attachment II

ecological offset strategy.

Environment Effects Statement | May 2021

western outer ring main

a project of apa

APA VTS (Operations) Pty Ltd

Western Outer Ring Main - Environment Effects Statement

Ecological offset strategy

May 2021

This Ecological offset strategy (Report):

1. Has been prepared by GHD Pty Ltd ("GHD") for APA VTS (Operations) Pty Ltd (APA);
2. May only be used for the purpose of informing the Environment Effects Statement and Pipeline Licence Application for the Western Outer Ring Main Project (and must not be used for any other purpose); and
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Abbreviations

Abbreviation	Definition
APA	APA VTS Australia (Operations) Pty Ltd (APA) (trading as APA Group, the proponent for the Project)
BioCS	Bioregional Conservation Significance
BCS	Biodiversity Conservation Strategy
CMA	Catchment Management Authority
CVU	Central Victorian Uplands
DAWE	Department of Agriculture, Water and the Environment
DoEE	Department of Environment and Energy (now DAWE)
DELWP	Department of Environment, Land, Water and Planning
DEPI	Department of Environment and Primary Industries (now DELWP)
DSE	Department of Sustainability and Environment (now DELWP)
DSEWPAC	Department of Sustainability, Environment, Water, Population and Communities (now DAWE)
EES	Environment Effects Statement
EnSym	Environmental Systems Modelling Platform
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
EVC	Ecological Vegetation Class
FFG Act	*Flora and Fauna Guarantee Act 1988*
FFGA Act	*Flora and Fauna Guarantee Amendment Act 2019*
GAA	Growth Area Authority
GEWVVP	Grassy Eucalypt Woodland of the Victorian Volcanic Plain
GHD	GHD Pty Ltd
GHU	General Habitat Units- unit relevant to the Victorian offsets process
HCO	Habitat Compensation Obligation
Hha	Habitat ha
HZ	Habitat zone
KP	Kilometre Point
LGA	Local Government Authority
MNES	Matters of National Environmental Significance
MSA	Melbourne Strategic Assessment

Abbreviation	Definition
NTGVVP	Natural Temperate Grassland of the Victorian Volcanic Plain
NVIM	Native Vegetation Information Management
NVR report	Native Vegetation Removal report
OMP	Offset Management Plan
OMR	Outer Metropolitan Ring
PE Act	*Planning and Environment Act 1987*
PMST	Protected Matters Search Tool
SHU	Species Habitat Unit- Unit for Victorian offset process
TEC	Threatened Ecological Community
UGB	Urban Growth Boundary
UGZ	Urban Growth Zone
VPO	Vegetation Protection Overlay
VQA	Vegetation Quality Assessment
VVP	Victorian Volcanic Plain
WICA	Works in Conservation Area
WORM	Western Outer Ring Main (the Project)
WVTN	Western Victoria Transmission Network

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Appendices

1. Introduction

1.1 Background

The Western Outer Ring Main (WORM) gas pipeline project (the Project) is a proposed 600 millimetre nominal diameter high pressure gas transmission pipeline that will provide a high pressure connection between the eastern and western pipeline networks of the Victorian Transmission System (VTS).

APA VTS (operations) Pty Ltd (APA) is the proponent for the Project. APA is Australia's largest natural gas infrastructure business. In Victoria, the VTS is owned and maintained by APA and consists of 2,267 kilometres of gas pipelines. The VTS serves a total consumption base of approximately two million residential consumers and approximately 60,000 industrial and commercial users throughout Victoria.

The Project has been designed to provide critical infrastructure for Victoria's gas supply, distribution, and consequent security, efficiency and affordability. The key objectives of the Project are to:

- Improve system resilience and security of gas supply
- Increase the amount of natural gas that can be stored for times of peak demand
- Improve network performance and reliability
- Address potential gas shortages as forecasted by the Australian Energy Market Operator (AEMO) in the March 2020 Victorian Gas Planning Report update

Impacts resulting from the Project are being assessed jointly at State and Commonwealth level through the Environment Effects Statement (EES) process and under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) and the Bilateral Assessment Agreement which allows for an accredited assessment process for the purposes of the EPBC Act. Following assessment through the EES process and the Victorian Minister for Planning's assessment of the EES, the Commonwealth Minister for the Environment (or delegate) will ultimately decide whether the action is approved and, if so, what offset requirements are to be imposed by way of conditions on the approval. Similarly, at the State level, the key project approval is the Pipeline Licence under the *Pipelines Act 2005*. Any approval under the *Pipelines Act 2005* will require offsets at the state level in accordance with the Guidelines for the removal, destruction or lopping of native vegetation (2017).

The Scoping Requirements for the EES include requirement 4.2 Biodiversity and habitats that sets out the following Evaluation Objectives:-

> *Avoid and minimise potential adverse effects on native vegetation, listed threatened and migratory species and ecological communities, and habitat for these species, as well as restore and offset residual environmental effects consistent with state and Commonwealth policies.*

The Performance Criteria for this Evaluation Objective requires APA to address the following in the EES:

- *Describe and evaluate proposed measures to manage the residual effects of the project on biodiversity values and MNES, including an offset strategy and offset management plan (OMP) that sets out and includes evidence of the offsets that can be secured or are proposed to satisfy Commonwealth and Victorian offset policy or guideline requirements*
- *Describe how the offset/s will be secured, managed and monitored, including management actions, responsibility, timing, performance measures and the specific environmental outcomes to be achieved*
- *Proposed EPBC Act offsets must meet the requirements of the EPBC Act Environmental Offsets Policy (October 2012)*
- *Describe and evaluate the approach to monitoring and the proposed contingency measures to be implemented in the event of adverse residual effects on flora, fauna and ecological community values requiring further management*

The EES includes an assessment of impacts to biodiversity values in areas that may be impacted by the construction of the WORM (EES Technical report A Biodiversity and habitats, GHD 2021). These biodiversity values are recognised by the Australian Government and the Victorian Government in legislation, frameworks and policies designed to facilitate their conservation.

Project planning and impact assessment has worked through opportunities to avoid and minimise impacts to the ecological values. The residual unavoidable impacts require offsetting and are the focus of the offset strategy (this report). Proposed loss of vegetation and habitat presented in this Offset Strategy reflected by the residual impact is a conservative assessment, based on assuming 100 per cent vegetation/habitat loss within the construction corridor. In addition, further surveys may be undertaken prior to construction to confirm known habitat within the construction corridor. This is despite some areas of Horizontal Directional Drilling/reductions to the construction corridor to avoid impacts. There is likely to be further opportunity to confirm and reduce the amount of vegetation/habitat removed within the construction corridor during the detailed design phase of the project and through construction measures. Final offset requirements will therefore be calculated once the final approved route and impact area is known and results of further surveys have informed known habitat. These requirements will be set out in the Offset Management Plans to be approved by DELWP and DAWE.

For this Project, offsets are likely to be required under both Commonwealth legislation (*Environment Protection and Biodiversity Conservation Act 1999* - EPBC Act) administered by the Australian Department of Agriculture, Water and Environment (DAWE) and State (Victorian Government) legislation (i.e. the *Pipelines Act 2005*) administered by the Victorian Department of Environment, Land, Water and Planning (DELWP). A summary of the Commonwealth and State legislation and how these apply to the offsets required for the Project is outlined in Appendix A. The residual biodiversity impacts that require offsets are likely to be:

State administered offsets:

- 14.789 ha of native vegetation (including 19 large trees)

Commonwealth administered offsets:

- 19.93 ha of Golden Sun Moth habitat
- 39.34 ha of Striped Legless Lizard habitat
- 3.81 ha of Natural Temperate Grassland of the Victorian Volcanic Plain (NTGVVP)
- 2.29 ha of Grassy Eucalypt Woodland of the Victorian Volcanic Plain (GEWVVP)

This document presents the proposed strategy for identifying offsetting requirements for the WORM project and how the requirements are proposed to be achieved.

This document presents a summary of the potential residual impacts and subsequent offset requirements for the Project under Commonwealth and State legislation, along with the proposed strategy by which the Project will offset those residual impacts. This document fulfils the requirements of both the Terms of Reference for the Project to submit an offset strategy and the *Environment Protection and Biodiversity Conservation Act 1999* Environmental Offsets Policy for the Project to submit an 'Offset Proposal'. The production of this document is an iterative process and will be further developed in consultation with relevant stakeholders.

1.2 Purpose of this strategy

This document sets out the offsetting strategy for APA in relation to the WORM project. The offset values and calculations provided within this strategy are an estimate only and will be clearly defined, confirmed and approved once the Project impacts are finalised and the Offset Management Plan is developed.

This strategy aims to:

- Detail the offsets likely to be required by Australian Government legislation (EPBC Act) as part of the EPBC Act Approval for the project and how these offsets would be achieved, including the selection of suitable offset sites and the process of preparing an Offset Management Plan. Final offset requirements will not be known until approval of the final alignment, further surveys completed and the final areas of impact are determined.
- Detail offsets likely to be required by Victorian Government legislation and how these offsets would be achieved, including demonstrating how the 'no net loss' objective of the Guidelines for the removal, destruction or lopping of natural vegetation 'the Guidelines' (DELWP, 2017) would be achieved for native vegetation affected by WORM by:
  - Describing the general habitat units (GHU) required for the native vegetation removed or assumed lost for the WORM reference project
  - Outlining the options for achieving the GHU requirements for WORM and how these would be secured to make a contribution to Victoria's biodiversity that is equivalent to the contribution made by the native vegetation being removed or assumed lost. Final offset requirements will not be known until approval of the final alignment and the final areas of impacts are determined
- Set out the proposed means for identifying and securing the offsets

1.3 Relationship with existing reports

This offset strategy draws upon information presented in, and should be read in conjunction with, the following report:

- APA VTS (Operations) Pty Ltd - Western Outer Ring Main (WORM) Environment Effects Statement Technical Report A - Biodiversity and Habitats Report (GHD 2021)

2. Summary of impacts

A detailed description of the residual ecological impacts resulting from the Project is contained in Sections 9 and 10 of the WORM Environment Effects Statement Technical Report A - Biodiversity and Habitats Report (GHD 2021). The following sections provide a summary of the residual impacts and should be read in conjunction with the detailed report. It should be noted the proposed loss of vegetation/habitat reflected by the residual impacts summarised in the following sections is a conservative assessment. The assessment is based on assuming 100 per cent vegetation/habitat loss within the construction corridor and presence of habitat has been assumed in areas not fully surveyed. There may be opportunity to reduce the amount of vegetation removed within the construction corridor following additional surveys to confirm the presence of habitat and during the detailed design phase of the project and through construction measures.

2.1 Summary of avoidance and minimisation methods

Avoid and minimise steps taken up until this point in the Project are reflected in Section 13.1 of the Environment Effects Statement Technical Report A - Biodiversity and Habitats Report (GHD 2021). The steps undertaken to avoid impacts are summarised below:

- Alignment and corridor
  - Five alignment options were analysed through a Multi Criteria Assessment (MCA), through this process Option C was identified as the preferred route option. This option, although being the 12 km longer than others, was assessed as being the optimum alignment to satisfy key criteria which the project weighted the greatest importance (environment, heritage, community and land considerations).
  - Stakeholder consultation and engagement with the Landowners and Department of Transport has further refined the alignment. Items taken into consideration included crossing of Jackson Creek, Sunbury Road and Deep Creek, to follow property boundaries, avoid impacts to urban growth land within the Sunbury South PSP, alignment relative to the Outer Metropolitan Ring
  - Further ecological and cultural heritage assessments and design/ constructability assessments have resulted in further refinement. Values taken into consideration at this point included avoiding established treelines and scattered trees where possible, reducing the construction footprint within private properties where particularly sensitive biodiversity and habitat exists', avoiding dams and wetlands, avoiding suitable habitat for protected fauna under state and federal legislation where possible.
  - Workshops between ecologists and APA have also achieved micro alignment changes to avoid large trees and native vegetation impacts
- Construction methods
  - There are three methods to construct the pipeline: Horizontal Directional Drilling, Horizontal Boring (both trenchless methods) and Open trench
  - Trenchless construction methods are being targeted to selected watercourses and sealed road crossings to minimise vegetation loss in these areas

These steps taken to minimise unavoidable impacts, including rehabilitation and restoration requirements, are summarised in Section 13.3 of the Environment Effects Statement Technical Report A - Biodiversity and Habitats Report (GHD 2021).

