam. Kikuyu *Cenchrus clandestinus* was present as ground cover.

HEATHY WOODLAND

Three small patches of Heathy Woodland EVC 48 occur on site. Heathy Woodland is defined as:

'Spans a variety of geologies but is generally associated with nutrient-poor soils including deep uniform sands (aeolian or outwash) and Tertiary sand/clay which has been altered to form quartzite gravel. Eucalypt-dominated low woodland to 10 m tall lacking a secondary tree layer and generally supporting a diverse array of narrow or ericoid-leaved shrubs except where frequent fire has reduced this to a dense cover of bracken. Geophytes and annuals can be quite common but the ground cover is normally fairly sparse.' (DELWP, 2016)

Patches of Heathy Woodland within the study area were predominantly due to the occurrence of Coastal Tea Tree *Leptospermum laevigatum*. These three remnant patches are a highly modified example of this EVC with no EVC 48 canopy species present and low understory species diversity.

EVC 48 Heathy Woodland

SWAMP SCRUB

One patch of Swamp Scrub EVC 53 was identified in the study area, to the south-east of the study area. Swamp Scrub is defined as:

'Closed scrub to 8 m tall at low elevations on alluvial deposits along streams or on poorly drained sites with higher nutrient availability. The EVC is dominated by Swamp Paperbark Melaleuca ericifolia (or sometimes Woolly Tea-tree Leptospermum lanigerum) which often forms a dense thicket, out-competing other species. Occasional emergent eucalypts may be present. Where light penetrates to ground level, a moss/lichen/liverwort or herbaceous ground cover is often present. Dry variants have a grassy/herbaceous ground layer.' (DELWP, 2016)

EVC 53 Swamp Scrub

A single patch of EVC 53 identified within the study area occurs on low-lying land to the north of the channelised drain in the south-east of the study area. This patch was primarily due to coverage of recruiting Swamp Paperbark *Melaleuca ericifolia.* Fringing vegetation was predominantly exotic being, for the most part, Lesser Canary-grass **Phalaris minor*.

AQUATIC HERBLAND

One patch of Aquatic Herbland EVC 653 was identified in the study area, a thin strip (~1.5m wide) to the south of 1450 Thompson's road surrounding the dam. Aquatic Herbland is defined as:

'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' (DELWP, 2016)

This patch was primarily due to coverage of recruiting Slender Knotweed *Persicaria decipiens* around the shallow marsh and ephemerally wet verges. Fringing vegetation was predominantly exotic being, for the most part, Kikuyu **Cenchrus clandestinus* covering the dam.

EVC 653 Aquatic Herbland

TALL MARSH

One patch of Tall Marsh EVC 821 was identified in the study area, to the south-east of the study area. Tall Marsh is defined as:

'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. Closed to open grassland/sedgeland to 2-3 m tall, dominated by Common Reed and Cumbungi. Small aquatic and semi-aquatic species occur amongst the reeds.' (DELWP, 2016)

EVC 821 Tall Marsh

A single patch of EVC 821 identified within the study area occurs on the north side of the dam in the southern section of 1450 Thompson's road. This patch was primarily due to coverage of Common Reed *Phragmites australis.* Fringing vegetation was Kikuyu **Cenchrus clandestinus* covering the dam. The patch was sandwiched between the Aquatic Herbland patch on either side.

SCATTERED TREES

Two Large trees were recorded within the study area. Both of these were outside of the project area, within the 20 m study area buffer. Both of these trees were inside the MSA. These trees are shown in Appendix C-2.

Details of trees mapped are detailed in Table 3.3 below. This table includes whether each tree would be counted as scattered tree (ST) or within a patch (canopy tree – large tree (LT)) as per the Guidelines (DELWP, 2017c), assumed impact status, Tree Protection Zone (m) and the attributed size class as per the most appropriate EVC.

Table 3.3 Indigenous large scattered trees recorded within the study area

#	COMMON NAME	SCIENTIFIC NAME	DBH (CM)	HABITAT	ENSYM	IMPACT	TPZ	SIZE CLASS
1	River Red-gum	*Eucalyptus camaldulensis*	105		n/a	n/a	3.72	ST
2	Mana Gum	*Eucalyptus viminalis ssp. Viminalis*	120	Hollows	n/a	n/a	11.04	LT

3.2.2.2 SIGNIFICANT FLORA SPECIES

Based on database search results, and following site assessment results, there are no significant flora species considered likely to occur. Three listed species were observed during site survey – Spotted Gum *#Corymbia maculata,* Bog Gum *#Eucalyptus kitsoniana* and *#Melaleuca armillaris subsp. armillaris* . These species are not considered indigenous to the area and were likely planted. See the full likelihood of occurrence assessment attached at Appendix B.

3.2.2.3 FFG ACT LISTED AND PROTECTED FLORA

Three FFG Act protected flora Sallow Wattle *#Acacia longifolia subsp. sophorae,* Giant Honey-myrtle *#Melaleuca armillaris subsp. armillaris* (Endangered), Bog Gum *#Eucalyptus kitsoniana* (Critically Endangered) and Spotted Gum *#Corymbia maculata* (Vulnerable) were observed on site, although, as mentioned above, these species are non-indigenous to the study area.

3.2.2.4 HABITAT HECTARE SCORES

Habitat hectare assessments were undertaken on 1 December 2021 by one ecologist – Justin Pegg, who is a DEECA accredited Vegetation Quality Assessor. Assessments were also undertaken on the 24th January 2023 by one ecologist – Pat Monarca, who is a DEECA accredited Vegetation Quality Assessor.

Habitat hectare scoring for all patches of native vegetation is provided in Table 3.4 below. Impacts on these areas are provided in Section 4.1. Habitat hectare assessment results indicate there are 12 small patches of low quality native vegetation, and one 1.5 ha DEECA current wetland (wetland ID 71150).

Table 3.4 Vegetation Quality Assessments, Habitat Hectare Scores, and EnSym attribution for patches of native vegetation within the study area

EVC	LARGE TREES	TREE CANOPY	WEEDS	UNDERSTORY	RECRUITMENT	ORGANIC LITTER	LOGS	LANDSCAPE CONTEXT	TOTAL AREA (HA)	VEGETATION QUALITY SCORE	HABITAT HECTARES	HH_EVC	BCS	LT_CNT	HH_SI	HH_ZI
	Vegetation Quality Assessment Results								EnSym attribution							
Plains Grassy Woodland 55	0	5	0	0	0	2	0	4	0.5352	11	0.021	GipP0055	E	0	1	P
Plains Grassy Woodland 55	10	5	0	0	0	2	2	4	0.0436	13	0.007	GipP0055	E	0	2	P
Plains Grassy Woodland 55	0	5	0	0	0	2	0	4	0.0598	11	0.001	GipP0055	E	0	3	P
Swamp Scrub 53	-	5	0	5	0	2	-	4	0.0068	18	0.001	GipP0053	E	0	4	P
Heathy Woodland 48	0	0	0	5	0	2	0	4	0.0220	11	0.002	GipP0048	LC	0	5	P
Heathy Woodland 48	0	0	0	5	0	2	0	4	0.0011	11	0.001	GipP0048	LC	0	6	P
Heathy Woodland 48	0	0	0	5	0	2	0	4	0.0011	11	0.001	GipP0048	LC	0	7	P
Heathy Woodland 48	0	0	0	5	0	2	0	4	0.0001	11	0.001	GipP0048	LC	0	8	P
Aquatic Herbland 653	-		0	5	3	2	-	4	0.1425	13	0.018	GipP0653	E	0	9	P
Tall Marsh 821	-		0	5	3	2	-	4	0.0053	13	0.001	GipP0821	LC	0	10	P
Plains Grassy Woodland 55	0	0	0	5	0	2	0	4	0.0038	7	0.001	GipP0055	E	0	11	P
Plains Grassy Woodland 55	0	0	0	5	0	2	0	4	0.0140	12	0.001	GipP0055	E	0	12	P
Current Wetlands																
Wetland ID 71150									1.4800	51	0.759	Wet0000	E	0	13	P

3.2.2.5 THREATENED ECOLOGICAL COMMUNITIES

There are no EPBC Act Threatened Ecological Communities (TEC) occurring within the study area.

No remnant vegetation or habitat within the study area aligns with the description of any FFG Act threatened communities

3.2.2.6 WEEDS AND INVASIVE ANIMALS

Three weed species listed under the CaLP Act were recorded across the study area. They are listed below with their classification in Table 3.5. Regionally prohibited weeds (P) are not widely distributed throughout the region but are capable of spreading further and it is reasonable to expect that it can be eradicated from the region. Regionally controlled weeds © are usually widespread in a region. To prevent further spread control measures are required. It is the landowners responsibility to prevent the growth and spread of weeds.

Invasive animals listed under the Act observed (visual or evidence (scats and tracks) observed) or likely to enter the study area included Mice **Mus musculus*, Cats **Felis catus*, Foxes **Vulpes vulpes*, Rabbits **Oryctolagus cuniculus* & Hares **Lepus europaeus.*

Table 3.5 CaLP Act weed species recorded within the study area

SCIENTIFIC NAME	COMMON NAME	CALP CLASSIFICATION
Cirsium vulgare	Spear Thistle	C
Rubus anglocandicans spp. agg.	Blackberry	C
Ulex europaeus	Gorse	P

3.2.3 FAUNA

3.2.3.1 OBSERVATIONS

No species of conservation significance were observed onsite. Common native fauna species observed during the site assessment included species such as Australian Magpie *Gymnorhina tibicen* and the Australian Wood Duck *Chenonetta jubata*. The complete fauna list may be observed in Appendix A.

3.2.3.2 HABITAT

Habitat resources available for fauna within the study area are described in Table 3.6 below.

Table 3.6 Habitat descriptions

HABITAT	DESCRIPTION	VALUES
Exotic grassy understory	Exotic grassy understory, highly modified by agricultural use, are primarily dominated by weedy exotic grasses and herbaceous weeds. Chilean Needle Grass was not recorded.	These areas provide foraging resources for common bird species and exotic fauna, such as House Mouse. **Mus musculus.*
Channelised ephemeral watercourse	The channelised ephemeral watercourse, of Shallow Marsh across the southern end of the study area is a long shallow swale.	This seasonally wet linear tract provides habitat for some native frogs, reptiles and birds local to the study area and dispersing throughout the landscape.

HABITAT	DESCRIPTION	VALUES
Trees and shrubs	Indigenous, native and exotic trees are supported by the study area. Seven of these Trees provide habitat in the form of hollows and/or cracks.	Individual planted trees may provide limited roosting, foraging and refuge habitat for native birds, including those mentioned in section 3.2.3.1 above, and microbats. The River Red Gums planted along Thompsons road may provide nesting and foraging habitat for some birds as well as connectivity for these species in the landscape. Large old trees providing hollows and cracks may possibly be utilised for refuge by a number of common and threatened native arboreal fauna species, or microbats.

3.2.3.3 HABITAT CONNECTIVITY

There is no continuous connectivity to large (>50 ha) areas of 'core-habitat' for native vegetation within the study area. There is limited connectivity through exotic revegetation to patches of native vegetation to the west within the wider proposed Croskell Precinct area and within the MSA.

Beyond the wider PSP, agricultural land to the west, and residential housing to the north, west and south limit connectivity throughout the landscape for many native species beyond common bird species that frequent residential back-yards, and find passage along street trees such as Noisy Miners *Manorina melanocephala*. Low quality watercourses thorough exotic grassland provide connectivity to similar quality suburban watercourses possibly for common frogs and reptiles.

3.2.3.4 SIGNIFICANT FAUNA SPECIES

Based on database searches, species habitat requirements, the result of the site assessment, and targeted survey results – section 3.2.4 below, no significant fauna or habitat has been observed across the study area The Likelihood of Occurrence for this site placed all species in the 'low' category and so it's unlikely that species dependent on different seasons and conditions would be present at other times of the year.

3.2.4 TARGETED SURVEY RESULTS

Upon initial investigations it was thought possible that the Growling Grass Frog *Litoria raniformis* may utilise the large dam, and two smaller dams 10 m west of the study, area as well as a shallow aquatic ephemeral watercourse that runs through the study area to disperse during the breeding season, as it connects to other unnamed dams via unnamed tributaries within the broader PSP and surrounding.

Populations of Growling Grass Frog, and therefore, suitable breeding habitat, are often found where groups of neighbouring, permanent waterbodies are present, usually somewhat connected via tributaries or drainage lines, creating a dispersal-matrix throughout the local area (Heard et al. 2004, Hamer and Organ 2008, Heard et al. 2015). Each cluster of Growling Grass Frog populations, at each waterbody (permanent or ephemeral), make-up a larger grouping of the species, known as a meta-population (Hale et al. 2013). The surrounding dams do provide a matrix of wetland habitats that may be suitable to support Growling Grass Frog. However, the most recent record within 10 km of the construction footprint was in 1980 and this record is associated with a tributary 3.5 km away from the study area and not connected with tributaries or dams associated with the study area.

Due to the presence of the dams with potential habitat so close to the study area, targeted surveys for this species were undertaken. Survey details and conditions are detailed above in Table 2.2. Results are detailed in Table 3.7 below. No Growling Grass Frogs were recorded during targeted surveys around Croskell Precinct. Growling Grass Frogs were

recorded both nights during reference checks verifying suitable survey conditions and timing. Due to a lack of local recent records, and an absence of Growling Grass Frogs during targeted surveys, this species is considered absent around the Study area, and is considered unlikely to utilise the shallow channelised drain crossing the study area.