The key outcomes of avoid and minimisation measures to impacts on biodiversity for the project are:

- Avoiding impacts to Matted Flax-lily and Tough Scurf-pea though minor changes to pipeline alignment/construction corridor in areas of recorded occurrence
- Reduction in impacts to threatened ecological communities of both the EPBC and FFG Act though minor changes to pipeline alignment/construction corridor in areas of recorded occurrences
- Avoiding impacts to Groundwater Dependant Ecosystems though minor changes to pipeline alignment/construction corridor in areas of recorded occurrences
- Reduction in the construction footprint in habitat known to contain Stripped Legless Lizards and Golden Sun Moth
- Reduction in impacts to Growling Grass Frog Habitat though minor changes to pipeline alignment/construction corridor in areas of recorded occurrences
- Reduction in the width of the corridor through Jackson Creek to reduce impacts to Platypus
- Location of the alignment into existing easements which have previously been disturbed
- Where possible and feasible the use of trenchless construction techniques where particularly sensitive biodiversity and habitat exists

2.2 Commonwealth matters

Sections 0 and 2.2.2 describe the potential for the construction and operation of the Project to impact ecological assets, values and uses in regard to Matters of National Environmental Significance (MNES) listed under the EPBC Act.

On 21 February 2020, the Project was determined by Department of Agriculture, Water and the Environment (DAWE) to be a controlled action under Section 75 of the EPBC Act (referral submission 2019/8569). As a controlled action, the Project requires further assessment and approval under the EPBC Act before it can proceed.

The Project is being assessed in accordance with the bilateral agreement between the State of Victoria and the Commonwealth (Environmental Assessment, 2014). The EES and subsequent assessment by the State of Victoria will inform a separate approval decision by the Commonwealth Minister or delegate) under the EPBC Act. The EPBC Act approval will set out the final offset Commonwealth offset requirements for the Project.

DAWE has accepted that the subject of the referral is a component of a larger proposed action under section 74A of the EPBC Act. Two geographic sections of the Construction corridor with differing assessment and approvals pathways have been identified:

- Within the approved MSA areas (KP 0 - KP 3.15, KP 28.16 - KP 28.57 and KP 32.07 – KP 51.04)
- Outside the MSA approvals (KP 3.15 - KP 28.16 and KP 28.57 – KP 32.07)

Assessment of MNES under the EPBC Act is relevant to the area outside the MSA approvals only, while areas within the approved MSA area are covered by the MSA provisions where levies may be applicable rather than offsets (Section 2.3).

Of the nine MNES listed under the EPBC Act, one was identified as a controlling provision by the DAWE: listed threatened species and communities (Sections 18 and 18A of the Act).

2.2.1 Threatened ecological communities

Sections 9 and 10.1.1 of the Environment Effects Statement Technical Report A - Biodiversity and Habitats Report (GHD 2021) assess and quantify impacts to threatened ecological communities (TEC) outside of the MSA approvals. Impacted TECs include *Grassy Eucalypt Woodland of the Victorian Volcanic Plain (GEWVVP)* and *Natural Temperate Grassland of the Victorian Volcanic Plain (NTGVVP)*. Impacts have been summarised below for both TECs.

Grassy Eucalypt Woodland of the Victorian Volcanic Plain

Construction of the Project will require removal of 2.29 ha of this critically endangered TEC, most of which occurs at a single location outside the MSA and is part of a larger patch. The TEC was assessed as in moderate condition and patches also include a number of large River Red Gum trees that are likely to provide valuable habitat. The patches of the TEC scored as a weighted average 0.42 Habitat Hectares.

The project is likely to have a significant impact on *the Grassy Eucalypt Woodland of the Victorian Volcanic Plain* based on the relevant EPBC Act criteria (see Section 12.2.1 of the Environment Effects Statement Technical Report A - Biodiversity and Habitats Report (GHD 2021)). Residual impacts will be addressed through offsetting in accordance with the EPBC Act (Section 4.1.1) and the *Guidelines for the removal, destruction or lopping of native vegetation* (DELWP, 2017).

Natural Temperate Grassland of the Victorian Volcanic Plain

Removal of 3.81 ha consisting of approximately 30 patches of the critically endangered threatened ecological community (TEC), *Natural Temperate Grassland of the Victorian Volcanic Plain*, is expected during construction. The patches of TEC were of moderate condition scoring a weighted average 0.34 Habitat Hectares. The highest quality patch scored 0.47 and the poorest quality patch scored 0.18 Habitat Hectares.

The Project is likely to have a significant impact on *Natural Temperate Grassland of the Victorian Volcanic Plain* based on the relevant EPBC Act criteria. Residual impacts will be addressed through offsetting in accordance with the EPBC Act (Section 4.1.1) and the *Guidelines for the removal, destruction or lopping of native vegetation* (DELWP, 2017).

2.2.2 Fauna

Sections 9 and 10.1.1 of the Environment Effects Statement Technical Report A - Biodiversity and Habitats Report (GHD 2021) assess and quantify impacts to a threatened species outside of the MSA approvals. Residual impacts for Golden Sun Moth and Striped Legless Lizard have been assessed as significant based on the relevant EPBC Act criteria and are summarised below.

Golden Sun Moth

The Project would involve removal of a total of 19.93 ha of potential habitat for Golden Sun Moth outside of the MSA. This includes areas where Golden Sun Moth were detected during targeted surveys and areas where habitat was identified but four targeted surveys were not completed.

The Project occurs in a landscape of contiguous habitat (i.e., >10 ha) where the impact threshold for a significant impact is “habitat loss, degradation or fragmentation >0.5 ha”. As such, the Project meets this criterion for a significant impact.

Residual impacts will be addressed through offsets in accordance with the EPBC Act (Section 4.1.1).

Striped Legless Lizard

The Project would involve removal of 39.34 ha of potential habitat for Striped Legless Lizard outside of the MSA.

The Striped Legless Lizard population within the Project Area may be considered an important population. The proposed removal of 39.34 ha of known and assumed habitat for this species is considered to trigger a significant residual impact on this species and may result in a reduction in the area of occupancy of the species and fragmentation of a population if present within areas of assumed habitat only.

As such, the Project meets this criterion for a significant impact.

Residual impacts will be addressed through offsets in accordance with the EPBC Act (Section 4.1.1).

2.3 MSA matters

As per Section 2.2, the applicable section within the Project Area inside the MSA approvals is KP 0 - KP 3.15, KP 28.16 - KP 28.57 and KP 32.07 – KP 51.04 (approximately 25 km of the Project Area) (Figure 1). The liability to pay an MSA levy is triggered when a levy event occurs within the levy area, where habitat compensation obligations have not been previously met. The Project has the potential to trigger two levy events:

- Issue of a Statement of Compliance for a plan of subdivision (i.e. Subdivision of land)
- Construction of utility infrastructure on Crown land (where that land is outside a conservation area)

The Project Area does not intercept any Crown land subject to the levy. The MSA Levy is expected to be triggered only where land at Gunns Gully Road will be acquired as a subdivision. This subdivision is expected to result in impacts to 0.01 ha of Golden Sun Moth levy type.

The liability to pay an MSA levy is triggered when a levy event occurs within the levy area, where habitat compensation obligations have not been previously met. The anticipated levy is discussed further in Section 4.2.

The Project Area triggers state offsets where it intercepts the Crown land within the MSA. The total impacts are represented in Table 1 and shown in Appendix B.

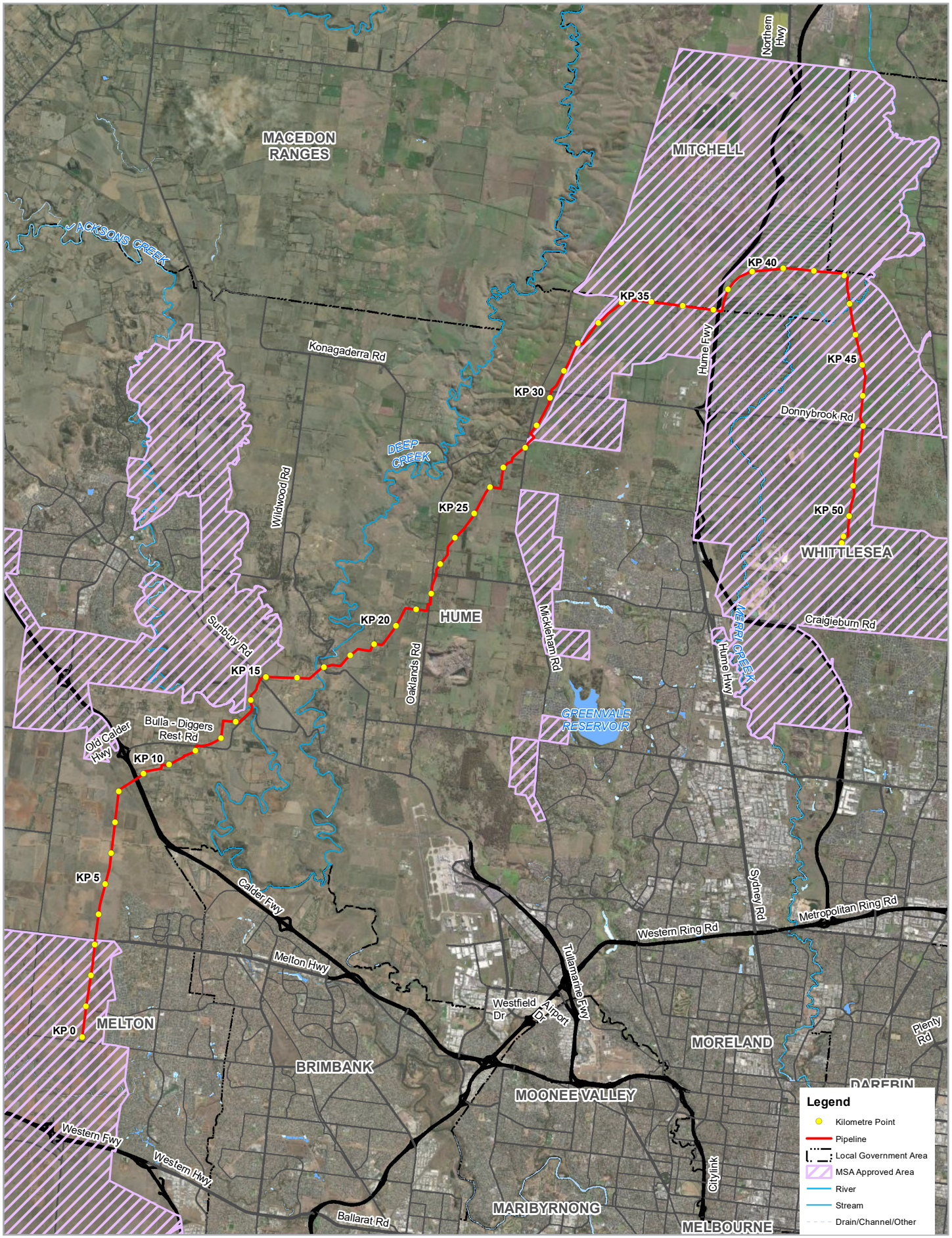
Table 1 Native vegetation loss within Crown Land inside the MSA

Summary of native vegetation loss	
Extent of proposed removal	0.013 hectares
No. of Large trees proposed to be removed	0 large trees
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 ha of native vegetation in this location will not have a significant impact on any habitat for a rare or threatened species.

The Project area traverses two Biodiversity Conservation Strategy conservation areas (Figure 2):

- Conservation Area 34a - Northern Growth Corridor: Growling Grass Frog Corridor (between KP 42 and KP 44)
- Conservation Area 28b - Summerhill Road (East), Wollert (between KP 48 and KP 50)

A Works in Conservation Area (WICA) approval will be required for any works proposed in a Conservation Area. No offsets or levies are triggered for the Project in these areas as the construction corridor is within an area previously cleared for the Wollert-Wondong pipeline project and habitat compensation arranged as part of that previous project (DELWP MSA Team advice received 24 February 2021). The vegetation clearing for this Project is therefore considered exempt under the *Guidelines for the removal, destruction or lopping of native vegetation (DELWP 2017)*.



Paper Size ISO A4

0 1 2 3 4

Kilometers

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

N

GHD

APA VTS (Operations) Pty Ltd
Western Outer Ring Main Gas Project

Project No. **31-12529997**
Revision No. **D**
Date **14/12/2020**

Project Area Overview

Figure 1

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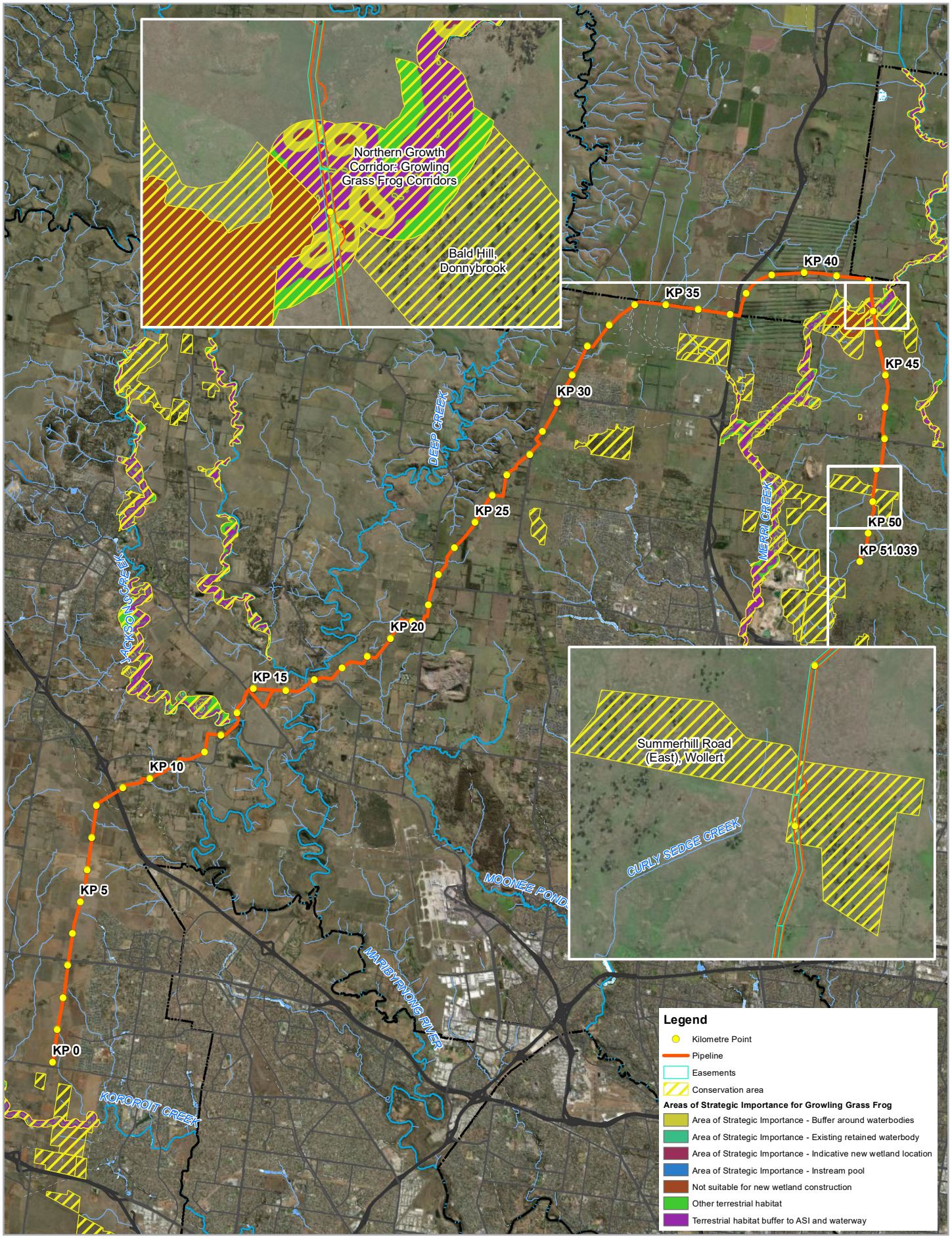
Print date: 14 Dec 2020 - 10:54

Data source: DELWP, VicMap, 2020; Geoscience australia 2012, GHD, 2020,Vicmap basemap imagery Created by: kgardner



Paper Size ISO A4

0 1 2 3

Kilometers

Map Projection: Lambert Conformal Conic
Horizontal Datum: GDA 1994
Grid: GDA 1994 VICGRID94

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GHD

Australian Pipeline Limited
Western Outer Ring Main Gas Project

Project No. **12529997**
Revision No. **B**
Date **19/10/2020**

Conservation Areas

FIGURE 2

Data source: DELWP, VicMap, 2020; Geoscience australia 2012, GHD, 2020; Biosis, 2020. Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. Created by: kgardner

2.4 State matters

The ecological impact assessment also identified native vegetation and State-protected species with the potential to be impacted by the project. This assessment included surveys of vegetation located within the construction corridor (the boundary the construction activities and final project infrastructure would be located within). To allow for flexibility and avoiding and minimising impacts during the detailed design phase, all native vegetation located within the construction corridor has been conservatively assumed to be removed. The native vegetation assumed to be removed outside the MSA is mapped in Figure 10 of the Western Outer Ring Main (WORM) Environment Effects Statement Technical Report A - Biodiversity and Habitats Report (GHD 2021) and summarised in Table 1 below. This loss is determined under the *Guidelines for the removal, destruction or lopping of native vegetation* (DELWP, 2017a) (Appendix C). These losses include trees that are just outside the construction corridor but have at least 10 per cent of their tree protection zone within the construction corridor (meaning that they would be regarded as being removed by construction of the project). It does not include vegetation losses not considered under the guidelines (e.g. exempt planted vegetation, non-native vegetation).

Table 2 Summary of total native vegetation loss within the construction corridor outside the MSA

Summary of native vegetation loss	
Extent of proposed removal	14.775 hectares
No. of Large trees proposed to be removed	19 large trees
Location category of proposed removal	Location 3 The native vegetation is in an area where the removal of less than 0.5 hectares could have a significant impact on habitat for one or more rare or threatened species. The native vegetation is also in an area mapped as an endangered Ecological Vegetation Class (as per the state-wide EVC map).

3. Offset requirements

3.1 Offset requirements summary

Table 3 provides a summary of the values presented within Sections 3.2 and 3.3.

Table 3 Summary of likely offset requirements for the Project

Offset Type	Impacted area of community, habitat or vegetation	Quality of impacted community/ fauna habitat	Quantum of Impact (Adjusted ha)	Approximate area to be offset / Offsets estimated to be required
Commonwealth				
NTGVVP	3.81 ha	3/10	1.14	13 ha
GEWVVP	2.29 ha	4/10	0.92	10.5 ha
Golden Sun Moth	19.93 ha	5/10	9.97	113.5 ha
Striped Legless Lizard	39.34 ha	6/10	23.60	125 ha
State				
General offsets	14.789 ha 19 large trees	N/A		General offset amount equal to 5.527 general habitat units: • 19 large trees • Within the Port Philip and Westernport Catchment Management Authority (CMA) or the municipalities of Hume City, Melton City • With a minimum strategic biodiversity value score: 0.522

Note: the areas and offsets required in Table 3 are subject to change during continual avoid and minimise measures and detailed design being implemented during the project planning phase.

3.2 Commonwealth offsets

Offsets that are expected to be triggered under the EPBC Act based on residual impact to MNES are two species, the Golden Sun Moth and Striped Legless Lizard, and two threatened ecological communities, *Natural Temperate Grassland of the Victorian Volcanic Plain* and *Grassy Eucalypt Woodland of the Victorian Volcanic Plain*.

To determine offsets required for the project the residual impact and quality for each MNES must be used to calculate the 'Quantum of Impact', as calculated by the *EPBC Act Offset Assessment Guide* (DAWE 2020a and DAWE 2020b). The extent of the direct offset required to deliver a tangible and measurable on-ground conservation gain to compensate for the 'Quantum of Impact' to the MNES is calculated by several factors, these are captured in the *EPBC Act Offset Assessment Guide* and *How to use the offsets assessment guide* documentation (DAWE 2020a and DAWE 2020b):

- What improvement will the offset deliver for the attribute being impacted?
  - Time until ecological benefit
  - Confidence in result
- What is the level of *averted loss* resulting from the proposed offset?
  - Change in risk of loss
  - Time over which loss is averted
  - Confidence in result

These factors contribute to calculating the minimum conservation gain supplied by the direct offset to compensate for the impact.

Additional key considerations, as outlined in *EPBC Act Offset Assessment Guide* and *How to use the offsets assessment guide* documentation (DAWE 2020a and DAWE 2020b) when determining direct and indirect offsets to compensate for the impact include:

- The offset must account for the status of the protected matter that is being impacted
- Suitable offsets must be additional to what is already required, determined by law or planning regulations, or agreed to under other schemes or programs
- The offset has transparent governance arrangements including being able to be readily measured, monitored, audited and enforced
- The offset is informed by scientifically robust information and incorporates the precautionary principle in the absence of scientific certainty
- Where relevant, the quality of the offset site must be at least equal to that of the impact site

3.2.1 *Natural Temperate Grassland of the Victorian Volcanic Plain*

Area of community impacted

Some patches of Plains Grassland (EVC 132) within the project area meet the criteria to be recognised as an occurrence of *Natural Temperate Grassland of the Victorian Volcanic Plain* (GHD 2020). A total of 3.81 hectares of the TEC occurs within the construction corridor and would be required to be removed for the Project.

Quality of community impacted

Natural Temperate Grassland of the Victorian Volcanic Plain within the construction corridor comprises remnant native vegetation in moderate condition. The quality of a community is scored out of ten for offsets assessment guide calculations. DAWE's instructions for the offsets assessment guide identify three site characteristics that may contribute to quality: 'site condition', 'site context' and 'species stocking rate'. These three attributes must be weighted according to their relative importance to the offset calculations based on the ecology of the relevant species or community (DSEWPAC 2012) (i.e. their relative contribution to the total score out of ten).

For the purpose of assessing the quality of the TEC for this project, the Vegetation Quality Assessment (VQA, Habitat Hectares) score has been used, this method is used in Victoria to assess the quality of vegetation under the *Guidelines for the removal destruction and lopping of native vegetation* (DELWP 2017). The VQA method measures the condition of the vegetation out of 75 points and the landscape context of the vegetation out of 25.