Table 3.7 Growling Grass Frog survey results at Croskell Dam and nearby reference sites

SURVEY DATE	SURVEY POINT	TEMPERATURE	PH	CONDUCTIVITY - µS	GGF RECORDED	OTHER SEPECIES
Survey 1: 15/12/2021	Reference check 1	20.1	7.9	729	3	Banjo Frog *Limnodynastes dumerilii*
	Croskell Dam check 1	21.1	8.7	1218	0	-
Survey 2: 21/12/2021	Reference check 2	-	-	-	30	-
	Croskell Dam check 2	-	-	-	0	-

4 POTENTIAL ECOLOGICAL IMPACTS

4.1 NATIVE VEGETATION CLEARANCE

There is considered limited value in the retention of sporadic occurrences of low quality remnant native vegetation where it occurs across the precinct. Clearing of all patches of remnant native vegetation identified in the field assessment is considered required for the development of the precinct.

The main opportunity for avoidance of impacts to native vegetation is around tree protection zones of indigenous canopy trees along the eastern boundary of the MSA, if this aligns with the larger precinct design.

Native vegetation within the precinct are detailed in Table 4.1 below. There are no scattered trees within the project area and two large trees occur within patches along the eastern boundary. Advise from an arborist may be required to inform decision making in the design phase regarding the retention of these trees. These impacts are mapped in Appendix C-2.

Table 4.1 Quantification of native vegetation clearance

ZONE	TYPE	BIOREGION	EVC	STATUS	LARGE TREES	CONDITION SCORE	AREA	HABITAT HECTARES
1-P	Patch	Gippsland	Plains Grassy Woodland 55	Endangered	0	0.11	0.5352	0.021
2-P	Patch	Gippsland	Plains Grassy Woodland 55	Endangered	0	0.13	0.0436	0.007
3-P	Patch	Gippsland	Plains Grassy Woodland 55	Endangered	0	0.11	0.0598	0.001
4-P	Patch	Gippsland	Swamp Scrub 53	Endangered	0	0.18	0.0068	0.001
5-P	Patch	Gippsland	Heathy Woodland 48	Least Concern	0	0.11	0.0220	0.002
6-P	Patch	Gippsland	Heathy Woodland 48	Least Concern	0	0.11	0.0011	0.001
7-P	Patch	Gippsland	Heathy Woodland 48	Least Concern	0	0.11	0.0011	0.001
8-P	Patch	Gippsland	Heathy Woodland 48	Least Concern	0	0.11	0.0001	0.001
9-P	Patch	Gippsland	Aquatic Herbland 653	Endangered	0	0.13	0.1425	0.018
10-P	Patch	Gippsland	Tall Marsh 821	Least Concern	0	0.13	0.0053	0.001
11-P	Patch	Gippsland	Plains Grassy Woodland 55	Endangered	0	0.07	0.0038	0.001
12-P	Patch	Gippsland	Plains Grassy Woodland 55	Endangered	0	0.12	0.0140	0.001
13-P	DEECA current wetland (wetland ID 71150)	Gippsland		Endangered	0	0.51	1.489	0.759
						Total	1.897	0.838

Legend

BIOEVC: Bioregion code and Ecological Vegetation Class code
SBV: Strategic Biodiversity Value

4.2 POTENTIAL IMPACTS ON MNES

Development of the precinct has been assessed as having a low likelihood of impacting EPBC Act listed MNES.

Targeted surveys were undertaken in December following rain. No Growling Grass Frogs *Litoria raniformis* – EPBC Act Vulnerable FFG Act vulnerable, were recorded – section Table 3.7. Growling Grass Frog is considered locally absent. There are not anticipated impacts to this species.

4.3 POTENTIAL IMPACTS ON FFG ACT LISTED ECOLOGICAL VALUES

There are no potential impacts to flora or fauna species, or communities listed under the FFG Act.

4.4 POTENTIAL IMPACTS ON DEECA ADVISORY LIST SPECIES

In addition to FFG Act listed species, DEECA advisory list species that have the potential to occur across the precinct, and impacted are discussed below.

FLORA

No state listed species were recorded within the study area. No other advisory list species are considered likely to occur within the study area.

FAUNA

There are no anticipated impacts to species of Victorian conservation significance listed as near threatened on the Victorian Advisory List of threatened vertebrate fauna (DSE, 2013).

5 MITIGATION MEASURES

The Guidelines (DELWP, 2017c) and other legislation, such as the EPBC Act, require that all efforts must be made to avoid and minimise impacts to native vegetation before resorting to offsets. Recommended measures to avoid and mitigate impacts to both native vegetation and ecological values observed during the site assessment are detailed in Sections 5.1, 5.2, 5.3, & 5.9 below.

5.1 AVOIDANCE AND MINIMISATION OF IMPACTS ON NATIVE VEGETATI–N - PLANNING

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 provides or potentially provides ecological connectivity.

The remnant vegetation in the study area includes patches to the north of the study site near Thompsons Road and along the western border of the study area, and that associated with the farm-style dam equates to 1.897 ha.

WSP propose selectively avoiding this remnant vegetation where possible giving priority to EVC 55 Plains Grassy Woodland which makes up 0.245 ha. Patches mapped due to canopy overhang from within the MSA along the eastern border may not be required to be considered cleared, depending on precinct design, and advice from an arborist. Clearance of these patches has been assumed as a precaution for possible permit requirements if tree protection zones cannot be maintained, or clearance of overhanging canopy from within the MSA is cleared – see Appendix C-2. It is recommended that an arborist be consulted upon development of precinct design to determine what trees are to be considered lost, and offsets as per section 6.2.5 be achieved accordingly.

5.2 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 vegetati–n - 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.

It is recommended that consideration be given to the retention of indigenous trees along the eastern boundary mapped as patches of native vegetation. Advise from an arborist may be required to inform decision making in design phase regarding the retention of these trees.

5.3 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 Australian 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-2 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.

5.4 SEDIMENT AND EROSION CONTROL

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 Channelised ephemeral watercourse that runs across the South of the study area. 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 channelised ephemeral watercourse of understorey vegetation during the development of the precinct can increase risk of sediment laden run off entering the watercourse. 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.

5.5 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.

Three 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:

- Spear Thistle **Cirsium vulgare*
- Gorse **Ulex europaeus*
- Common Blackberry **Rubus anglocandicans.*

Control measures for these species should be implemented within the retention areas. 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.

5.6 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.

There are possible impacts to the large tree with hollows that could provide habitat for various common bird and mammal species. If these trees are to be felled, 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.

5.7 STRATEGIC LEVEL PLANNING

Due to the small amount of impact, this is considered not applicable. Native vegetation clearance was strategically avoided when planning this project over another project. The absence of large amounts of remnant vegetation assisted this site being chosen as a candidate for the project.

5.8 STUDY AREA LEVEL PLANNING

Following site assessment, impacts to Plains Grass Woodland EVC 55 patches on site should be avoided entirely, and all native vegetation should be aimed to be retained, where possible. These sections should be designated as a no-go zone on site plans within the Constructions Environmental Management Plan (CEMP).

It is recommended that the channelised ephemeral watercourse that runs through the southern end of the study area be revegetated as this will rehabilitate any habitat linkage this may provide.

5.9 FURTHER AVOIDANCE AND MINIMISATION OF DIRECT IMPACTS

Further avoidance and minimisation recommendations:

- It is recommended that access to the study area where possible be via existing routes to avoid impacts to native vegetation growing along roadsides.
- It is recommended an arborist be consulted regarding the retention of indigenous trees within the MSA where possible to inform precinct design.
- Reduction of impacts to native vegetation across the wider precinct to the west within the MSA is recommended.
- Revegetation of the modified watercourse with indigenous understory species would provide a habitat resource for small native species local to the study area such as reptiles, birds and frogs. Revegetation of canopy using indigenous species throughout the precinct would also provide a refuge and foraging resource for birds dispersing throughout the landscape, as well as opportunities for residents to connect with nature.

  In considering retention of impacts to native vegetation across the precinct it is recommended that consideration be given to tree canopy and shrub percentage covers detailed as Action 2.1 in *Living Melbourne; our metropolitan urban forest* (The Nature Conservancy and Resilient Melbourne, 2019), and Table 2 therein. Table 2 details tree % canopy targets of 30% to be achieved by 2050. The retention of indigenous trees across the wider precinct would assist in achieving this target.
- It is recommended that the Current Wetland (wetland ID 71150) be retained, and apart of revegetation efforts.

6 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, following implementation of the specified mitigation measures and containing all works to the designated study area.

6.1 COMMONWEALTH

6.1.1 *ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999* (EPBC ACT)

The 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 MNES, the 'action' must be referred to the Commonwealth Department of the Environment and Energy (DAWE). This 'referral' is then released to the public for comment.

Growling Grass Frog *Litoria raniformis* – EPBC Act Vulnerable were not detected during targeted survey for this species – see sections 2.2.4.1, and 3.2.4 for targeted survey detains. This species is considered effectively absent from the study area. The likelihood of a 'significant impact' on this species is considered low. Urban development of the precinct is considered unlikely to result in impacts to any other MNES across the study area. A referral to the Department of Agriculture, Water and Environment (DAWE) under the EPBC Act is therefore not recommended.

6.2 STATE

6.2.1 *ENVIRONMENT EFFECTS ACT 1978* (EE ACT)

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 (EES). 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 EES to be prepared and submit it to the Minister for the Minister's assessment of the environmental effects of the works.

Ecologically relevant assessment criteria for the types of potential effects on the environment that might be of significance and therefore warrant referral of a project include (DSE, 2006):

- Potential clearing of 10 hectares or more of native vegetation
- Matters listed under the *Flora and Fauna Guarantee Act 1988*:
  - 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.

Assessing against both individual and cumulative criteria (relating to ecological matters) set out in the *Ministerial guidelines for assessment of environmental effects under the Environment Effects Act 1978* (DSE, 2006), an EES is highly unlikely to be triggered due to the small area of impact. As such an EES self-assessment and referral is not considered necessary for ecological matters.

6.2.2 *FLORA AND FAUNA GUARANTEE ACT 1988* (FFG ACT)

The Victorian 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 DEECA 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.

A permit under the FFG Act will not be required for the removal of Protected Flora within a listed community within the study area.

A permit under the FFG Act will be required for the removal of Protected Flora species – Sallow Wattle *#Acacia longifolia subsp. sophorae* if it is to be removed from within the project area.

The FFG Act Amendment Act 2019 came into effect on 1 June 2020. As part of the amendments, all taxa of flora and fauna listed under the FFG Act, along with all taxa on the DEECA Advisory lists (except those that are 'poorly known' or 'near threatened') and any taxa nominated by public submissions, were assessed in accordance with the common assessment method by a Scientific Advisory Committee overseen by DEECA. This process was completed with the gazetting of a new list in May 2021, which was published by DEECA in June 2021, with listings subsequently within the VBA in July 2021.

Giant Honey-myrtle *#Melaleuca armillaris subsp. armillaris* (Endangered) and Spotted Gum *#Corymbia maculata* (Vulnerable) were observed on site but these two species are considered non indigenous to the study area.

The FFG Act Amendment Act 2019 also introduces changes to the categories of protected flora and the way they are regulated, including introducing two categories: 'restricted use protected flora' and 'generally protected flora'. Restricted use protected flora are exclusively threatened by take for commercial/personal use, and the taking of these species incidental to clearing for development works, will not require a permit to take. Generally protected flora are threatened by take for reasons other than or additional to commercial/personal use (e.g. development clearing) and will require a

permit to take for any purpose. The protected flora list is currently being reviewed, but for now, all protected flora are classified as generally protected flora.

There were no Protected FFG Act flora species observed within the study area will require a permit to take.

Sallow Wattle *#Acacia longifolia subsp. sophorae* was observed on site. This species is considered non-indigenous to the study area and therefore no permit will be required for removal.

6.2.3 DEECA ADVISORY LIST SPECIES

There are no anticipated impacts to DEECA Advisory list species. Following site assessment.

6.2.4 PLANNING AND ENVIRONMENT ACT 1987 (P&E ACT)

The P&E Act provides the legal framework for the operation of Victoria's planning system, commonly referred to as *the Planning Scheme*. Sections of the Casey Planning Scheme of relevance to ecological matters are discussed below.

Sections of the Casey Planning Scheme of relevance to ecological matters are brought about by Clause 12.01, and subsequently Clause 52.17/16.

The objective of Clause 12.01-2S is to ensure that there is no net loss to biodiversity as a result of the removal, destruction or lopping of native vegetation. This clause calls for policy documents to be considered as relevant:

- *Guidelines for the removal, destruction or lopping of native vegetation* (DELWP, 2017d) (the Guidelines).
- *Assessor's handbook – applications to remove, destroy or lop native vegetation* (DELWP, 2018) (the Assessors handbook).

Clause 52.17/16 of the Casey 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 5.1 and 6.2.5.

Section 12 of the Plannings Scheme is tabulated for context in Table 6.1 below.

Table 6.1 Planning Scheme

DUTIES & POWERS OF PLANNING AUTHORITY – S 12	**RELEVANCE TO PROJECT**
STATE & LOCAL PLANNING POLICY FRAMEWORK OBJECTIVES	
Clause 12.01 Protection of Biodiversity & 12.01S Native Vegetation Management Objective: To protect and enhance Victoria's biodiversity.	Underneath this strategy it recommends avoiding impacts of land use and development on important areas of biodiversity. Refer to section 5, and summarised in section 7.2, as these address the relevant components of this clause.
Clause 12.03 Water Bodies and Wetlands Objective: To protect and enhance waterway systems including river and riparian corridors, waterways, lakes, wetlands and billabongs.	Refer to section 5.9 as this addresses the relevant components of this clause. The relevant section calls for enhancing a sense of place and identity. The DEECA current wetland (wetland ID 71150) and watercourse are recommended for retention and revegetation.

DUTIES & POWERS OF PLANNING AUTHORITY – S 12	RELEVANCE TO PROJECT
Clause 21 Municipal Strategic Statement, Clause 21.01 Introduction and Clause 21.04 Environment Objective 1 To protect and significantly restore Casey's biological diversity, recognising its fundamental importance in achieving a healthy environment and way of life for current and future generations. Objective 2 To progressively improve the health of Casey's built and natural environments through ecologically sustainable land use and development practices.	Refer to section 5, and then summarised in section 7.2, detailing avoidance and minimisation of impacts to native vegetation, including Minimising damage to trees, and recommendations for revegetation. .
Council Plan, City of Casey Environment Strategy 2021-2025, City of Casey Biodiversity Strategy. Conserve, enhance and restore the natural environment	Refer to section 5, and then summarised in section 7.2, detailing avoidance and minimisation of impacts to native vegetation, including Minimising damage to trees, and recommendations for revegetation.

6.2.4.1 PLANNING ZONES AND OVERLAYS

A Farming Zone 2 (FZ2) encompasses the entire study area, and lines the adjacent property to the east of the study area. The study area crosses the Railway line (Public Use Zone 4 (PUZ4)), north of the rail reserve to encompass another section of farming zone. North of the study area is predominantly Public Park and Recreation Zone (PPRZ). The north east of the study area is General Residential Zone 1 (GRZ1). Zonation across the precinct does not impose any additional planning requirements in relation to ecological values.

6.2.4.2 NATIVE VEGETATION PRECINCT PLAN

Sections 2.3 and 2.4 of *Preparing a Native Vegetation Precinct Plan* (DELWP, 2017d) detail the rational and reasoning for Native Vegetation Precinct Plans – NVPPs. According to guidance in section 2.3, a NVPP provides for up-front decision making, and the opportunity to inform key stakeholders regarding the retention and removal of native vegetation, avoidance and minimisation of higher value native vegetation, and offsetting clearance of native vegetation.

Section 2.4 details when a NVPP is appropriate. An assessment of the need for an NVPP against key guidance points in Section 2.4 has been provided in Table 6.2 below. Due to the lack of high value remnant vegetation, or high quality habitat, an NVPP is not considered to be required for the Croskell Precinct Structure Plan. Relevant objectives of a NVPP such as achievement of offsets on a per-Lot basis are addressed in section 6.2.5.3 below, other requirements of an NVPP such as the mitigation of impacts, and recommendations for revegetation and restoration of habitat and linkages are addressed in section 5 of this report.

Table 6.2 Requirement for an NVPP - Croskell Precinct Structure Plan

NVPP PURPOSE	CROSKELL NVPP REQUIREMENT
NVPP used to map and assess significant native vegetation areas and define the size and location of regional and local parks, trail networks, waterway corridors and habitat links.	No significant native vegetation supported by the study area. recommendations for revegetation and restoration of habitat and linkages are addressed in section 5 of this report.

NVPP PURPOSE	CROSKELL NVPP REQUIREMENT
The Precinct contains high value native vegetation and a clear direction about the extent of the vegetation loss is needed to inform the overall planning of the precinct.	No significant native vegetation supported by the study area. Clear direction about the extent of the vegetation loss is not considered to be needed to inform the overall planning of the precinct.
Decisions about what vegetation is to be retained and the nature and location of offsets are needed at an early stage to inform and integrate with the preparation of a precinct structure plan or other strategic plan.	Advice regarding vegetation retention, beyond what is provided in this report – section 5.1, is not considered necessary.
There is an opportunity to consolidate offset requirements onto fewer sites or a preferred site, and maximise development on others.	Both possible offset requirements, and lots/properties involved – 3, are minimal.
A precinct contains a number of properties and land managers and an NVPP is needed to coordinate development and native vegetation management.	As above, lots/properties involved – 3, are minimal.

6.2.5 GUIDELINES FOR THE REMOVAL, DESTRUCTION OR LOPPING OF NATIVE VEGETATION (THE GUIDELINES)

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

6.2.5.1 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 6.3.

Table 6.3 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 2017b).

ALL ASSESSMENT PATHWAYS

Application requirements for all applications for a permit to remove native vegetation 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. See paragraph above.
- **b** a description of the native vegetation to be removed accounted for as per the Guidelines – see section 3.2.2.1
- **c** Maps showing the native vegetation and property in context and vegetation to be removed as accounted for by the Guidelines. See Appendix C
- **d** 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. See section 3.2.2.1.

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. Not applicable.

5 An avoid and minimise statement. See Section 5.1

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.

Impacts to native vegetation within the study area fall in Location 2 and native vegetation to be removed is in an area mapped as an endangered EVC (as per the state-wide EVC map). As such, vegetation removal will follow an Intermediate Assessment Pathway. Removal of less than 0.5 ha of native vegetation in this location will not have a significant impact on any habitat for a rare or threatened species.

6.2.5.2 NATIVE VEGETATION REMOVAL REPORT

A NVR report is provided at Appendix D. possible impacts equate to a 1.897 ha extent, as per EnSym data standards (DELWP, 2017b). The offsets requirements for this are detailed in Table 6.4 below.

Table 6.4 Summarised vegetation clearance calculations and offset requirements

VEGETATION CLEARANCE	
Assessment pathway	Detailed Assessment Pathway
Extent including past and proposed	1.897 ha
Extent of past removal	0
Extent of proposed removal	1.897 ha
No. Large trees proposed to be removed	0
Location category	Location 2 The native vegetation is in an area mapped as an endangered Ecological Vegetation Class (as per the state-wide EVC map). Removal of less than 0.5 hectares of native vegetation in this location will not have a significant impact on any habitat for a rare or threatened species.
OFFSET REQUIREMENTS (IF PERMIT WAS GRANTED)	
General offset amount	0.836 general habitat units
Vicinity	Port Phillip Catchment Management Authority (CMA) or Casey Rural City Council

Minimum strategic biodiversity value score	0.309
Large trees	0 large trees

Source: EnSym report dated 27/02/2023 - Appendix D

6.2.5.3 OFFSETING REQUIREMENTS

The offset target to satisfy clause 52.17 or the planning scheme is for General Habitat Units only, with a minimum Strategic Biodiversity Value (SBV) score of 0.309, and 0 Large Trees. General habitat units are typically readily available.

Patches mapped due to canopy overhang from within the MSA along the eastern boarder may not be required to be considered cleared, depending on precinct design, and advice from an arborist. Offsets for clearance of these patches has been included in offset requirements as a precaution, and may be required to be achieved by to fulfill permit requirements if tree protection zones cannot be maintained, or clearance of overhanging canopy from within the MSA is cleared.

Offset requirements have been provided on a per property basis and as per table 4 of Appendix 1 to *Preparing a Native Vegetation Precinct Plan December 2017* (DELWP, 2017d) in Table 6.5 below.

Table 6.5 Quantification of native vegetation clearance – Patches

NATIVE VEGETATION				**OFFSET REQUIREMENT**						**PROPERTY**
ZONE ID	**TYPE**	**BIOEVC**	**STATUS**	**LARGE TREES**	**CONDITION SCORE**	**EXTENT**	**SBV**	**HABITAT UNITS**	**OFFSET TYPE**	
1-P	Patch	gipp0055	Endangered	0	0.11	0.192	**0.42**	**0.023**	**General**	350 Narre Warren Road Cranbourne East 3977 Lot 1
2-P	Patch	gipp0055	Endangered	0	0.13	0.006	**0.71**	**0.001**	**General**	
3-P	Patch	gipp0055	Endangered	0	0.11	0.018	**0.42**	**0.002**	**General**	
4-P	Patch	gipp0053	Endangered	0	0.18	0.001	**0.42**	**0**	**General**	
5-P	Patch	gipp0048	Least Concern	0	0.11	0.022	**0.76**	**0.003**	**General**	1460 Thompsons Road Cranbourne East 3977 Lot 3
6-P	Patch	gipp0048	Least Concern	0	0.11	0.001	**0.76**	**0**	**General**	1454 Thompsons Road Cranbourne East 3977 Lot 1
7-P	Patch	gipp0048	Least Concern	0	0.11	0.001	**0.76**	**0**	**General**	
8-P	Patch	gipp0048	Least Concern	0	0.11	0	**0.76**	**0**	**General**	
9-P	Patch	gipp0653	Least Concern	0	0.130	0.143	**0.340**	**0.19**	**General**	1450 Thompsons Road Cranbourne East 3977 Lot 2
10-P	Patch	gipp0821	Endangered	0	0.130	0.005	**0.210**	**0.001**	**General**	
11-P	Patch	gipp0055	Endangered	0	0.070	0.004	**0.210**	**0**	**General**	
12-P	Patch	gipp0055	Endangered	0	0.120	0.014	**0.397**	**0.002**	**General**	
13-P	DEECA current wetland (wetland ID 71150)	Wet_0000	Endangered	0	0.510	1.489	**0.379**	**0.785**	**General**	

BIOEVC: Bioregion code and Ecological Vegetation Class code as per EnSym data standards (DELWP, 2017b).

SBV: Strategic Biodiversity Value

6.2.5.4 AVOID AND MINIMISE

The three-step approach (avoid, minimise, offset) is the key policy in relation to the removal of native vegetation to achieve no net loss to biodiversity as a result of the removal, destruction or lopping of native vegetation. It is a precautionary approach that aims to ensure that the removal of native vegetation is restricted to only what is reasonably necessary, and that biodiversity is appropriately compensated for any removal of native vegetation that is approved (DELWP, 2017c).

The assessors' handbook (DELWP, 2017a) calls for the avoidance and minimisation statement to describe:

- any strategic level planning over the site
- what site level planning has been done
- that no feasible opportunities exist to further avoid and minimise impacts on native vegetation without undermining the key objectives of the proposal.

These points are addressed as appropriate in Section 5.1 discussing avoidance and minimisation if impacts to native vegetation.

6.2.6 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 DEECA.

Authorisation for fauna removal/relocation must be obtained under the *Wildlife Act 1975* through a licence granted by DEECA. 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*.

If clearance of arboreal habitat provided by Large old trees bearing hollows and cracks possible utilised by native fauna, authorisation under the Wildlife Act will be required.

6.2.7 CATCHMENT AND LAND PROTECTION ACT 1994 (CALP ACT)

6.2.7.1 DECLARED NOXIOUS WEEDS

The project area supports a number of weeds that are declared noxious under the 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 but 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.

Regionally prohibited weeds are not widely distributed in a region but are capable of spreading further. It is reasonable to expect that they can be eradicated from a region and they must be managed with that goal. Land owners, including public authorities responsible for crown land management, must take all reasonable steps to eradicate regionally prohibited weeds on their land.

The field survey identified that study area supports four regionally controlled (C) and two restricted weeds (R) and one prohibited weed (P). These weeds are listed in Table 3.5, and below:.

- Spear Thistle **Cirsium vulgare* C
- Gorse **Ulex europaeus* P
- Common Blackberry **Rubus anglocandicans* C

Measures to control both noxious weeds and pest animals during construction must be contained within the CEMP.

7 CONCLUSION AND RECOMMENDATIONS

7.1 CONCLUSION

A desktop and site assessment were undertaken across the proposed Croskell Precinct. The desktop and site assessments informed an impact assessment considering the whole precinct utilised for development, and an assessment of likely regulatory and legislative implications of this development.

The study area is, in general, highly modified from its likely condition pre-European settlement, which is likely to have been a biodiverse woodland most attributable to Plains Grassy Woodland EVC 55 and Heathy Woodland EVC 48. Currently, the understory is highly modified by weeds and grazing to degree that indigenous understory species are effectively absent, with the exception of a small number or opportunistic colonising species recruiting across areas reserved for the purposes of revegetation along much of the eastern boundary. Much of the remnant canopy has been cleared and canopy trees persist along the eastern boundary amongst areas of revegetation.

During the site assessments, twelve small patches of low-quality vegetation and one DEECA current wetland (wetland ID 71150) totalling 0.407 hectares were identified, equating to 0.624 habitat hectares.

There is considered limited value in the retention of sporadic occurrences of low quality remnant native vegetation where it occurs across the precinct. Clearing of all patches of remnant native vegetation identified in the field assessment (0.576 habitat hectares) may be required for the development of the precinct, however avoidance and minimisation are recommended where practicable.

Targeted surveys were undertaken for the Growling Grass Frog *Litoria raniformis*, no Growling Grass Frogs were observed. This species is considered absent from the study area.

No MNES are considered likely to be impacted by development of the precinct, an EPBC Act referral is not recommended.