The weighting of these relevant attributes for *Natural Temperate Grassland of the Victorian Volcanic Plain* was defined as follows:

- Site condition – out of 7.5 - comprising an assessment of the condition of the community within the project in relation to the ecological requirements of the community. Based on vegetation structure, native plant cover, species richness and presence of habitat resources
- Site context – out of 2.5 - comprising an assessment of the relative importance of the patches of the TEC in terms of its position in the landscape based on patch size, connectivity and proximity to threats
- Species stocking rate – N/A - this attribute is not directly relevant to threatened communities

Each characteristic was then scored based on the results of the field assessment as presented within Section 8.3.3 of the EES Technical Report A - Biodiversity and Habitats Report (GHD 2021). The weighted average site condition and site context was scored as 2.7/7.5 and 0.3/2.5 respectively, the total quality score equals 3/10, based on consideration of the condition thresholds in the listing advice for the community (DSEWPAC 2011), the VQA (Habitat Hectares) results and other field survey data collected within the habitat zones that comprise *Natural Temperate Grassland of the Victorian Volcanic Plains* within the project area. The patches of Plains Grassland that met the condition thresholds to be considered the *Natural Temperate Grassland of the Victorian Volcanic Plains* were of moderate quality and had significant threats and were considerably isolated from large and continuous patches of the community.

Based on the inputs described above, 'Impact calculator - quantum of impact – quality' (i.e. the quality of habitat to be impacted) was scored as 3/10 overall.

Quantum of impact

When the above values for *area of community impacted* and *quality of community impacted* are entered in the offsets assessment guide calculations (DAWE 2020b), the 'Quantum of Impact' is calculated as 1.14 'adjusted Hectares'. An impact area of '3.81 hectares' has been entered in the 'area of community' field and '3/10 quality' has been entered in the 'quality' field in the 'impact calculator' section of the offsets assessment guide for *Natural Temperate Grassland of the Victorian Volcanic Plains* (Appendix F).

Estimated offset requirement

A preliminary offsets assessment guide calculation was performed as a guide to the size and type of offset that would be required to meet the EPBC Act offset requirements for the WORM project's impacts on EPBC Act *Natural Temperate Grassland of the Victorian Volcanic Plain*. Based on the preliminary offsets assessment guide calculations (Appendix F), the Project would require an offset of approximately 13 hectares of *Natural Temperate Grassland of the Victorian Volcanic Plain*. Potential offset sites have been identified that contain the required area of the community and are described in Section 4.1.2. Final offset calculations and requirements will be finalised prior to construction once the final area of impact is known following approval of the final alignment in accordance with Project approvals.

3.2.2 *Grassy Eucalypt Woodland of the Victorian Volcanic Plain*

Area of community impacted

Some patches of Plains Grassy Woodland (EVC 55) within the project area meet the criteria to be recognised as an occurrence of *Grassy Eucalypt Woodland of the Victorian Volcanic Plain* (GHD 2020). A total of 2.29 hectares of the TEC occur within the construction corridor and would be required to be removed for construction of the WORM.

Quality of community impacted

Grassy Eucalypt Woodland of the Victorian Volcanic Plain within the project area comprises remnant native vegetation in moderate condition. The quality of a community is scored out of ten for offsets assessment guide calculations. DAWE's instructions for the offsets assessment guide identify three site characteristics that may contribute to quality: 'site condition', 'site context' and 'species stocking rate'. These three attributes must be weighted according to their relative importance to the offset calculations based on the ecology of the relevant species or community (DSEWPAC 2012) (i.e. their relative contribution to the total score out of ten).

For the purpose of assessing the quality of the TEC for this project, the Vegetation Quality Assessment (VQA, Habitat Hectares) score has been used, this method is used in Victoria to assess the quality of vegetation under the *Guidelines for the removal destruction and lopping of native vegetation* (DELWP 2017). The VQA method measures the condition of the vegetation out of 75 points and the landscape context of the vegetation out of 25. The weighting of these relevant attributes for *Grassy Eucalypt Woodland of the Victorian Volcanic Plain* was defined as follows:

- Site condition – out of 7.5 - comprising an assessment of the condition of the community within the project in relation to the ecological requirements of the community. Based on vegetation structure, native plant cover, species richness and presence of habitat resources
- Site context – out of 2.5 - comprising an assessment of the relative importance of the patches of the TEC in terms of its position in the landscape based on patch size, connectivity and proximity to threats
- Species stocking rate – N/A - this attribute is not directly relevant to threatened communities

Each characteristic was then scored based on the results of the field assessment as presented within the EES Technical Report A - Biodiversity and Habitats Report (GHD 2020). The weighted average site condition and site context was scored as 3.6/7.5 and 0.4/2.5 respectively, the total quality score equals 4/10, based on consideration of the condition thresholds in the listing advice for the community (DSEWPAC 2011), the Vegetation Quality Assessment (Habitat Hectares) results and other field survey data collected within the habitat zones that comprise *Grassy Eucalypt Woodland of the Victorian Volcanic Plain* within the project area. The patches of Plains Grassy Woodland that met the condition thresholds to be considered *Grassy Eucalypt Woodland of the Victorian Volcanic Plain* were of moderate quality and had significant threats and were part of a larger patch which is not continuous with other patches of the community.

Based on the inputs described above, 'Impact calculator - quantum of impact – quality' (i.e. the quality of habitat to be impacted) was scored as 4/10 overall.

Quantum of impact

When the above values for *area of community impacted* and *quality of community impacted* are entered in the offsets assessment guide calculations (DAWE 2020b), the 'Quantum of Impact' is calculated to 0.92 'adjusted Hectares'. An impact area of '2.29 hectares' has been entered in the 'area of community' field and '4/10 quality' has been entered in the 'quality' field in the 'impact calculator' section of the offsets assessment guide for *Grassy Eucalypt Woodland of the Victorian Volcanic Plain* (Appendix F).

Estimated offset requirement

A preliminary offsets assessment guide calculation (Appendix F) was performed as a guide to the size and type of offset that would be required to meet the EPBC Act offset requirements for the WORM project's impacts on *Grassy Eucalypt Woodland of the Victorian Volcanic Plain*. Based on the preliminary offsets assessment guide calculation, the WORM project would require an offset of approximately 10.5 hectares of *Grassy Eucalypt Woodland of the Victorian Volcanic Plain*. The offset strategy for this community is described in Section 4.1.2. Final offset calculations and requirements will be finalised prior to construction once the final area of impact is known following approval of the final alignment in accordance with Project approvals.

3.2.3 Golden Sun Moth Habitat

Area of habitat impacted

Areas of Golden Sun Moth habitat within the project area are summarised in Section 2.2.2. There are 19.93 hectares of Golden Sun Moth Habitat as defined under the EPBC Act to be impacted within the construction corridor outside of the MSA. Consequently, a total of 19.93 hectares of the Golden Sun Moth habitat would be required to be removed for construction of the WORM.

Quality of habitat impacted

Golden Sun Moth Habitat within the project area comprises remnant native vegetation in moderate condition and non-native vegetation of introduced species including weeds listed under the *Catchment and Land Protection (CALP) Act 1994* and Weeds of National Significance. The quality of threatened species habitat is scored out of ten for offsets assessment guide calculations. DAWE's instructions for the offsets assessment guide identify three site characteristics that may contribute to quality: 'site condition', 'site context' and 'species stocking rate'. These three attributes must be weighted according to their relative importance to the offset calculations based on the ecology of the relevant species or community (DAWE 2020a) (i.e. their relative contribution to the total score out of ten). Previous similar projects have been reviewed and an informed weighting has been used for this project (Biosis,2020a). The Biosis (2020a) report provides detail and background to the proposed weighting used below. The weighting of these three attributes for *Golden Sun Moth Habitat* was defined as follows:

- Site condition – out of 3 - comprising an assessment of the condition of the threatened species habitat within the project in relation to the ecological requirements of the threatened species. Based on vegetation structure, native plant cover, species richness and presence of habitat resources.
  - 3/3= dominated by high quality native vegetation including >40% cover of known food source, appropriate inter-tussock space
  - 2/3= dominated by moderate quality native vegetation including between 20-40 % cover of known food source with limited inter tussock space

  - 1/3= dominated by poor quality native vegetation including <20% cover of known food source
  - 0/3= dominated by introduced vegetation with no known food source present
- Site context – out of 3 - comprising an assessment of the relative importance of the patches of the threatened species habitat in terms of its position in the landscape based on patch size, connectivity and proximity to threats. A patch is considered to be an area of suitable habitat (not constrained to the alignment corridor) separated from other areas of suitable habitat by >200 m of unsuitable habitat or barriers to flight
  - 3/3= habitat patch size is > 10 ha, shaped appropriately to reduce edge effects, slightly sloped and north-facing, minimal shading
  - 2/3= habitat patch size is > 10 ha, shaped appropriately to reduce edge effects
  - 1/3= habitat patch size is > 0.25 ha but < 10 ha
  - 0/3= habitat patch size is < 0.25 ha
- Species stocking rate – out of 4 – comprising an assessment of the density of the species across the area of suitable habitat. Density is calculated as an average across the area of suitable habitat, the average is weighted to consider survey areas.
  - 4/4 = >50 males per ha
  - 3/4= >20-50 males per ha
  - 2/4= >5-20 males per ha
  - 1/4= 0-5 males per ha
  - 0/4 = no moths present
  - Due to the surveys being completed in 2019 and 2020 flying seasons a few assumptions were made to calculate the stocking rate
    - Where incomplete surveys recorded no moths on a parcel, the parcel received a 4/4
    - Where incomplete surveys recorded moths, the total combined moths from the completed rounds was applied to the remaining rounds. (i.e. Round 1 and 2 complete surveys recorded two months, Round 3 is given a assumed total of 2, Round 4 given an assumed total of 2= total GSM recorded for the four rounds is six for that parcel)
    - In 2019 the surveys were suspended if moths were found (absence/presence), however in 2020 surveys were conducted to inform stocking rates and were conducted over four rounds. If in 2020, the complete surveys recorded no moths, but in 2019 the incomplete survey recorded a moth, this moth recorded was awarded to the parcel.

Each characteristic was then scored based on the results of the field assessment as presented within the EES Technical Report - Biodiversity and Habitats Report (GHD 2020). The site condition was scored as 1/3 based on consideration of the suitable habitat published for the threatened species (DEWHA 2009) and other field survey data collected within the habitat zones that comprise of Golden Sun Moth Habitat within the project area. The site context was scored as 2/3 based on the size of the habitat patches and their connectivity with larger patches of habitat for Golden Sun Moth. The species stocking rate was scored as 2/4 based on the results of the targeted surveys completed over 2019, 2020 and 2021, moth survey results presented in Section 8.4.3 of the EES Technical Report - Biodiversity and Habitats Report (GHD 2021).

Based on the inputs described above, 'Impact calculator - quantum of impact – quality' (i.e. the quality of habitat to be impacted) was scored as 5/10 overall.

Quantum of impact

When the above values for area of community impacted and quality of community impacted are entered in the offsets assessment guide calculations (DAWE 2020b), the 'Quantum of Impact' is calculated as 9.97 'adjusted Hectares'. An impact area of '19.93 hectares' has been entered in the 'area of community' field and '5/10 quality' has been entered in the 'quality' field in the 'impact calculator' section of the offsets assessment guide for *Golden Sun Moth Habitat*(Appendix F).