Assessing against both individual and cumulative criteria set out in the *Ministerial guidelines for assessment of environmental effects under the Environment Effects Act 1978* (DSE, 2006), an EES is highly unlikely to be triggered due to the small area of impact. As such an EES self-assessment and referral is not considered necessary for ecological matters.

A permit under the FFG Act will be required for the removal of Protected Flora species – Jersey Cudweed *Helichrysum luteoalbum*, Coast Wattle *#Acacia longifolia subsp. sophorae.*

7.2 RECOMMENDATIONS

The following recommendations are provided to further avoid or reduce impacts to ecological values:

1 Further efforts should be made to avoid and minimise impacts to native vegetation:

- **a)** Reduction of impacts to scattered trees surrounding the project area by developers is recommended where possible.
- **b)** Reduction of impacts to native vegetation across the wider precinct to the west within the MSA is recommended where possible.
- **c)** It is recommended that where possible, new roads to access to the development be minimised, and that access for construction be via existing routes to avoid impacts to native vegetation supported by roadsides

2 Revegetation of the modified watercourse as well as the dam with indigenous species would provide a habitat resource for small native species local to the study area such as reptiles, birds and frogs. Revegetation of canopy using indigenous species throughout the precinct would also provide a refuge and foraging resource for birds dispersing throughout the landscape, as well as opportunities for residents to connect with nature.

3 It is recommended that the Current Wetland (wetland ID 71150) be retained, and apart of revegetation efforts.

4 In considering minimising impacts to native vegetation across the precinct it is recommended that consideration be given to tree canopy and shrub percentage covers detailed as Action 2.1 in *Living Melbourne; our metropolitan urban forest* (The Nature Conservancy and Resilient Melbourne, 2019), and Table 2 therein. Table 2 details tree % canopy targets of 30% to be achieved by 2050. The retention of indigenous trees across the wider precinct would assist in achieving this target.

5 Native vegetation mapping, offset requirements incorporated into a Precinct Structure Plan – PSP. The PSP to include the mapped areas that shown appendix C-2 to indicate where a permit will be required for the removal of native vegetation.

6 It is recommended an arborist be consulted regarding the retention of indigenous trees within the MSA where possible to inform precinct design.

8 LIMITATIONS

This Report is provided by WSP Australia Pty Limited (*WSP*) to the Victorian Planning Authority (*Client*) in response to specific instructions from the Client and in accordance with WSP's proposal under the Consultancy Agreement between WSP and the Client signed 10-9-2019.

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9 REFERENCES

DAWE. 2021. *Protected Matters Seach Tool* [Online]. Department of Agriculture, Water and the Environment. [Accessed].

DEHP 2015. Environmental Authority EPML00876713: Blair Athol. Department of Environment and Heritage Protection.

DELWP 2015. Permitted clearing of native vegetation – Biodiversity assessment handbook. Department of Environment, Land, Water and Planning.

DELWP 2016. EVC Benchmarks for Vegetation Quality Assessment. Department of Environment Land Water and Planning.

DELWP 2017a. Assessor's handbook; Applications to remove, destroy or lop native vegetation. *In:* PLANNING, D. O. E. L. W. A. (ed.).

DELWP 2017b. EnSym native vegetation regulation tool spatial data standards; For applications to remove native vegetation and protect native vegetation at an offset site. *In:* DEPARTMENT OF ENVIRONMENT, L., WATER AND PLANNING (ed.).

DELWP 2017c. Guidelines for the removal. destruction or lopping of native vegetation. Department of Environment Land Water and Planning.

DELWP 2017d. Preparing a Native Vegetation Precinct Plan. *In:* PLANNING, D. O. E. L. W. A. (ed.).

DELWP 2018a. Assessor's handbook: Applications to remove, destroy or lop native vegetation. Department of Environment Land Water and Planning.

DELWP. 2018b. *Victorian Biodiversity Atlas* [Online]. Department of Environment, Land, Water and Planning. Available: https://vba.dse.vic.gov.au/ [Accessed].

DELWP 2019. Wetland Current - shapefile data. *In:* DEPARTMENT OF ENVIRONMENT, L., WATER & PLANNING (ed.).

DELWP 2022. Vicplan. East Melbourne: Department of Environment, Land, Water and Planning.

DEPARTMENT OF THE ENVIRONMENT 2013. Matters of National Environmental Significance, Significant Impact Guidelines 1.1 Environment Protection and Biodiversity Conservation Act 1999. *In:* ENVIRONMENT, D. O. (ed.). Canberra, ACT: Commonwealth of Australia.

DEPI 2009. Native Vegetation - Modelled Extent 2005. *In:* ARTHUR RYLAH INSTITUTE (ed.). Biodiversity and Ecosystem Services (DEPI).

DEWHA 2009. Significant Impact Guidelines for the Vulnerable Growling Grass Frog (Litoria raniformis). Nationally threatened species and ecological communities EPBC Act Policy Statement 3.14. . *In:* AUSTRALIAN GOVERNMENT, D. O. T. E., WATER, HERITAGE AND THE ARTS. (ed.). Canberra. .

DEWHA 2010a. Survey guidelines for Australia's threatened frogs - guidelines for detecting frogs listed as threatened under the *Environment Protection and Biodiversity Conservation Act 1999*. *In:* DEPARTMENT OF THE ENVIRONMENT, W., HERITAGE AND THE ARTS (ed.). Department of the Environment, Water, Heritage and the Arts.

DEWHA 2010b. Survey guidelines for Australia's threatened frogs: Guidelines for detecting frogs listed as threatened under the EPBC Act *In:* DEPARTMENT OF THE ENVIRONMENT, W., HERITAGE AND THE ARTS (ed.).

DSE 2004. Native Vegetation: Sustaining a living landscape. Vegetation Quality Assessment Manual – guidelines for applying the habitat hectares scoring method version 1.3 East Melbourne: Department of Sustainability and Environment.

DSE 2006. Ministerial guidelines for assessment of environmental effects under the Environment Effects Act 1978. Department of Sustainability and Environment.

DSE 2013. Advisory List of Threatened Vertebrate Fauna in Victoria. East Melbourne: Department of Sustainability and Environment.

ENSBEY, R. & JOHNSON, A. 2009. *Noxious and Environmental Weed Control Handbook, A Guide to Weed Control in Non-crop, Aquatic and Bushland Situations. 4th Edition*, NSW Department of Primary Industries.

ENVIRONMENTAL PROTECTION AGENCY 1991. Construction Techniques for Sediment Pollution Control,. Melbourne, Victoria.

ENVIRONMENTAL PROTECTION AGENCY 1996. Environmental Guidelines for Major Construction Sites.

GOOGLE. 2021. *Google Maps* [Online]. Imagery 2015 Sinclair Knight Merz: Google. Available: https://www.google.com.au/maps/place/Melbourne+VIC/@-37.971237,144.4926947,9z/data=!3m1!4b1!4m5!3m4!1s0x6ad646b5d2ba4df7:0x4045675218ccd90!8m2!3d-37.8136276!4d144.9630576 [Accessed 2021].

PYŠEK, P., RICHARDSON, D. M. & WILLIAMSON, M. 2004. Predicting and explaining plant invasions through analysis of source area floras: some critical considerations. *Diversity and Distributions,* 10**,** 179-187.

ROYAL BOTANIC GARDENS MELBOURNE. 2016. *Flora of Victoria* [Online]. National Herbarium of Victoria, Royal Botanic Gardens Melbourne. Available: https://vicflora.rbg.vic.gov.au/ [Accessed].

ROYAL BOTANIC GARDENS OF VICTORIA 2021. Vicflora: Flora of Victoria.

STANDARDS AUSTRALIA 2007. AS 4373-2007 Australian Standard Pruning of amenity trees. Sydney: Standards Australia.

STANDARDS AUSTRALIA 2009. AS 4970-2009 Australian Standard Protection of trees on development sites. Sydney: Standards Australia.

THE NATURE CONSERVANCY AND RESILIENT MELBOURNE 2019. Living Melbourne: Our Metropolitan Urban Forest. The Nature Conservancy and Resilient Melbourne.

APPENDIX A

SPECIES LISTS

A1 SPECIES LISTS

Table A.1 Flora species observed on site

ORIGIN	SCIENTIFIC NAME	COMMON NAME	CONSERVATION STATUS	CALP ACT
#	*Acacia longifolia subsp. sophorae*	Sallow Wattle	P	-
	Acacia melanoxylon	Blackwood		-
	Acacia paradoxa	Hedge Wattle		-
	Acacia paradoxa	Hedge Wattle		-
*	*Acetosella vulgaris*	Sheep Sorrel		-
*	*Agrostis capillaris*	Brown-top Bent		-
	Allocasuarina verticillata	Drooping Sheoak		-
*	*Anthoxanthum odoratum*	Sweet Vernal-grass		-
*	*Arctotheca calendula*	Cape weed		-
	Austrostipa bigeniculata	Kneed Spear-grass		-
*	*Brassica fruticulosa*	Twiggy Turnip		-
*	*Bromus catharticus*	Prairie Grass		-
	Carex appressa	Tall Sedge		-
*	*Cenchrus clandestinus*	Kikuyu		-
*	*Cirsium vulgare*	Spear Thistle		C
*	*Conyza sumatrensis var. sumatrensis*	Tall Fleabane		-
*	*Coprosma repens*	Mirror Bush		-
#	*Corymbia maculata*	Spotted Gum	vu	-
*	*Cynodon dactylon var. dactylon*	Couch		-
*	*Epilobium hirsutum*	Great Willow-herb		-
#	*Eucalyptus botryoides*	Southern Mahogany		-
	Eucalyptus camaldulensis	River Red-gum		-
	Eucalyptus kitsoniana	Bog Gum	cr	-
	Eucalyptus viminalis	Manna Gum		-
	Ficinia nodosa	Knobby Club-sedge		-
*	*Geranium molle*	Dove's Foot		-
*	*Helminthotheca echioides*	Ox-tongue		-
*	*Hesperocyparis macrocarpa*	Monterey Cypress		-
*	*Holcus lanatus*	Yorkshire Fog		-
*	*Hordeum leporinum*	Barley-grass		-
*	*Hypochoeris radicata*	Flatweed		-

ORIGIN	SCIENTIFIC NAME	COMMON NAME	CONSERVATION STATUS	CALP ACT
	Juncus bufonius	Toad Rush		-
	Juncus flavidus	Gold Rush		-
	Juncus subsecundus	Finger Rush		-
*	*Lolium perenne*	Perennial Rye-grass		-
*	*Lotus subbiflorus*	Hairy Bird's-foot Trefoil		-
	Lythrum hyssopifolia	Small Loosestrife		-
*	*Malva sylvestris*	Tall Mallow		-
#	*Melaleuca armillaris subsp. armillaris*	Giant Honey-myrtle	en	-
#	*Melaleuca ericifolia*	Swamp Paperbark		-
	Persicaria decipiens	Slender Knotweed		-
*	*Phalaris aquatica*	Toowoomba Canary-grass		-
*	*Phalaris minor*	Lesser Canary-grass		-
	Phragmites australis	Common Reed		-
*	*Phytolacca octandra*	Red-ink Weed		-
*	*Pinus radiata*	Radiata Pine		-
*	*Plantago lanceolata*	Ribwort		-
*	*Polygonum arenastrum*	Wireweed		-
*	*Polygonum aviculare s.l.*	Prostrate Knotweed		-
	Portulaca oleracea	Common Purslane		-
	Rhagodia candolleana subsp. candolleana	Seaberry Saltbush		-
*	*Rubus anglocandicans*	Common Blackberry		-
*	*Rubus fruticosus spp. agg.*	Blackberry		C
*	*Rumex crispus*	Curled Dock		-
*	*Sonchus oleraceus*	Common Sow-thistle		-
*	*Taraxacum bracteatum*	Garden Dandelion		-
*	*Ulex europaeus*	Gorse		P

Table A.2 Fauna species observed onsite

ORIGIN	SCIENTIFIC NAME	COMMON NAME	CONSERVATION STATUS
	Acridotheres tristis	Common Myna	
	Anas castanea	Chestnut Teal	
	Anas superciliosa	Pacific Black Duck	
	Chenonetta jubata	Australian Wood Duck	
	Circus approximans	Swamp Harrier	

ORIGIN	SCIENTIFIC NAME	COMMON NAME	CONSERVATION STATUS
	Grallina cyanoleuca	Magpie-lark	
	Gymnorhina tibicen	Australian Magpie	
*	*Lepus europeaus*	European Hare	
	Limnodynastes peronii	Striped Marsh Frog	
	Ocyphaps lophotes	Crested Pigeon	
	Petrochelidon neoxena	Welcome Swallow	
*	*Pieris rapae*	Cabbage white	
	Rhipidura leucophrys	Willie Wagtail	
	Turdus merula	Common Blackbird	

KEY

Conservation Status in Australia (EPBC) 1999
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

Status under the Flora and Fauna Guarantee Act 1988
vu = Vulnerable ex = Extinct, cr = Critically Endangered, en = Endangered

Origin
* = Introduced, # = native but some strands may be alien

APPENDIX B

LIKELIHOOD OF OCCURRENCE ASSESSMENT

B1 LIKELIHOOD OF OCCURRENCE AND IMPACT ASSESSMENT – FLORA

A search of the DELWP's Victorian Biodiversity Atlas (VBA) and the Environment Protection and Biodiversity Conservation Act 1999 Protected Matters Search Tool (PMST) was undertaken within a 5-kilometre radius of the study area to identify threatened species with potential to occur. Table B.1 below identifies the results of these searches and the assessment of each species' likelihood of occurrence within the study area based on the availability of habitat observed during the field assessment.