Estimated offset requirement

A preliminary offsets assessment guide calculation (Appendix F) was performed as a guide to the size and type of offset that would be required to meet the EPBC Act offset requirements for the WORM project's impacts on *Golden Sun Moth Habitat*. Based on the preliminary offsets assessment guide calculation, the WORM project would require an offset of around 113.5 hectares of *Golden Sun Moth Habitat*. Potential offset sites have been identified that contain the required area of the community and are described in Section 4.1.2. Final offset calculations and requirements will be finalised prior to construction once the final area of impact is known following approval of the final alignment in accordance with Project approvals.

3.2.4 Striped Legless Lizard Habitat

Area of habitat impacted

Areas of *Striped Legless Lizard habitat* within the project area are summarised in Section 2.2.2. There are 39.34 hectares of *Legless Lizard habitat* as defined under the EPBC Act to be impacted within the construction corridor outside of the MSA. Consequently, a total of 39.34 hectares of the *Striped Legless Lizard habitat* would be required to be removed for construction of the WORM.

Quality of habitat impacted

Striped Legless Lizard Habitat within the project area comprises remnant native vegetation in moderate condition and non-native vegetation of introduced species including weeds listed under the *Catchment and Land Protection (CALP) Act 1994* and Weeds of National Significance. The quality of threatened species habitat is scored out of ten for offsets assessment guide calculations. DAWE's instructions for the offsets assessment guide identify three site characteristics that may contribute to quality: 'site condition', 'site context' and 'species stocking rate'. These three attributes must be weighted according to their relative importance to the offset calculations based on the ecology of the relevant species or community (DAWE 2020a) (i.e. their relative contribution to the total score out of ten). The weighting for this project has been informed from previous similar projects (Biosis,2020b). The Biosis (2020b) report provided detail and background to the proposed weighting.

The weighting of these three attributes for *Striped Legless Lizard Habitat* was defined as follows:

- Site condition – out of 3 - comprising an assessment of the condition of the threatened species habitat within the project in relation to the ecological requirements of the threatened species. Based on vegetation structure, native plant cover, species richness and presence of habitat resources.
  - 3/3 = Good - Site (on average) supports a species-rich and structurally complex ground flora (reflecting appropriate biomass management). Dominated by an above average diversity of native tussock-forming grasses and above average native forbs, together with embedded and/or surface rock.
  - 2/3 = Satisfactory - Site (on average) supports a moderately diverse ground flora with good structural complexity (reflecting some biomass management). Dominated by an average diversity of native tussock forming grasses and average diversity of native forbs with or without embedded and/or surface rock.
  - 1/3 = Poor - Site (on average) supports a species-poor ground flora with low structural complexity (reflecting inadequate biomass management). Dominated by a few native or predominantly introduced tussock-forming grasses with no or very few native forbs with or without embedded and/or surface rock.
- Site context – out of 4 - comprising an assessment of the relative importance of the patches of the threatened species habitat in terms of its position in the landscape based on patch size, connectivity and proximity to threats
  - Connectivity score out of 2
    - 1/2= Site is < 0.5 ha
    - 2/2 Site is equal to > 0.5 ha
  - Threats that may impact upon Striped Legless Lizards have been categorised
    - Site currently subject to continuous, intensive grazing by livestock or kangaroos, thereby reducing the floristic and structural complexity of the habitat
    - Site subject to frequent, widespread and intense fires, including deliberate burns that are not sympathetic to the maintenance of Striped Legless Lizard habitat
    - Site subject to historical or ongoing ploughing, pasture improvement and agricultural intensification
    - Site subject to historical or ongoing removal of surface and/or embedded or rock
    - Site subject to frequent slashing thereby reducing the structural complexity of the habitat
    - Site dominated by exotic grasses to the extent that the majority of the site is no longer defined as native vegetation
    - Site currently not subject to any form of appropriate biomass reduction (e.g. low-moderate intensity grazing or sympathetic ecological burns to maintain structural and floristic diversity of the habitat)
    - 2/2= Site subject to none of the above threats
    - 1/2= Site subject to between one and four of the above threats
    - 0/2 = Site subject to five or more of the above threats

- Species stocking rate – out of 3 – comprising an assessment of the density of the species across the area of suitable habitat. The method proposed by Biosis (2020b) uses the maximum number of Striped Legless Lizards detected at a tile grid during any one site survey as a surrogate for density. This includes counts of sloughs as well as actual lizards.
  - 3/3 = Three or more individuals or sloughs encountered under the tile grid during any one of seven monitoring events
  - 2/3 = A maximum of two individuals or sloughs encountered under the tile grid during any one of seven monitoring events
  - 1/3 = A maximum of one individual, or slough encountered under the tile grid during any one of seven monitoring events

Surveys must be carried out as per the survey standards in the referral guidelines, including the minimum number of grids based on the area of the site (DSEWPAC 2011b). This standard requires fortnightly tile grid checks between 1 September and 31 December (a minimum of seven checks). More frequent checks can be undertaken (e.g. weekly), but this is not mandatory. All sloughs must be removed during each check.

Each characteristic was then scored based on the results of the field assessment as presented within the EES Technical Report - Biodiversity and Habitats Report (GHD 2020). The site condition was scored as 1/3 based on consideration of the suitable habitat published for the threatened species (TSSC 2016) and other field survey data collected within the habitat zones that comprise of Legless Lizard habitat within the project area. The site context was scored as 2/4 based on the size of the habitat patches and the frequent and uncontrolled threats subjected to the habitat. Due to targeted surveys not being completed for all of the Striped Legless Lizard habitat within the Project Area, the species stocking rate is unable to be calculated therefore the species stocking rate was scored as 3/3, of the targeted surveys completed so far only one of the properties surveyed did detect the species (EES Technical Report - Biodiversity and Habitats Report (GHD 2020).

Based on the inputs described above, 'Impact calculator - quantum of impact – quality' (i.e. the quality of habitat to be impacted) was scored as 6/10 overall.

Quantum of impact

When the above values for area of community impacted and quality of community impacted are entered in the offsets assessment guide calculations (DAWE 2020b), the 'Quantum of Impact' is calculated as 23.6 'adjusted Hectares'. An impact area of 39.34 hectares' has been entered in the 'area of community' field and '6/10 quality' has been entered in the 'quality' field in the 'impact calculator' section of the offsets assessment guide for *Striped Legless Lizard habitat* (Appendix F).

Estimated offset requirement

A preliminary offsets assessment guide calculation (Appendix F) was performed as a guide to the size and type of offset that would be required to meet the EPBC Act offset requirements for the WORM project's impacts on *Striped Legless Lizard Habitat*. Based on the preliminary offsets assessment guide calculation, the WORM project would require an offset of around 125 hectares of *Striped Legless Lizard Habitat*. Potential offset sites have been identified that contain the required area of the habitat and are described in Section 4.1.2. Final offset calculations and requirements will be finalised prior to construction once the final area of impact is known following approval of the final alignment in accordance with Project approvals.

3.3 State offsets

The expected vegetation removal described in Section 3 was analysed through DELWP's EnSym Native Vegetation Regulations (NVR) tool to determine the offset requirements for the project. The NVR tool assesses whether the removal of vegetation (including trees) has the potential to affect significant habitat of threatened species and uses mapped habitat to identify offset requirements to compensate for vegetation loss due to the project. The results of the analysis were provided in a Native vegetation removal report and are summarised below.

It should be noted the proposed loss of vegetation in Table 21 is a conservative assessment, based on assuming 100 per cent vegetation loss within the construction corridor. There may be opportunity to reduce the amount of vegetation removed within the construction corridor during the detailed design phase of the project and through construction measures.

The available approaches to achieve State offset requirements are outlined in Section 2.

3.3.1 General habitat units

There are two *Native vegetation removal report* (NVRR) generated for this project. One is for the areas of Crown land within the MSA (Appendix B as discussed in Section 2.3) and the other is for the total project site with the Crown land considered as past removal (Appendix C). Table 4 lists the following requirements for general habitat of each NVRR:

Table 4 Summary of GHU requirements

	NVRR in areas of Crown land within MSA	NVRR in the total project site with the Crown land considered as past removal
General offset amount	0.006	5.521
Large trees	0	19
Vicinity	Port Phillip and Westernport Catchment Management Authority (CMA) or Mitchell Shire, Whittlesea City Council	Port Phillip and Westernport Catchment Management Authority (CMA) or Hume City, Melton City Council
Minimum strategic biodiversity score	0.304	0.522

It should be noted that these results are not final and may change. Following further construction footprint refinement, landowner negotiations and construction methodologies the area of native vegetation impacted may decrease or increase slightly and this will be addressed prior to the procurement process to purchase offsets, as well as during the reconciliation of impacts following construction. Final offsets required can therefore only be calculated and reconciled following construction.

3.3.2 Species habitat units

Both NVRRs indicated that no species offsets are required for the project.

It should be noted that these results are not final and may change; however, it is unlikely Species habitat units (SHU) will be triggered, as the estimates presented here are based on assumed loss of all vegetation within the construction corridor, and if any SHU were to be potentially to be triggered it would be by removing considerably larger amounts of native vegetation.

4. Proposed offset strategy

Given the scale of the project and its current design/construction stage, there is a level of uncertainty associated with the amount of native vegetation that would need to be removed within the construction corridor. Therefore, this strategy has been conservatively developed, assuming loss of all vegetation within the construction corridor. Whilst it is noted that there may be opportunities to further avoid and minimise impacts on biodiversity values (such as native vegetation or EPBC-listed communities or species habitat) this strategy outlines proposed options available to APA to identify and progress towards securing offsets with the assumption that impacts cannot be reduced.

It has been found that the standard approach to purchasing established offsets through an offset broker will meet the requirements of the project, and this approach is outlined in Sections 0, 4.2 and 4.3. As shown below, the risk of not being able to secure the required offsets is low, however APA have been in contact with multiple offset brokers to ensure their capacity and availability should any issues arise. If the required offsets are not available for purchase on the open market, APA will approach an offset broker to assist in searching for appropriate properties and establishing an offset site on an appropriate property. The offset values and calculations provided within this strategy are an estimate only and will be clearly defined, confirmed and approved once the Project impacts are finalised and the Offset Management Plan is developed.

Offset sites will be legally secured to ensure the ongoing protection of the vegetation offset area. In Victoria, an agreement under one of the following Acts can be established to secure an offset:

- Section 173 of the *Planning and Environment Act 1987* – An agreement under the *Planning and Environment Act 1987* would need to be established with the relevant responsible Authority
- Section 3A of the *Victorian Conservation Trust Act 1972* – a security agreement under this Act can be arranged through Trust for Nature (TFN)
- Section 69 of the *Conservation, Forests and Lands Act 1987* – DELWP is responsible for security agreements under this Act

It is recognised that some previous projects have co-located both State and Commonwealth offsets obligations on the same property. For the offset requirements and areas required to be secured for this Project this method is not feasible after assessing the availability and cost of co-locating. The offset package provided within Sections 0 and 4.3 describe an offset package for the Commonwealth and State through separate properties and processes relevant to each legislation.

Table 5 outlines the indicative timeline and steps for APA to secure offsets for both Commonwealth and State impacts. These steps and timing will be confirmed in consultation with the State and Commonwealth.

As the finalisation of the construction footprint is evolving, a step has been included to ensure the correct impacted areas have been considered for the procurement process prior to the construction phase.

Table 5 Proposed offset strategy timeline

Date	Activity	Responsible Party
Q4 2020 – Q2 2021	Identification of the offset requirements and availability of offsets on the open market via third party offsets	Proponent
	Determine residual impacts to MNES and calculate offsets required	Commonwealth / State / Proponent
	Assess potential sites against offset requirements and for compliance with DAWE policy	Commonwealth / Proponent
	Prepare Offset Strategy for Project in accordance with Scoping Requirements	Proponent / Commonwealth / State
Next Steps TBC in consultation with State/Commonwealth or landowners (as applicable)	Reporting to DELWP and DAWE and seek approval of the offset site(s) or agreed approach	Proponent / Commonwealth / State
	Negotiation with land owner of offset site or approved credit provider	Landowner / Proponent
	Enter into a MOU with landowner for offset sites	Landowner / Proponent
	Prepare Offset Management Plans for the offset site(s) or agreed approach	Landowner / Proponent / Commonwealth
	Development of a legal binding agreement	Landowner / Proponent
	Finalise Offset Management Plan and sign contracts	Landowner / Proponent / Commonwealth
	Finalise procurement of credits once final design has been confirmed	Landowner / Proponent / Commonwealth
	Secure offset site with covenant on Title and provide evidence to DELWP/DAWE	Proponent
Following construction completion	Offset reconciliation DELWP	State
	Formal reporting to DAWE as per monitoring program and approval conditions	Commonwealth
	On-selling of any excess offsets.	State

4.1 Commonwealth offset package

The offset values and calculations provided within this strategy are an estimate only and will be clearly defined, confirmed and approved once the Project impacts are finalised and the Offset Management Plan is developed.

To satisfy the offset requirements for the project, APA has commenced discussions with offset brokers to source and secure offset properties. At this stage, early investigations into properties have begun and further sites may be considered to ensure that suitable offsets sites are secured and arrangements/contracts and fees are appropriate for APA.

Currently, two sites have been identified with potential to meet offset requirements for Golden Sun Moth (GSM) habitat and one site to meet offset requirements for both *Natural Temperate Grassland of the Victorian Volcanic Plain* (NTGVVP) and Striped Legless Lizard (SLL). Initial site investigations are being undertaken to understand the quantity of land suitable to be secured for the offsets and to determine the presence of GSM habitat, NTGVVP and SLL habitat. Once these values are understood and determined as suitable to provide the required offsets, negotiations with the landowners can commence along with drawing up of contracts and the Offset Management Plans (as described in Section 4.1.3.

One site has been identified by the Offset Broker to meet the offset requirements for *Grassy Eucalypt Woodland of the Victorian Volcanic Plain* (GEWVVP). Initial site investigations are being undertaken to understand the quantity of land suitable to be secured for the offsets and to confirm the presence of GEWVVP.

Section 4.1.2 describes the offset sites currently under investigation to determine if they meet the offset obligations of the project.

Section 4.1.3 describes the remaining process for securing, funding and managing the offset sites to ensure the offset obligations are met to the satisfaction of DAWE.

Section 4.1.4 outlines the EPBC offset calculator inputs that have been generated on limited knowledge of the offset sites being investigated.

APA is also in discussion with multiple offset brokers to ensure that if any other suitable properties come onto the market these can be investigated and potentially secured to meet the offset obligations.

4.1.1 EPBC Act Environmental Offsets Policy

The EPBC Act Environmental Offsets Policy specifies a range of offset principles to guide the development of strategies to offset for residual impacts which are detailed below (Table 6). This policy provides transparency around how the suitability of offsets is determined. The suitability of a proposed offset is considered as part of the decision as to whether or not to approve a proposed action under the EPBC Act (DSEWPaC 2012).

The *Offsets Assessment Guide*, which accompanies the EPBC Act Environmental Offsets Policy, has been developed in order to give effect to the requirements of this policy, utilising a balance sheet approach to measure impacts and offsets. It applies where the impacted protected matter is a threatened species or ecological community. Management of the proposed offset sites (discussed in Table 7) will involve protection (via a covenant) and active ecological land management will be undertaken as described within a site-specific Offset Management Plan.

Table 6 EPBC Act Offset Requirements

Item no.	Offset requirement	Response
1	Suitable offsets must deliver an overall conservation outcome that improves or maintains the viability of the protected matter.	Currently, two sites have been identified with potential to meet the offset requirements for GSM habitat and one site to meet offset requirements for both NTGVVP and SLL. Another site has been identified by the Offset Broker to meet the offset requirements for GEWVVP. Site investigations are being undertaken to determine the quantity and quality of community/habitat present within these proposed offset sites. At a minimum, the quality of community/habitat at these offsets must meet the quality of community/habitat at the impact site. If assessed to be suitable, the proposed sites would provide an offset for the protection and management of MNES associated with the proposed WORM Project. The protection and ongoing improvements proposed will secure an area of NTGVVP, GEWVVP, GSM habitat and SLL habitat. Securing the sites under a legal covenant will allow the active management of current potentially threatening processes to be managed in accordance with best practice guidelines as per approved Offset Management Plans (OMP's). This management is considered important for the long-term viability of the threatened species and ecological communities at the offset sites.
2	Suitable offsets must be built around direct offsets but may include other compensatory measures.	The proposed offset sites are required to form a minimum of 90% of the total offset requirement for each MNES. The management of habitat through ongoing protection and associated on-ground measures to improve vegetation condition is considered to be a direct offset. Once secured, offset sites would be managed in accordance with the OMP's.
3	Suitable offsets must be in proportion to the level of statutory protection that applies to the protected matter.	The proposed offset sites will be secured in proportion to the level of statutory protection that applies to the MNES associated with the project, in accordance with the EPBC Act (see section 4.1.4). This process relates to MNES of greater conservation status requiring greater offset requirements and is calculated in the *Offset assessment guide*.
4	Suitable offsets must be of a size and scale proportionate to the residual impacts on the protected matter.	The proposed offset sites would be secured to protect for an impact to NTGVVP, GEWVVP, GSM habitat and SLL habitat. The current offset values and calculations provided within this strategy are an estimate only and will be clearly defined, confirmed and approved once the Project impacts are finalised and the Offset Management Plan is developed. Offset sites will be acquired to provide adequate offset for these MNES using the *Offset assessment guide*.
5	Suitable offsets must effectively account for and manage the risks of the offset not succeeding.	The offset sites will be subject to site-specific OMP's that will contain a risk assessment detailing relevant risk and mitigation measures for each offset site. The proposed offset sites will also be protected a legal covenant. The proposed offsets will be managed by the landowner under a legal covenant and will also require independent audits and reporting by a suitably qualified ecologist. Protection under covenant will also remove the legal possibility of existing permitted uses such as the application of fertilizer or grazing of stock (other than sheep) which are likely to have a significant negative impact on these MNES.

Item no.	Offset requirement	Response
6	Suitable offsets must be additional to what is already required, determined by law or planning regulations or agreed to under other schemes or programs	No specific offsets for NTGVVP, GEWVVP, SLL or GSM are prescribed under any State or Local Government offset prescriptions relevant to the project area. Environmental offsets already paid for under other schemes or programs cannot be used. However, if additional conservation gains on the same piece of land can be achieved these may be eligible for use as offsets provided that there are no perverse outcomes and synergies are produced.
7	Suitable offsets must be efficient, effective, timely, transparent, scientifically robust and reasonable.	The offset will be actively managed by the landowner under a covenant and with the supervision a suitably qualified ecologist. The decrease in condition scores of the offsets within the proposed timeframes are considered to be a conservative approach given the potential risks associated with vegetation and habitat quality decreasing without active management. Conversely, the objectives and implementation of appropriate management guidelines (to be outlined within the OMP's) are likely to improve the quality of communities/habitat given the positive response that these MNES can exhibit to active management. This will be achieved through ongoing monitoring events throughout the 10-year management period which is deemed an effective way to audit and reach the desired environmental outcome for the offset site (i.e. adaptive management for greater ecological gains).
8	Suitable offsets must have transparent governance arrangements including being able to be readily measured, monitored, audited and enforced.	Governance includes supervision by a suitably qualified and independent ecologist with formal reporting required to be submitted to annually to DAWE. Offset proposals will need to clearly include articulated measures of success that are linked to the purpose of the offsets and provide clear benchmarks about their success and failure.

4.1.2 Description of offset sites

The sites currently being investigated by APA and the offset broker to determine suitability are described in Table 7. Further sites may be considered if the conditions of the sites are not appropriate or if negotiations with the landowners are not successful.

Table 7 Description of the proposed offset sites

	Stockyard Hill	Glenhope	Grampians
MNES habitat	GSM, SLL and NTGVPP	GSM	GEWVVP
Location and tenure	The property is south of Beaufort. The property is within the Victorian Volcanic Plain Bioregion and managed area of the Glenelg Hopkins Catchment Management Authority.	The property is located north of Kyneton. The property is within the Goldfields Bioregion and managed area of the North Central Catchment Management Authority.	The property is located south of Dunkeld. The property is within the Victorian Volcanic Plain Bioregion and managed area of the Glenelg Hopkins Catchment Management Authority.
Landscape context	Approximately 800 ha within the identified property contains patches of *Plains Grassland - Heavier soils (EVC 132-61)* on basalt forming the heavy black cracking soils with gilgai formations. The patches of grassland are separated by freely draining areas and stony rises with surface basalt. Most of these patches meet the NTGVVP condition thresholds. Both patches of *Plains Grassland – Heavier soils* and areas of non-native vegetation form habitat for Golden Sun Moth and Striped Legless lizard within the property. The property already has an offset site being established for NTGVVP and SLL. Land to the south of the property comprises Blacks Creek Nature Conservation Reserve (NCR) managed by Parks Victoria.	Within the approximately 170 ha property, there are patches of *Valley Grassy Forest EVC 47* with areas of introduced pasture due to the history of grazing. Recent surveys have determined the presence of Golden Sun Moth and currently further surveys are being undertaken to determine stocking rate of the species within this property and the extent of habitat.	Within the property, there are mapped patches of three EVCs: *Plains Grassland (EVC 132), Plains Grassy Woodland (EVC 55) and Creekline Grassy Woodland (EVC 68)*. *Plains Grassy Woodland (EVC 55)* is associated with the GEWVVP community. The offset site occurs within the Farming Zone (FZ) and a natural waterway, Back Creek, flows through the site. The offset site has been historically used for livestock and surrounding land beyond the proposed offset site, is likely to have similar quality vegetation.

4.1.3 Offset establishment and management

Site security

Discussions with offset brokers about potential offset properties has detailed that sites would be secured via a covenant pursuant to Section 3A of the *Victorian Conservation Trust Act 1972* or Section 69 of the Conservation, Forests and Lands Act 1987, or Section 173 of the Planning and Environment Act 1987. These security options are common in Victorian offsetting agreements and are seen as the secure method to ensure protection of the offset property.

Funding of offset site

The management of the offset site would be funded through the purchase of the offsets through the Section 3A, or Section 69 or Section 173 covenant. The offsets would be purchased by APA from the Offset Landowner through Trust for Nature/ DELWP at an agreed rate incorporating management costs, assessment costs and compensation for opportunity costs.

Trust for Nature/DELWP would then facilitate annual payments to the landowner to implement the required management actions.

Offset management plans

An Offset Management Plan (OMP) is required to be developed in consultation with each Offset Landowner /DELWP/ council and approved by DAWE to ensure that the offset site is maintained and monitored to result in a gain for the MNES over the management period. The final OMP will be developed once the final offset requirements are calculated based in the final approved alignment and impact area is known, following approval of the pipeline.

The objective of the OMP is to record the details of the project site and offset site in order to meet EPBC Act approval requirements of offsetting impacts to a MNES by securing, maintaining and improving the MNES within the offset site.