The brief habitat descriptions for flora are appropriated from the species descriptions on VicFlora, website by (Royal Botanic Gardens of Victoria, 2021), and species-specific publicly-available Commonwealth and State government resources, including conservation advice.

Table B.1 Threatened flora species with potential to occur within the study area

SCIENTIFIC NAME	COMMON NAME	SOURCE	CONSERVATION STATUS	COUNT OF SIGHTINGS	LAST RECORD	HABITAT DESCRIPTIONS	LIKELIHOOD OF OCCURRENCE
Acacia howittii	Sticky Wattle	VBA	vu	1	17/09/1980	Confined to eastern Victoria from the upper Macalister River area near Mt Howitt south to near Yarram and east to near Tabberabbera. Collections from near Daylesford and Melbourne are presumably of cultivated origin. Grows in moist forest.	this species is considered non-indigenous to the study area.
Amphibromus fluitans	River Swamp Wallaby-grass	VBA and PMST	VU	1	1/12/1979	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 - not observed during optimal conditions.
Billardiera scandens s.s.	Velvet Apple-berry	VBA	en	3	1/06/1941	Apparently uncommon in Victoria, occurring chiefly in dry open-forests and woodlands in the north-east (Beechworth, Whitfield etc.), with isolated occurrences near Mt Macedon, Eltham-Hurstbridge area, Eildon and Orbost.	Low - the study area supports only highly modified remnant understory in places - unlikely habitat for this species. Not observed during seasonally appropriate survey.

Caladenia aurantiaca	Orange-tip Finger-orchid	VBA	en	1	1/05/1928	Grows in damp coastal to near-coastal heaths or heathy woodlands east of Melbourne (e.g. Cranbourne, Yarram, Cape Conran, Mallacoota) on well-drained sandy soils.	Low - the study area supports only highly modified remnant understory in places - unlikely habitat for this species.
Caladenia orientalis	Eastern Spider Orchid	PMST	en			Endemic to Victoria where found in coastal heathlands and heathy woodlands between the Mornington Peninsula and Yarram, on well-drained sandy soil.	Low - the study area supports only highly modified remnant understory in places - unlikely habitat for this species.
Caladenia robinsonii	Frankston Spider-orchid	VBA	EN cr	1	8/09/1981	Endemic to Victoria where currently known from only one small extant population near Rosebud on the Mornington Peninsula in heathy near-coastal woodland on sandy soil.	Low - the study area supports only highly modified remnant understory in places - unlikely habitat for this species.
Caladenia xanthochila	Yellow-lip Spider-orchid	VBA	EN en	12	1/03/1981	Extremely rare in Victoria. This orchid speices is only known to occur at four localities between Bendigo and Dimboola where it grows on sandy soil in Yelow Gum woodland.	Low - the study area supports only highly modified remnant understory in places - unlikely habitat for this species.
Cardamine moirensis	Riverina Bitter-cress	VBA	en	1	26/10/1979	In Victoria, occurring in the north and west in seasonally wet areas.	Low -VBA record considered an anomaly.
Coronidium gunnianum	Pale Swamp Everlasting	VBA	cr	1	1/08/1979	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 - the study area supports only highly modified remnant understory in places - unlikely habitat for this species. Not observed during seasonally appropriate survey.
Craspedia canens	Grey Billy-buttons	VBA	cr	1	1/01/1978	Known in Victoria only from grassland (often bordering swamps) at low altitude between c. Cranbourne and Traralgon.	Low - the study area supports only highly modified remnant understory in places - unlikely habitat for this species. Not observed during seasonally appropriate survey.

Dianella amoena	Matted Flax-lily	PMST	en			Occurs mainly in lowland grasslands, grassy woodlands, valley grassy forest and creek lines of herb-rich woodland.	Low - the study area supports only highly modified remnant understory in places - unlikely habitat for this species. Not observed during seasonally appropriate survey.
Diuris punctata var. punctata	Purple Diuris	VBA	en	1	12/03/1909	Occurring in the open forests, woodlands and grasslands of the fertile lowlands, now much reduced through clearing for agriculture and restricted to relatively few, isolated sites, but sometimes locally abundant.	Low - the study area supports only highly modified remnant understory in places - unlikely habitat for this species.
Eucalyptus leucoxylon subsp. megalocarpa	Large-fruit Yellow-gum	VBA	cr	9	18/12/1980	The Victorian occurrence, near Nelson, is the easternmost part of the mainly South Australian coastal distribution, south of Mt Gambier.	Low - not observed.
Eucalyptus strzeleckii	Strzelecki Gum	PMST	vu			Largely restricted to the western section of the Strzelecki Range, from Neerim South in the north, south to Foster, and with a few isolated records from the Otway ranges. The species prefers ridges, slopes and streambank habitats with deep fertile soils.	Low - not observed.
Glycine latrobeana	Clover Glycine	PMST	vu			Widespread but of sporadic occurrence and rarely encountered. Grows mainly in grasslands and grassy woodlands.	Low - the study area supports only highly modified remnant understory in places - unlikely habitat for this species.
Hakea macraeana	Willow Needlewood	VBA	cr	1	1/09/1979	Found on the south coast, southern tablelands of NSW and northern Victoria where it grows in wet or dry sclerophyll forest in skeletal soil on rocky ground from near sea-level to 1060 meters.	Low - the study area supports only highly modified remnant understory in places - unlikely habitat for this species.
Lachnagrostis semibarbata var. filifolia	Purple Blown-grass	VBA	en	2	1/01/1976	Similar habitat to that described for var. semibarbata but known further east near the Gippsland Lakes, east of Sale.	Low - the study area supports only highly modified remnant understory in places - unlikely habitat for this species.

Melaleuca armillaris subsp. armillaris	Giant Honey-myrtle	VBA	en	1	1/12/1980	Mainly confined to near-coastal sandy heaths, scrubs slightly raised above saltmarsh, riparian scrubs, rocky coastlines and foothill outcrops eastwards from about Marlo. Occurrences to the west are naturalized from cultivated stock. Commonly grown for ornament, as a windbreak or street tree and sometimes giving rise to seedlings, particularly after fire.	Observed on site. This species is considered non-indigenous to the study area.
Microseris scapigera s.s.	Plains Yam-daisy	VBA	cr	1	28/06/1977	Formerly widespread in moist depressions on the basalt plains of western Victoria, but now very rare due to loss of habitat.	Low - the study area supports only highly modified remnant understory in places - unlikely habitat for this species. Not observed during seasonally appropriate survey.
Prasophyllum frenchii	Maroon Leek-orchid	VBA	EN en	1	28/10/1971	Widespread across southern Victoria, but rare. Occurs in grassland, heathland and open forest on well-drained or water-retentive sand or clay loams.	Low - the study area supports only highly modified remnant understory in places - unlikely habitat for this species.
Prasophyllum spicatum	Dense Leek-orchid	PMST	vu			Localised across southern Victoria in coastal heathland and near-coastal heathy forest, but also occurs in South Australia. Species grows on sandy soils in coastal heath and sandhill environments. Generally flowers between August and November but will also flower freely after fire or similar disturbance.	Low - the study area supports only highly modified remnant understory in places - unlikely habitat for this species.
Pterostylis chlorogramma	Green-striped Greenhood	PMST	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 - the study area supports only highly modified remnant understory in places - unlikely habitat for this species.
Pterostylis cucullata	Leafy Greenhood	PMST	vu			Widely distributed but disjunct, mostly occurring in small groups in coastal areas, sometimes near inland watercourses.	Low - the study area supports only highly modified remnant understory in places - unlikely habitat for this species.

Senecio psilocarpus	Swamp Fireweed	PMST	vu			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 - the study area supports only highly modified remnant understory in places - unlikely habitat for this species. Not observed during seasonally appropriate survey.
Thelionema umbellatum	Clustered Lily	VBA	vu	2	1/12/1980	Recorded from a few widely separated wet heathland sites in lowland southern Victoria (Portland, Cape Otway, Cranbourne, Can River, Mallacoota areas), but possibly overlooked as a tenuous form of the more widespread T. caespitosum.	Low - the study area supports only highly modified remnant understory in places - unlikely habitat for this species.
Thelymitra circumsepta	Naked Sun-orchid	VBA	en	2	1/12/1979	Occurs from near sea-level to subalpine areas where it grows in open forest, woodlands or tall wet forest, usually in moist positions such as swamp margins, stream banks or bogs in peaty sand, clay loams or rich mountain loam soils.	Low - the study area supports only highly modified remnant understory in places - unlikely habitat for this species.
Thelymitra epipactoides	Metallic Sun-orchid	PMST	en			Grows mostly in coastal heathland, grassland and woodland, but extending further inland into similar habitats in the western part of its range. Substrates may be moist or dry sandy soils.	Low - the study area supports only highly modified remnant understory in places - unlikely habitat for this species.
Thryptomene calycina	Grampians Thryptomene	VBA	en	3	1/01/1930	Confined to the Grampians where occurring in heathlands and heathy woodlands mostly on sandy soils. Naturalised at Black Rock.	Low - not observed. This species is considered non-indigenous to the study area. VBA records are likely planted nearby.
Xerochrysum palustre	Swamp Everlasting	PMST	vu			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 - the study area supports only highly modified remnant understory in places - unlikely habitat for this species. Not observed during seasonally appropriate survey.

Conservation Status in Australia (EPBC) 1999

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

Status under the Flora and Fauna Guarantee Act 1988

vu = Vulnerable ex = Extinct, cr = Critically Endangered, en = Endangered

B2 LIKELIHOOD OF OCCURRENCE AND IMPACT ASSESSMENT – FAUNA

A search of the DELWP's Victorian Biodiversity Atlas (VBA) and the EPBC Act Protected Matters Search Tool (PMST) was undertaken within a 5-kilometre radius of the study area to identify threatened species with potential to occur. Table B.2 below identifies the results of these searches and the assessment of each species' likelihood of occurring within the study area (or adjacent habitat) based on the availability of habitat observed during the field assessment.

The brief habitat descriptions for fauna have been sourced from several sources including Birdlife Australia species profiles, Commonwealth DAWE species profiles (SPRAT) and other publicly-available Commonwealth and State government resources.

Table B.2 Threatened fauna species with potential to occur within the study area

SCIENTIFIC NAME	COMMON NAME	SOURCE	CONSERVATION STATUS	COUNT OF SIGHTINGS	LAST RECORD	HABITAT DESCRIPTIONS	LIKELIHOOD OF OCCURRENCE
Accipiter novaehollandiae	Grey Goshawk	VBA	en	1	23/09/1993	Found in most forest types, especially tall closed forests, including rainforests.	Low - lack of preferred and required habitat resources across the study area.
Acrodipsas brisbanensis	Large Ant Blue Butterfly	VBA	en	3	1/01/1988	Typically confined to remnants of open forest and woodland in central Victoria (i.e. Broadford, Mansfield Kangaroo Ground and Wedderburn with unconfirmed records from Plenty Gorge and Kinglake National Park). Subspecies, cyrilus, is now believed to be extinct at several of its former known locations, including Warrandyte North, the You Yangs, Moe, Springvale and Cranbourne.	Low - lack of preferred and required habitat resources across the study area.. Lack of recent records.

Actitis hypoleucos	Common Sandpiper	VBA	vu	2	28/03/2006	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 - lack of preferred and required habitat resources across the study area.
Actitis hypoleucos	Common Sandpiper	PMST	M			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 - lack of required habitat resources for this species.
Anseranas semipalmata	Magpie Goose	VBA	vu	4	22/05/2009	Mainly found in shallow wetlands with dense growth of rushes or sedges. Occasionally on terrestrial habitats feeding on grasses, bulbs and rhizomes. Found in the tropics with vagrants as far south as northern Victoria.	Low - lack of preferred and required habitat resources across the study area.
Antechinus minimus maritimus	Swamp Antechinus (mainland)	PMST	vu			Habitat includes dense wet heathlands, tussock grasslands, sedgelands, damp gullies, swamps and some shrubby woodlands (Menkhorst 1995), often in landscape settings with little exposure to the sun.	Low - lack of required habitat resources for this species.
Anthochaera phrygia	Regent Honeyeater	VBA and PMST	CR cr	1	6/03/1987	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 - lack of preferred and required habitat resources across the study area.

Apus pacificus	Fork-tailed Swift	PMST	M			It is almost exclusively aerial, flying from less than 1 m to at least 300 m above ground. It mostly occurs over inland plains but sometimes above foothills or in coastal areas over cliffs, beaches, islands and well out to sea. It also occurs over towns and cities. It mostly occurs over dry and/or open habitats, including riparian woodland and tea-tree swamps, low scrub, heathland or saltmarsh, grassland, spinifex sandplains, farmland and sand-dunes. It sometimes occurs above forests.	Low - lack of required habitat resources for this species.
Ardea alba modesta	Eastern Great Egret	VBA	vu	65	11/05/2019	Prefer shallow water, particularly when flowing, but may be seen on any watered area, including damp grasslands.	Low - no substantial water bodies on site, large numbers associated with surrounding water bodies
Ardea intermedia plumifera	Plumed Egret	VBA	cr	2	25/11/2011	Habitat preferences for this species include freshwater swamps, billabongs, floodplains and wet grasslands with dense aquatic vegetation. The species is only occasionally seen in estuarine or intertidal habitats.	Low - lack of preferred and required habitat resources across the study area.
Arenaria interpres	Ruddy Turnstone	VBA	en	2	14/10/1993	Strongly prefers rocky shores or beaches where there are large deposits of rotting seaweed.	Low - lack of preferred and required habitat resources across the study area.
Aythya australis	Hardhead	VBA	vu	14	12/05/2019	On terrestrial wetlands and occasionally sheltered estuarine and inshore waters. Almost entirely aquatic, preferring large deep fresh waters with abundant aquatic vegetation; particularly deep swamps, lakes, creeks, billabongs and alluvial plains.	Low - lack of preferred and required habitat resources across the study area.
Biziura lobata	Musk Duck	VBA	vu	2	24/01/2007	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.	Low - lack of preferred and required habitat resources across the study area.