An OMP would generally include the following:

- Offset suitability
  - Project details
  - Summary of vegetation to be impacted
  - Description of offset site
  - Offset site suitability
- Offset site implementation
  - Offset site details
  - Strategy for the site
  - Offset site security
  - Management and reporting responsibilities
  - Offset site completion criteria - including future site condition and performance requirements
  - Ongoing management commitments
  - Risk assessment and adaptive management techniques
  - Management actions and land use commitments

- Monitoring
- Reporting
- Auditing
- OMP review

Annual monitoring, continuous monitoring and audits of offset performance

The details of the following three methods of monitoring will be outlined within the OMP when it is developed.

- *Annual monitoring*

  Independent monitoring of the offset site is required during the OMP. The monitoring should include an understanding of the baseline offset site condition and have objectives that aim at monitoring and recording the progress towards the offset completion criteria (Future site condition).

  Monitoring would be undertaken annually to align with the annual compliance reports to be provided to DAWE by APA (unless otherwise advised by the Minister). Annual reporting would allow for adaptive management under the OMP to be undertaken (if required) in a reactive manner.

  The monitoring objectives at each offset site would vary, however, examples of specific monitoring that may be undertaken include fence, weed, pest animal, vegetation condition and MNES monitoring.

- *Continuous monitoring*

  Regular site inspections to understand general site condition are required by the Offset Landowner.

- *Audits*

  The approval holder (APA) under the EPBC Act conditions is responsible to undertake independent audits. These audits are to monitor the implementation and effectiveness of the OMP. The audits usually occur in stages over the 10-year period:

  - Year one – to ensure initial management and set up meets the satisfaction of the approval holder and DAWE
  - Year four – to audit the previous four year's monitoring reports and independently audit the MNES in the offset site
  - Year eight – as per year four audit
  - Year 10 (completion audit) – to audit the implementation and effectiveness of the OMP

  If any environmental incident occurs and results in a significant change to site conditions (bushfire) or requires a change in the OMP, additional audits may be required.

4.1.4 Offset calculations

The Offset Management Plans for each offset site would comprise the conservation and management of the proposed offset site. As the proponent for the project is currently undertaking negotiations with Offset Brokers and landholders only indicative calculations for the offset sites being considered are able to be provided. These calculations will be finalised in the appropriate Offset Management Plans for DAWE approval.

Initial offset assessment guide calculations were performed for each MNES based on the following:

- Impacts on community or habitat as determined in Section 3.2
- The conservation of the proposed offset sites and management for biodiversity conservation in perpetuity as described in Sections 4.1.1 and 4.1.2
- A minimum of 90 per cent direct offset of the proposal impacts as calculated with the offset assessment guide would be required with the remaining offsetting requirement able to be met by alternative contributions such as a financial contribution to research or conservation. Based on the preliminary calculations the proposed offset sites could meet all of the Proposal's EPBC Act offsetting requirements as direct offsets.

The data that is presented in the preliminary offset assessment guide calculations are summarised in the tables below for each MNES, along with the justification for the attribute values that were entered and the estimated percentage of the direct offset requirement for each MNES that would be met by this offset strategy. These values are also presented in Appendix F.

4.2 MSA levies

The environmental mitigation levies set out in the MSA Act replace the previous Biodiversity Conservation Strategy Habitat Compensation Obligations fee system. The Project intercepts 0.01 ha of the levy type 'Golden Sun Moth' where land associated with the proposed mainline valve station 3 (Gunn's Gully Road) will be acquired as a subdivision. The levy for the 2020/21 financial year for Golden Sun Moth Habitat is $10,005 per Hectare (note this price may change closer to the construction date for the 2021/22 financial year).

The payment process for the MSA levy liability, is as follows:

1) DELWP will issue a levy assessment notice to the landowner (or relevant lodging party) via email where a Statement of Compliance is issued for a plan of subdivision within the MSA Levy Area, for land where a levy liability remains.
2) Once the levy liability has been paid, DELWP will issue the appropriate certificate to the landowner (or relevant lodging party).
3) This certificate must be presented to Land Use Victoria to demonstrate the levy has been paid. Land Use Victoria cannot accept plan of subdivision lodgement unless the appropriate MSA certificate is provided.

4.3 State offsets

4.3.1 Offset availability

APA initially consulted with DELWP during September 2020 to explore offset requirements and availability. As of March 2021, DELWP's Native Vegetation Credit Register outlines that there were a total of 49 different credit sites that would be able to individually provide the offset requirements for the area of Crown land within MSA (Appendix D) and a total of five different credit sites for the total project area with the Crown land considered as past removal (Appendix E). These sites would meet both the general units and large trees required for the project. APA will approach the brokers of these sites to obtain further details and quotes on the required offsets to determine the most appropriate credit site for the Project.

4.3.2 Offset reconciliation post-construction

Some projects, particularly large ones, identify all native vegetation that may potentially be removed when the project is delivered. Offset requirements included in approval conditions are calculated for this 'worst case' scenario. During APA's Project construction, the actual amount of native vegetation removed would likely be less than originally approved and offset, due to the constructor being able to minimise vegetation loss.

Under these circumstances, DELWP provides for the opportunity to reconcile offset requirements to ensure incentives remain for on-site minimisation efforts after approval is granted and offsets are secured (DELWP, 2017b).

Offsets can be reconciled at the end of a project so that any excess credits can be unallocated and banked or sold on. An accredited native vegetation assessor must provide suitable evidence to DELWP and the responsible authority showing the difference in approved and actual native vegetation removal (DELWP, 2017b). APA anticipates undertaking such an assessment at the end of construction of the WORM.

Under these circumstances, the following requirements apply (DELWP, 2017b):

- The project has been approved and native vegetation credits have been allocated to it
- The extent of native vegetation removed during construction is reduced, and it is decided there are benefits of reconciling the offset requirements
- The accredited native vegetation assessor confirms the actual extent of native vegetation that was removed and maps this in a GIS shapefile (meeting DELWP data requirements)
- The applicant compares the approved NVR report with the NVR report for the actual removal and confirms whether they want to proceed with the reconciliation
- The applicant approaches the approval authority and requests an amendment to the offset conditions included in the original approval, and the new offset requirements are included in the new NVR report
- If agreed, responsible authority amends the offset condition and/or issues a new approval
- The applicant provides evidence of new offset condition to DELWP's Native Vegetation Credit Register requesting excess credits be unallocated
- Native Vegetation Credit Register un-allocates excess credits from the project and registers them as available credits owned by the applicant
- The applicant has available credits registered to their name which can be allocated to a future project or sold on the credit market

5. Conclusion

For this Project, offsets are likely to be required under both Commonwealth legislation (EPBC Act) administered by the Australian Department of Agriculture, Water and Environment (DAWE) and State (Victorian Government) legislation (i.e. the *Pipelines Act 2005*) administered by the Victorian Department of Environment, Land, Water and Planning (DELWP).

This document presents a summary of the potential residual impacts and subsequent offset requirements for the Project under Commonwealth and State legislation, along with the proposed strategy by which the Project will offset those residual impacts. This fulfils the requirements of the Terms of Reference for the Project to submit an offset strategy and along with the individual Offset Management Plans for the offset sites will fulfill the *Environment Protection and Biodiversity Conservation Act 1999* Environmental Offsets Policy for the Project to submit an 'Offset Proposal'. The production of this document is an iterative process and will be further developed in consultation with relevant stakeholders.

5.1 Commonwealth offset package summary

APA is required to provide a description of any Commonwealth offsets that will compensate for any predicted or potential residual significant impacts on two Threatened Ecological Communities: *Grassy Eucalypt Woodland of the Victorian Volcanic Plain* and *Natural Temperate Grassland of the Victorian Volcanic Plain* as well as Golden Sun Moth and Striped Legless Lizard Habitat.

Offset assessment guide calculations have been initially performed for both TEC, the Golden Sun Moth and Striped Legless Lizard Habitat based on the assessed residual impacts (Table 3 and Appendix F) and are summarised below:

Table 8 Summary of likely Commonwealth offset requirements

Offset Type	Impacted area of community, habitat or vegetation	Quality of impacted community/fauna habitat	Quantum of Impact	Approximate area to be offset / Offsets required
Commonwealth				
NTGVVP	3.81 ha	3/10	1.14	13 ha
GEWVVP	2.29 ha	4/10	0.92	10.5 ha
Golden Sun Moth	19.93 ha	5/10	9.97	113.5 ha
Striped Legless Lizard	39.34 ha	6/10	23.6	125 ha

As described in Section 4.1, the proposed offset package for the Commonwealth impacts includes properties to meet the requirements for NTGVVP, Golden Sun Moth and Striped Legless Lizard habitat. Surveying is currently underway to ensure and provide evidence that the properties are appropriately sited to directly benefit the TECs and the species habitat impacted by the Project. For the GEWVVP, one property has been identified and initial surveys are being undertaken to confirm the presence of suitable condition TEC and sufficient quantity to be offset against.

The proposed offset sites would be set aside and secured via a legal covenant. Management of the sites would be funded in perpetuity by the purchase of the offsets. The management of the offset sites would include specific consideration of the TECs, Golden Sun Moth and Striped Legless Lizard Habitat and the actions required to maintain and improve the communities and habitat. Initial offset assessment guide calculations have been performed for the Project based on the removal of the TECs ,Golden Sun Moth and Striped Legless Lizard Habitat and are described in Section 3.2 and Appendix F. The outcome of these calculations is that conservation and management of the proposed offset sites could meet over 100 per cent of the direct offset requirement for the NTGVVP, GEWVVP ,Golden Sun Moth and Striped Legless Lizard Habitat in accordance with the department's offset assessment guide and policy (DSEWPaC, 2012). Based on these preliminary calculations the proposed offset sites could meet all of the Project's EPBC Act offsetting requirements as direct offsets

This offset strategy provides an estimate of the quantum of commonwealth offsets that would be required to compensate for residual impacts on the NTGVVP, GEWVVP, Golden Sun Moth and Striped Legless Lizard Habitat arising from the Project and demonstrates that APA has access to proposed offset sites that could meet this offsetting requirement in accordance with the DAWE offset policy (DSEWPaC, 2012).

5.2 State offset package summary

The *Native vegetation removal report* (Appendix B and Appendix C) received from DELWP indicated that only general habitat units were required to be meet for the Projects native vegetation impacts. The project would be required to secure 5.527 general habitat units, which includes 19 large trees that are located within Port Philip and Westernport Catchment Management Authority (CMA) or the municipalities of Hume City, Melton City, Mitchell Shire, Whittlesea City Council and has a minimum strategic biodiversity value score of 0.522.

This offset strategy provides evidence and methods required to compensate for the loss of native vegetation that cannot be avoided under state legislation. Where native vegetation is assessed to be lost due to the Project, offsets would be required.

Section 3.3 and 4.3 demonstrate that APA has access to offsets that could meet the offsetting requirements in accordance with DELWP's Guidelines to achieve 'no net loss' by compensating for lost vegetation by protecting existing native vegetation.