Botaurus poiciloptilus	Australasian Bittern	VBA	EN cr	4	19/06/2014	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 - lack of preferred and required habitat resources across the study area.
Botaurus poiciloptilus	Australasian Bittern	PMST	en			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 - lack of required habitat resources for this species.
Calidris acuminata	Sharp-tailed Sandpiper	PMST	M			Prefers muddy edges of shallow fresh or brackish wetlands, with inundated or emergent sedges, grass, saltmarsh or other low vegetation. This includes lagoons, swamps, lakes and pools near the coast, and dams, waterholes, soaks, bore drains and bore swamps, saltpans and hypersaline salt lakes inland.	Low - lack of required habitat resources for this species.
Calidris canutus	Red Knot, Knot	PMST	en M			In Australasia the Red Knot mainly inhabit intertidal mudflats, sandflats and sandy beaches of sheltered coasts, in estuaries, bays, inlets, lagoons and harbours; sometimes on sandy ocean beaches or shallow pools on exposed wave-cut rock platforms or coral reefs. They are occasionally seen on terrestrial saline wetlands near the coast, such as lakes, lagoons, pools and pans, and recorded on sewage ponds and saltworks, but rarely use freshwater swamps. They rarely use inland lakes or swamps.	Low - lack of required habitat resources for this species.
Calidris ferruginea	Curlew Sandpiper	VBA and PMST	CR cr M	3	6/04/2006	Occurs in inter-tidal mudflats of estuaries, lagoons, mangrove channels and also around lakes, dams, floodwaters and flooded saltbush surrounding inland lakes.	Low - lack of preferred and required habitat resources across the study area.

Calidris melanotos	Pectoral Sandpiper	PMST	M			Prefers shallow fresh to saline wetlands. The species is found at coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains and artificial wetlands. The species is usually found in coastal or near coastal habitat but occasionally found further inland. It prefers wetlands that have open fringing mudflats and low, emergent or fringing vegetation, such as grass or samphire. The species has also been recorded in swamp overgrown with lignum. They forage in shallow water or soft mud at the edge of wetlands.	Low - lack of required habitat resources for this species.
Dasyurus maculatus maculatus (SE mainland population)	Spot-tailed Quoll (southeastern mainland population)	PMST	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 - lack of required habitat resources for this species.
Egretta garzetta	Little Egret	VBA	en	2	19/12/2018	Little Egrets inhabit mudflats, saltworks and shallow margins of tidal estuaries and inland rivers and lakes.	Low - lack of preferred and required habitat resources across the study area.
Falco hypoleucos	Grey Falcon	PMST	vu			Uncommon in Victoria, with an occasional vagrant from NSW found east of the Great Dividing Range. Usually restricted to arid and semi arid regions, particularly along grassland, shrubland and woodland watercourses. Can occur near wetlands and in open woodlands near the coast.	Low - lack of required habitat resources for this species.
Falco subniger	Black Falcon	VBA	cr	29	2/02/2010	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 grasslands, saltbush plains, bluebush plains and other low vegetation.	Moderate - may utilise surrounding exotic vegetation
Galaxiella pusilla	Dwarf Galaxias	VBA and PMST	VU en	1	1/11/1905	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 - last record in 1905, habitat in study area is degraded

Gallinago hardwickii	Latham's Snipe	PMST	M			Occurs in freshwater or brackish wetlands generally near protective vegetation cover.	Low - lack of preferred habitat for this species. A shallow channelised grassy drain dominated by exotic flora species crosses the south of the study area. While this drain may provide limited forageing resources for Latham's Snipe there is a lack of taller vegetation preference by this species for cover.
Grantiella picta	Painted Honeyeater	VBA and PMST	VU vu	3	22/04/2009	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 preferred and required habitat resources across the study area.
Haliaeetus leucogaster	White-bellied Sea-Eagle	VBA	en	1	26/10/2017	Occurs in coastal areas including islands, estuaries, inlets, large rivers, inland lakes and reservoirs.	Low - lack of preferred and required habitat resources across the study area.
Hieraaetus morphnoides	Little Eagle	VBA	vu	1	18/04/2017	The Little Eagle is seen over woodland and forested lands and open country, extending into the arid zone. It tends to avoid rainforest and heavy forest.	Low - lack of preferred and required habitat resources across the study area.
Hirundapus caudacutus	White-throated Needletail	VBA	VU vu M	2	11/09/2017	Occurs in airspace over forests, woodlands, farmlands, plains, lakes, coasts and towns.	Moderate - may utilise farmland as habitat
Hydroprogne caspia	Caspian Tern	VBA	vu	3	10/06/2018	Occur in most coastal regions, with scattered records throughout the western half of the state, including the Murray Valley. They usually forage in open wetlands, including lakes and rivers and prefer sheltered shallow water near the margins, but can also be found in open coastal waters.	Low - lack of preferred and required habitat resources across the study area.
Isoodon obesulus obesulus	Southern Brown Bandicoot	VBA and PMST	EN en	65	27/07/2019	Inhabit a variety of habitats including heathland, shrubland, sedgeland, heathy open forest and woodland and are usually associated with infertile, sandy and well drained soils, but can be found in a range of soil types Within these vegetation communities they typically inhabit areas of dense ground cover.	Low - lack of preferred and required habitat resources across the study area.. large numbers associated with records 1-3km away

Lathamus discolor	Swift Parrot	VBA and PMST	CR cr	1	15/02/2016	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 - lack of preferred and required habitat resources across the study area.
Lewinia pectoralis	Lewin's Rail	VBA	vu	3	14/10/1993	Three subspecies occur in Australia, with Rallus pectoralis being the subspecies that occurs on Australia's mainland east coast. Lewin's Rail mostly inhabits wetland areas such as swamps, river flats and dams where there is dense vegetation cover. They can also occur in coastal saltwater areas.	Low - lack of preferred and required habitat resources across the study area.
Limosa lapponica	Bar-tailed Godwit	VBA	VU vu	11	1/02/1997	Mainly in coastal habitats such as large intertidal sandflats, banks, harbours, coastal lagoons and bays. It is found often around beds of seagrass and nearby saltmarsh. It has been sighted in coastal sewage farms and saltworks, salt lakes and brackish wetlands near coasts, rock platforms, and coral reef-flats. It is rarely found on inland wetlands or in areas of short grass, such as farmland, paddocks.	Low - lack of preferred and required habitat resources across the study area.
Lissolepis coventryi	Swamp Skink	VBA	en	1	11/12/2009	In Victoria, species primarily occurs south of the Great dividing range with the population at the Grampians being the most northern extent of the species distribution. Species is limited to densely vegetated swamps, associated watercourses and wet heath environments, sedgelands and saltmarshes. Species often use fallen timber, driftwood, sedges, and tussocks to bask upon.	Low - lack of preferred and required habitat resources across the study area.

Litoria raniformis	Growling Grass Frog	VBA and PMST	VU vu	1	1/01/1760	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 - No Growling Grass Frogs were recorded during targeted surveys around Croskell Precinct. Due to a lack of local recent records, and an absence of Growling Grass Frogs during targeted surveys, this species is considered absent around the Study area, and is considered unlikely to utilise the shallow channelised drain crossing the study area.
Macquaria australasica	Macquarie Perch	VBA	EN en	1	1/01/1908	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 - last record in 1908, habitat in study area is degraded
Melanodryas cucullata	Hooded Robin	VBA	vu	7	26/06/2008	Found in south-eastern Australia, generally east of the Great Dividing Range. Found in eucalypt woodland and Mallee and acacia shrubland.	Low - lack of preferred and required habitat resources across the study area.
Monarcha melanopsis	Black-faced Monarch	PMST	M			Mainly occurs in rainforest ecosystems, and sometimes in nearby open eucalypt forest with a dense, shrubby understorey. In Victoria mainly found in East Gippsland, it is a vagrant in the west.	Low - lack of required habitat resources for this species.
Motacilla flava	Yellow Wagtail	PMST	M			This species occurs in a range of habitats including estuarine habitats such as sand dunes, mangrove forests and coastal saltmarshes. This species also occurs in open grassy areas including disturbed sites such as sports grounds and has been recorded on the edges of wetlands, swamps, lakes and farm dams.	Low - lack of required habitat resources for this species.
Myiagra cyanoleuca	Satin Flycatcher	PMST	M			Occurs in heavily vegetated gullies, in forests and taller woodlands. During migration it is found in coastal forests, woodlands, mangroves, trees in open country and gardens.	Low - lack of required habitat resources for this species.
Nannoperca obscura	Yarra Pygmy Perch	PMST	vu			Typically occurs in slow-flowing or still waters which possess large amounts of aquatic vegetation (particularly emergent vegetation) such as lakes, ponds and slow-flowing rivers.	Low - lack of required habitat resources for this species.

Numenius madagascariensis	Eastern Curlew	VBA and PMST	CR cr M	2	1/11/1981	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 - lack of preferred and required habitat resources across the study area.
Oxyura australis	Blue-billed Duck	VBA	vu	20	24/04/2019	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, (Muehlenbeckia cunninghami) and paperbark Melaleuca.	Low - lack of preferred and required habitat resources across the study area.
Petauroides volans	Greater Glider	PMST	vu			The greater glider favours forests with a diversity of eucalypt species, due to seasonal variation in its preferred tree species.	Low - lack of required habitat resources for this species.
Pomatostomus temporalis	Grey-crowned Babbler	VBA	vu	7	22/06/2009	Occupy open woodlands dominated by mature eucalypts, with regenerating trees, tall shrubs, and an intact ground cover of grass and forbs.	Moderate - may utilise surrounding exotic vegetation
Potorous tridactylus tridactylus	Long-nosed Potoroo (SE Mainland)	PMST	vu			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 - lack of required habitat resources for this species.
Prototroctes maraena	Australian Grayling	PMST	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 - lack of required habitat resources for this species.

Pseudomys fumeus	Smoky Mouse	PMST	en			The Smoky Mouse occurs in a variety of vegetation communities, ranging from coastal heath to dry ridgeline forest, sub-alpine heath and, occasionally, wetter gullies (Menkhorst, 1981). Except for the wetter sites, a consistent feature of Smoky Mouse habitats is the diversity of heath and bush-pea species present, combined with potential shelter sites in the form of woody debris or rocks.	Low - lack of required habitat resources for this species.
Pseudomys novaehollandiae	New Holland Mouse	VBA	VU en	1	23/09/1993	Found from coastal areas and up to 100 km inland on sandstone country, on open heathland, open woodland with a heathland understorey and vegetated sand dunes.	Low - lack of preferred and required habitat resources across the study area.
Pseudophryne semimarmorata	Southern Toadlet	VBA	en	1	1/01/1760	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.	Low - lack of required habitat resources for this species.
Pteropus poliocephalus	Grey-headed Flying-fox	PMST	vu			Occurs in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps. Urban gardens and cultivated fruit crops also provide habitat for this species.	Low - lack of required habitat resources for this species.

Pyrrholaemus sagittatus	Speckled Warbler	VBA	en	2	1/10/1981	In Victoria, the speckled warbler is found within a broad strip, including the Chiltern Box-Ironbark and Warby-Ovens National Parks, the Bendigo region, the Brisbane Ranges and You Yangs, across to Balmoral on the western side of the Grampians.[9] It is scarce to moderately common within its range.[2] Its preferred habitat is open eucalypt woodland with rocky gullies, tussocky grass, scattered logs, and sparse shrubbery.[2]	Low - lack of preferred and required habitat resources across the study area.
Rhipidura rufifrons	Rufous Fantail	PMST	M			Occurs in a range of habitats including the undergrowth of rainforests/wetter eucalypt forests/gullies, monsoon forests paperbarks, sub-inland and coastal scrubs, mangroves, watercourses, parks and gardens.	Low - lack of required habitat resources for this species.
Rostratula australis	Australian Painted Snipe	PMST	en			Inhabits shallow, vegetated, temporary or infrequently filled wetlands, including where there are trees such as River Red Gum and Poplar Box or shrubs such as Lignum or Samphire.	Low - lack of required habitat resources for this species.
Spatula rhynchotis	Australasian Shoveler	VBA	vu	3	12/02/2019	Uses a wide variety of wetlands; prefers large permanent lakes or swamps that have abundant cover.	Low - lack of preferred and required habitat resources across the study area.
Stagonopleura guttata	Diamond Firetail	VBA	vu	1	31/10/1983	Occurs in a range of eucalypt dominated communities with a grassy understorey including woodland, forest and Mallee.	Low - lack of preferred and required habitat resources across the study area.

Sternula nereis nereis	Australian Fairy Tern	PMST	vu			Nests on sheltered sandy beaches, spits and banks above the high tide line and below vegetation. The subspecies has been found in embayments of a variety of habitats including offshore, estuarine or lacustrine (lake) islands, wetlands and mainland coastline.	Low - lack of required habitat resources for this species.
Synemon plana	Golden Sun Moth	VBA and PMST	CR vu	308	30/06/2020	This species occurs Natural Temperate Grasslands, exotic grassland and some secondary grassland. Larvae feed on the roots of native grasses, particularly wallaby grasses Rytidosperma spp. They also feed on the introduced noxious weed Chilean Needlegrass Nassella neesiana.	Low - lack of required grass species - Wallaby Grasses *Rytidosperma* spp., Chillean Needle Grass **Nassella neesiana.* Also a lack of intertussock space required for breeding.
Thinornis cucullatus cucullatus	Eastern Hooded Plover	PMST	vu			The Hooded Plover is found predominately in coastal and subcoastal freshwater lakes, marshes, coastal lagoons and beaches. Beaches with seaweed and dunes typically have more abundant populations.	Low - lack of required habitat resources for this species.
Tringa glareola	Wood Sandpiper	VBA	en	1	23/07/1999	Found in well-vegetated, shallow, freshwater wetlands such as swamps, billabongs, lakes, pools and waterholes with emergent aquatic plants and taller fringing vegetation.	Low - lack of preferred and required habitat resources across the study area.

Tringa nebularia	Common Greenshank	VBA and PMST	en	1	7/10/1998	The Common Greenshank is found in a wide variety of inland wetlands and sheltered coastal habitats of varying salinity. It occurs in sheltered coastal habitats, typically with large mudflats and saltmarsh, mangroves or seagrass.	Low - lack of preferred and required habitat resources across the study area.
Tringa stagnatilis	Marsh Sandpiper	VBA	en	1	11/09/1995	Permanent or ephemeral wetlands of varying salinity, including swamps, lagoons, billabongs, saltpans, saltmarshes, estuaries, pools on inundated floodplains, and intertidal mudflats and also regularly at sewage farms and saltworks.	Low - lack of preferred and required habitat resources across the study area.

Conservation Status used in the table above:

Conservation Status in Australia

Listing under the federal Environment Protection and Biodiversity Conservation Act 1999:

CR = Critically Endangered, EN = Endangered, VU = Vulnerable, M = Migratory

Conservation Status in Victoria

Status under the *Flora and Fauna Guarantee Act 1988*

cr = Critically Endangered, en = Endangered, vu = Vulnerable,

Victorian Advisory List

r = rare, nt = near threatened, dd = Data Deficient

APPENDIX C

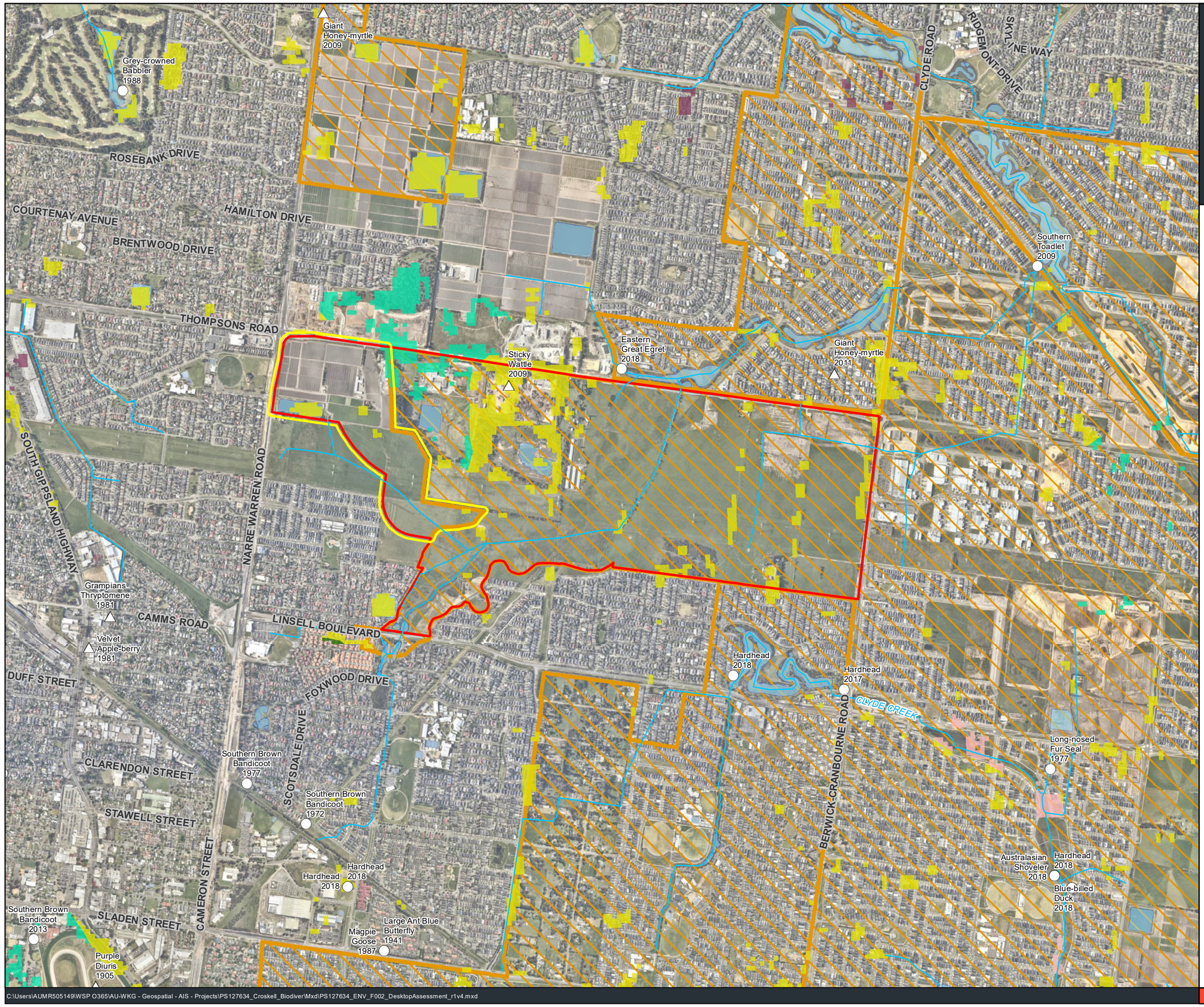
MAPPING

APPENDIX C-1
HISTORIC RECORDS AND MODELLING

wsp

Croskell Precinct Structure Plan

Figure 2
Desktop Assessment



Legend

- Study Area
- Total Precinct Area
- Melbourne Strategic
- Victorian Wetland Inventory (Current)
- Threatened Flora Species Records
- Threatened Fauna Species Records
- Watercourse

NV EVC 2005

- Heathy Woodland
- Plains Grassland/Plains Grassy Woodland Mosaic
- Plains Grassy Wetland
- Swamp Scrub
- Swampy Riparian Woodland/Swamp Scrub Mosaic

0 200 400 Meters

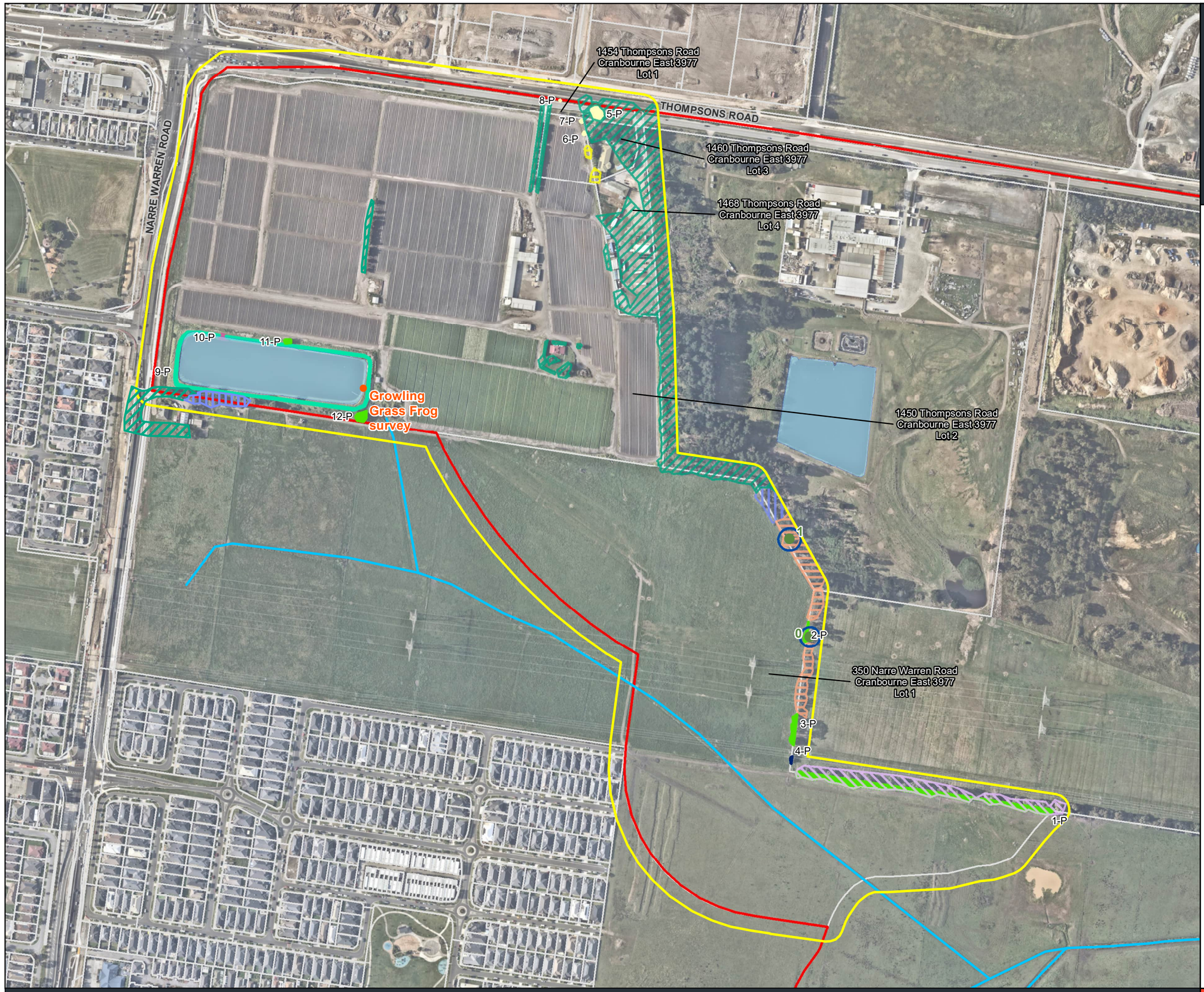
Coordinate system: GDA2020 MGA Zone 55

Scale ratio correct when printed at A3

1:20,000 Date: 25/01/2024

Data sources: DELWP 2022, WSP 2022, Nearmap

APPENDIX C-2
ECOLOGICAL VALUES



Croskell Precinct Structure Plan

Figure 4
Ecological Values

Legend

- Study Area
- Total Precinct Area
- Cadastre
- DELWP Current Mapped Wetland
- Tree protection zones
- Targeted survey location
- Large scattered trees
- Watercourse

Revegetation

- Australian native revegetation
- Exotic revegetation
- Indigenous revegetation
- Victorian native revegetation
- Other

Native Vegetation

- Aquatic Herbland 653
- Heathy Woodland 48
- Plains Grassy Woodland 55
- Swamp Scrub 53
- Tall Marsh 821

0 40 80
Meters

Coordinate system: GDA2020 MGA Zone 55

Scale ratio correct when printed at A3

1:4,700 Date: 25/01/2024

Data sources: DELWP 2022, WSP 2022, Nearmap

APPENDIX D

NATIVE VEGETATION REMOVAL REPORT

Native vegetation removal report

This report provides information to support an application to remove, destroy or lop native vegetation in accordance with the *Guidelines for the removal, destruction or lopping of native vegetation*. The report **is not an assessment by DELWP** of the proposed native vegetation removal. Native vegetation information and offset requirements have been determined using spatial data provided by the applicant or their consultant.

Date of issue: **02/05/2023**
Time of issue: **8:36 am**

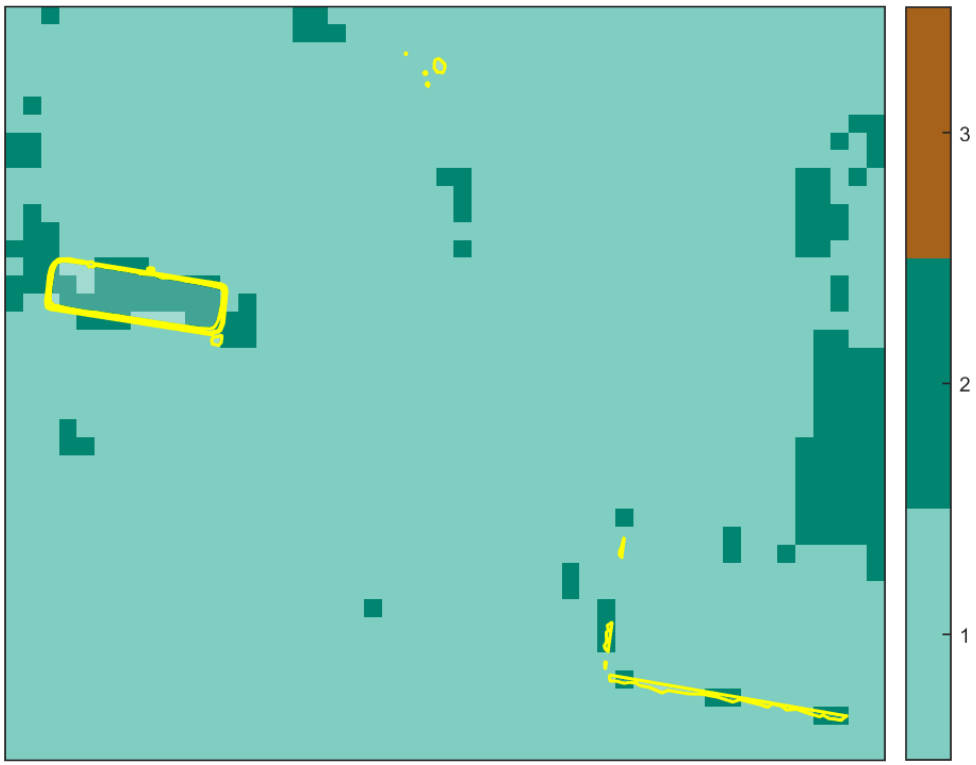
Report ID: WSP_2023_012

Project ID	WSP_EnsymCroskell_2023

Assessment pathway

Assessment pathway	**Detailed Assessment Pathway**
Extent including past and proposed	1.897 ha
Extent of past removal	0.000 ha
Extent of proposed removal	1.897 ha
No. Large trees proposed to be removed	0
Location category of proposed removal	Location 2 The native vegetation is in an area mapped as an endangered Ecological Vegetation Class (as per the statewide EVC map). Removal of less than 0.5 hectares of native vegetation in this location will not have a significant impact on any habitat for a rare or threatened species.

1. Location map



Offset requirements if a permit is granted

Any approval granted will include a condition to obtain an offset that meets the following requirements:

General offset amount[1]	0.836 general habitat units
Vicinity	Port Phillip and Westernport Catchment Management Authority (CMA) or Casey City Council
Minimum strategic biodiversity value score[2]	0.309
Large trees	0 large trees

NB: values within tables in this document may not add to the totals shown above due to rounding

Appendix 1 includes information about the native vegetation to be removed

Appendix 2 includes information about the rare or threatened species mapped at the site.

Appendix 3 includes maps showing native vegetation to be removed and extracts of relevant species habitat importance maps

1 The general offset amount required is the sum of all general habitat units in Appendix 1.

2 Minimum strategic biodiversity score is 80 per cent of the weighted average score across habitat zones where a general offset is required

Next steps

Any proposal to remove native vegetation must meet the application requirements of the Detailed Assessment Pathway and it will be assessed under the Detailed Assessment Pathway.

If you wish to remove the mapped native vegetation you are required to apply for a permit from your local council. Council will refer your application to DELWP for assessment, as required. **This report is not a referral assessment by DELWP.**

This *Native vegetation removal report* must be submitted with your application for a permit to remove, destroy or lop native vegetation.

Refer to the *Guidelines for the removal, destruction or lopping of native* vegetation (the Guidelines) for a full list of application requirements This report provides information that meets the following application requirements:

- The assessment pathway and reason for the assessment pathway
- A description of the native vegetation to be removed (partly met)
- Maps showing the native vegetation and property (partly met)
- Information about the impacts on rare or threatened species.
- The offset requirements determined in accordance with section 5 of the Guidelines that apply if approval is granted to remove native vegetation.

Additional application requirements must be met including:

- Topographical and land information
- Recent dated photographs
- Details of past native vegetation removal
- An avoid and minimise statement
- A copy of any Property Vegetation Plan that applies
- A defendable space statement as applicable
- A statement about the Native Vegetation Precinct Plan as applicable
- A site assessment report including a habitat hectare assessment of any patches of native vegetation and details of trees
- An offset statement that explains that an offset has been identified and how it will be secured.

Authorised by the Victorian Government, 8 Nicholson Street, East Melbourne.

For more information contact the DELWP Customer Service Centre 136 186

www.delwp.vic.gov.au

Appendix 1: Description of native vegetation to be removed

The species-general offset test was applied to your proposal. This test determines if the proposed removal of native vegetation has a proportional impact on any rare or threatened species habitats above the species offset threshold. The threshold is set at 0.005 per cent of the mapped habitat value for a species. When the proportional impact is above the species offset threshold a species offset is required. This test is done for all species mapped at the site. Multiple species offsets will be required if the species offset threshold is exceeded for multiple species.

Where a zone requires species offset(s), the species habitat units for each species in that zone is calculated by the following equation in accordance with the Guidelines:

Species habitat units = extent x condition x species landscape factor x 2, where the species landscape factor = 0.5 + (habitat importance score/2)

The species offset amount(s) required is the sum of all species habitat units per zone

Where a zone does not require a species offset, the general habitat units in that zone is calculated by the following equation in accordance with the Guidelines:

General habitat units = extent x condition x general landscape factor x 1.5, where the general landscape factor = 0.5 + (strategic biodiversity value score/2)

The general offset amount required is the sum of all general habitat units per zone.

Native vegetation to be removed

Information provided by or on behalf of the applicant in a GIS file							Information calculated by EnSym					
Zone	**Type**	**BioEVC**	**BioEVC conservation status**	**Large tree(s)**	**Partial removal**	**Condition score**	**Polygon Extent**	**Extent without overlap**	**SBV score**	**HI score**	**Habitat units**	**Offset type**
10-P	Patch	gipp0821	Endangered	0	no	0.130	0.005	0.005	0.210		0.001	General
9-P	Patch	gipp0653	Least Concern	0		0.130	0.143	0.143	0.340		0.019	General
12-P	Patch	gipp0055	Endangered	0		0.120	0.014	0.014	0.397		0.002	General
11-P	Patch	gipp0055	Endangered	0		0.070	0.004	0.004	0.210		0.000	General
1-P	Patch	gipp0055	Endangered	0		0.110	0.192	0.192	0.420		0.023	General
2-P	Patch	gipp0055	Endangered	0		0.130	0.006	0.006	0.710		0.001	General
3-P	Patch	gipp0055	Endangered	0		0.110	0.018	0.018	0.420		0.002	General
4-P	Patch	gipp0053	Endangered	0		0.180	0.001	0.001	0.420		0.000	General
5-P	Patch	gipp0048	Least Concern	0		0.110	0.022	0.022	0.760		0.003	General
6-P	Patch	gipp0048	Least Concern	0		0.110	0.001	0.001	0.760		0.000	General
7-P	Patch	gipp0048	Least Concern	0		0.110	0.001	0.001	0.760		0.000	General

Information provided by or on behalf of the applicant in a GIS file							Information calculated by EnSym					
Zone	**Type**	**BioEVC**	**BioEVC conservation status**	**Large tree(s)**	**Partial removal**	**Condition score**	**Polygon Extent**	**Extent without overlap**	**SBV score**	**HI score**	**Habitat units**	**Offset type**
8-P	Patch	gipp0048	Least Concern	0		0.110	0.000	0.000	0.760		0.000	General
13-P	Patch	wet_0000	Endangered	0		0.510	1.489	1.489	0.379		0.785	General

Appendix 2: Information about impacts to rare or threatened species' habitats on site

This table lists all rare or threatened species' habitats mapped at the site.

Species common name	Species scientific name	Species number	Conservation status	Group	Habitat impacted	% habitat value affected
Grey Billy-buttons	*Craspedia canens*	504643	Endangered	Dispersed	Habitat importance map	0.0003
Green Scentbark	*Eucalyptus fulgens*	505175	Rare	Dispersed	Habitat importance map	0.0002
Swamp Everlasting	*Xerochrysum palustre*	503763	Vulnerable	Dispersed	Habitat importance map	0.0001
Maroon Leek-orchid	*Prasophyllum frenchii*	502709	Endangered	Dispersed	Habitat importance map	0.0001
Matted Flax-lily	*Dianella amoena*	505084	Endangered	Dispersed	Habitat importance map	0.0001
Purple Blown-grass	*Lachnagrostis punicea subsp. punicea*	504206	Rare	Dispersed	Habitat importance map	0.0001
Swamp Fireweed	*Senecio psilocarpus*	504659	Vulnerable	Dispersed	Habitat importance map	0.0001
Pale Swamp Everlasting	*Coronidium gunnianum*	504655	Vulnerable	Dispersed	Habitat importance map	0.0001
Purple Blown-grass	*Lachnagrostis punicea subsp. filifolia*	504222	Rare	Dispersed	Habitat importance map	0.0001
Purple Diuris	*Diuris punctata*	501084	Vulnerable	Dispersed	Habitat importance map	0.0001
Floodplain Fireweed	*Senecio campylocarpus*	507136	Rare	Dispersed	Habitat importance map	0.0001
Plains Yam-daisy	*Microseris scapigera s.s.*	504657	Vulnerable	Dispersed	Habitat importance map	0.0000
Black Falcon	*Falco subniger*	10238	Vulnerable	Dispersed	Habitat importance map	0.0000
White-throated Needletail	*Hirundapus caudacutus*	10334	Vulnerable	Dispersed	Habitat importance map	0.0000

Habitat group

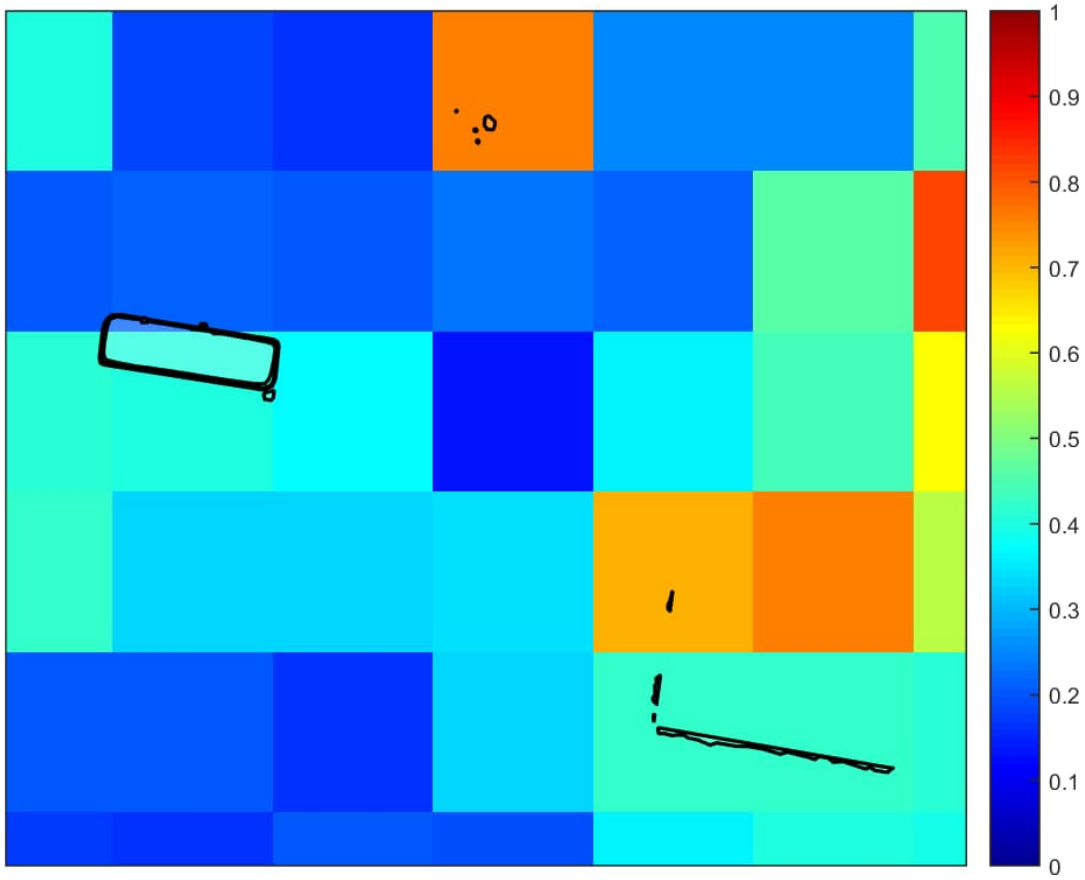
- Highly localised habitat means there is 2000 hectares or less mapped habitat for the species
- Dispersed habitat means there is more than 2000 hectares of mapped habitat for the species

Habitat impacted

- Habitat importance maps are the maps defined in the Guidelines that include all the mapped habitat for a rare or threatened species
- Top ranking maps are the maps defined in the Guidelines that depict the important areas of a dispersed species habitat, developed from the highest habitat importance scores in dispersed species habitat maps and selected VBA records
- Selected VBA record is an area in Victoria that represents a large population, roosting or breeding site etc.

Appendix 3 – Images of mapped native vegetation

2. Strategic biodiversity values map



3. Aerial photograph showing mapped native vegetation

4. Map of the property in context

Yellow boundaries denote areas of proposed native vegetation removal.