6. References

Biosis 2020a, Sievers Lane, Glenhope, Victoria: Golden Sun Moth Offset Management Plan (EPBC 2017/8008), Prepared for Major Road Projects Victoria

Biosis 2020b, Victorian Big Battery Storage Facility, 680 Ballan Road Moorabool, Victoria: Preliminary Documentation for EPBC 2020/8614, Prepared for Neoen Australia Pty Ltd

DAWE 2020a, How to use the offset assessment guide , Department of Agriculture Water and the Environment, accessed from https://www.environment.gov.au/system/files/resources/12630bb4-2c10-4c8e-815f-2d7862bf87e7/files/offsets-how-use.pdf in October 2020

DAWE 2020b, Offset Assessment Guide, Department of Agriculture Water and the Environment, Canberra

DELWP 2017, Guidelines for the removal, destruction or lopping of natural vegetation, Department of Environment, Land, Water and Planning, Melbourne, Victoria

DEWHA 2009. Significant impact guidelines for the critically endangered golden sun moth (*Synemon plana*). Department of the Environment, Water, Heritage and the Arts, 2009. Available at: http://www.environment.gov.au/resource/significant-impact-guidelines-critically-endangered-golden-sun-moth-synemon-plana

DSEWPAC 2012, Environment Protection and Biodiversity Conservation Act 1999, Environment Offset Policy, Department of Sustainability, Environment, Water, Population and Communities, Canberra

DSEWPAC 2011, Nationally Threatened Ecological Communities of the Victorian Volcanic Plain: Natural Temperate Grassland and Grassy Eucalypt Woodland, Department of Sustainability, Environment, Water, Population and Communities, Canberra

DSEWPAC (2011b). Survey guidelines for Australia's threatened reptiles - Guidelines for detecting reptiles listed as threatened under the Environment Protection and Biodiversity Conservation Act 1999. Commonwealth of Australia

GHD 2021, APA VTS (Operations) Pty Ltd- Western Outer Ring Main (WORM) Environment Effects Statement, Technical report A - Biodiversity and Habitats

Threatened Species Scientific Committee (2016). Conservation Advice Delma impar Striped Legless Lizard, Department of the Environment and Energy, Canberra

Appendices

Appendix A – Achieving offsets

Commonwealth offsets

Offsets may be required under the Australian Government's EPBC Act to compensate for any residual impacts to Matters of National Environmental Significant (MNES) once avoidance and mitigation measures have been considered (DSEWPAC, 2012). Where residual impacts are considered to be significant, an offset is likely to be required.

An offset must deliver an overall conservation outcome that improves or maintains the viability of the MNES and should be tailored specifically to the attribute of the MNES that is to be affected. An offsets package is defined in the EPBC Offsets Policy (DSEWPAC, 2012) as a suite of actions that a proponent undertakes to compensate for the residual significant impact of a project. An offsets package can comprise a combination of direct offsets and other compensatory measures.

Direct offsets are actions that deliver a measurable conservation gain for an impacted protected matter. Conservation gains may be achieved by:

- Improving existing habitat for the protected matter
- Creating new habitat for the protected matter
- Reducing threats to the protected matter
- Increasing values of a heritage place
- Averting the loss of a protected matter or its habitat that is under threat

Other compensatory measures are actions that do not directly offset the impacts on the protected matter but are anticipated to lead to benefits for the impacted protected matter.

Under the EPBC Offsets Policy, a minimum of 90 per cent of the offset requirements for any given impact must be met through direct offsets.

The EPBC Offsets Policy is guided by overarching principles to be applied when determining the suitability and assessment of offsets. Suitable offsets must:

1. Deliver an overall conservation outcome that improves or maintains the viability of the protected matter
2. Be built around direct offsets but may include other compensatory measures
3. Be in proportion to the level of statutory protection that applies to the protected matter
4. Be of a size and scale proportionate to the residual impacts on the protected matter
5. Effectively account for and manage the risks of the offset failing
6. Be additional to what is already required, determined by law or planning regulations, or agreed to under other schemes or programs
7. Be efficient, effective, timely, transparent, scientifically robust and reasonable
8. Have transparent governance arrangements including being able to be readily measured, monitored, audited and enforced

In assessing the suitability of an offset, government decision-making will be:

1. Informed by scientifically robust information and incorporate the precautionary principle in the absence of scientific certainty
2. Conducted in a consistent and transparent manner

MSA levies

The Melbourne Strategic Assessment is an agreement between the Victorian and Australian governments made under Part 10 of the EPBC Act whereby impacts on MNES that are expected to occur within the Melbourne urban growth boundary are defined and accounted for *a priori* and can be considered early in the development of a plan, policy or program. No further approvals are required under the EPBC Act for urban development in these areas, provided development follows the Urban Growth Boundary Program Report and the conditions of the approvals.

The *Melbourne Strategic Assessment (Environment Mitigation Levy) Act 2020* (MSA Levy Act) establishes a Victorian legislative framework for the existing MSA program. The Act came into effect on 1 July 2020. The environmental mitigation levies set out in the MSA Levy Act replace the earlier Biodiversity Conservation Strategy (BCS) Habitat Compensation Obligations fee system, with the purpose of imposing a levy to fund measures to mitigate impacts on biodiversity caused by the development of land in Melbourne's growth corridors.

The MSA Levy Act applies to areas declared by the Secretary of the DELWP as a levy area. The levy area covers the four growth corridors within the expanded 2010 Urban Growth Boundary, including the location of the Construction corridor. The levy to offset the loss or deemed loss of particular listed threatened species habitat and/or native vegetation also cover State-based offset obligations. The levy does not apply to conservation areas identified in the BCS, which are subject to alternative offsetting arrangements as required by DELWP.

Levy Triggers

The liability to pay an MSA levy is triggered when a levy event occurs within the levy area, where habitat compensation obligations have not been previously met. The only levy events are the:

- Issue of a Statement of Compliance for a plan of subdivision (i.e. Subdivision of land)
- Application for a building permit
- Approval of a work plan or variation of a work plan under the *Mineral Resources (Sustainable Development) Act 1990*
- Construction of utility infrastructure on Crown land
- Construction of a road on Crown land

State offsets

Three-step approach to ‘no net loss’

Native vegetation provides habitat for plants and animals and delivers a range of ecosystem services that make land more productive and contribute to human wellbeing. In Victoria, a permit is required to remove, destroy or lop native vegetation. As part of this permit, vegetation is required to be assessed and offset according to the Guidelines for the removal, destruction or lopping of natural vegetation ‘the guidelines’ (DELWP, 2017). One of the objectives of the guidelines is to achieve ‘no net loss’ of native vegetation and biodiversity. Offsetting is a mechanism for achieving ‘no net loss’ by compensating for lost vegetation by protecting existing native vegetation or planting native vegetation.

The Guidelines outline a three-step approach to achieve 'no net loss' by prioritising avoiding and minimising vegetation removal before offsetting. During detailed design of the project, areas of native vegetation would be avoided where possible by refining the area required for design and construction to minimise overall vegetation removal. Further discussion on the ongoing avoidance and minimisation efforts is described in Section 11.1 of Environment Effects Statement - Biodiversity and Habitats Report (GHD 2020). Where the loss of native vegetation cannot be avoided, offsets would be required.

Approach to delivering offsets

DELWP identifies two pathways to securing an offset. These include:

- First party offsets – permit holders can offset to the same site as the site being cleared
- Third party offsets – where a landholder who has a suitable offset on their property, which they are willing to protect and manage, can trade their offset credits with a permit holder

Offset brokers can assist permit holders to find a third-party offset, as well as assist landholders wanting to generate revenue from protecting environmental values on their property by matching them with a suitable permit holder.

Security arrangements

Offset sites must be secured to ensure the ongoing protection of the vegetation offset area. In Victoria, an agreement under one of the following Acts can be established to secure an offset:

- Section 173 of the *Planning and Environment Act 1987* – An agreement under the *Planning and Environment Act 1987* would need to be established with the relevant responsible Authority
- Section 3A of the *Victorian Conservation Trust Act 1972* – a security agreement under this Act can be arranged through Trust for Nature (TFN)
- Section 69 of the *Conservation, Forests and Lands Act 1987* – DELWP is responsible for security agreements under this Act

Offset sites are usually actively managed on an annual basis to control threats to the biodiversity values they support. Management can include activities such as removing high-threat weeds and controlling pest animals. Under Victoria's offset policy, offsets are to be managed for a 10-year period in accordance with an approved Vegetation Management Plan. After this time, landowners are not expected to continue active management, but are required to maintain biodiversity values to the condition reached at the end of the formal 10-year management period.

Offset site eligibility

Sites must comply with several criteria to be eligible as an offset. These criteria must be applied before gain is calculated. Offset site eligibility requires consideration of:

- Current and future land use at the offset site
- Existing offsets or agreements encumbering the offset site
- Threats to native vegetation condition
- Minimum security and management commitments

Appendix B – Native Vegetation Removal Report – Crown land within MSA

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: **05/02/2021**
Time of issue: **12:46 pm**

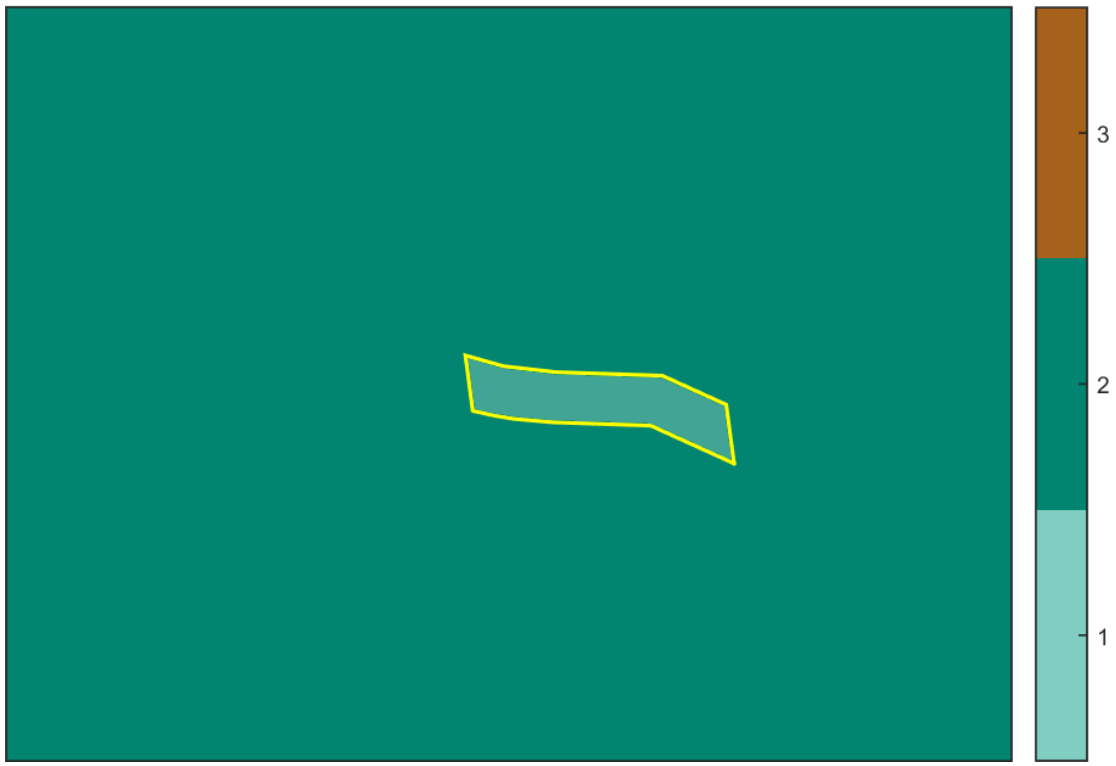
Report ID: GHD_2021_005

Project ID	12529997_DELWP_NVR_Crown_20210201

Assessment pathway

Assessment pathway	**Intermediate Assessment Pathway**
Extent including past and proposed	0.013 ha
Extent of past removal	0.000 ha
Extent of proposed removal	0.013 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]	0.006 general habitat units
Vicinity	Port Phillip and Westernport Catchment Management Authority (CMA) or Mitchell Shire, Whittlesea City Council
Minimum strategic biodiversity value score[2]	0.304
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 Intermediate Assessment Pathway and it will be assessed under the Intermediate 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 (met unless you wish to include a site assessment)
- Maps showing the native vegetation and property
- 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
- 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

All zones require a general offset, the general habitat units each 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

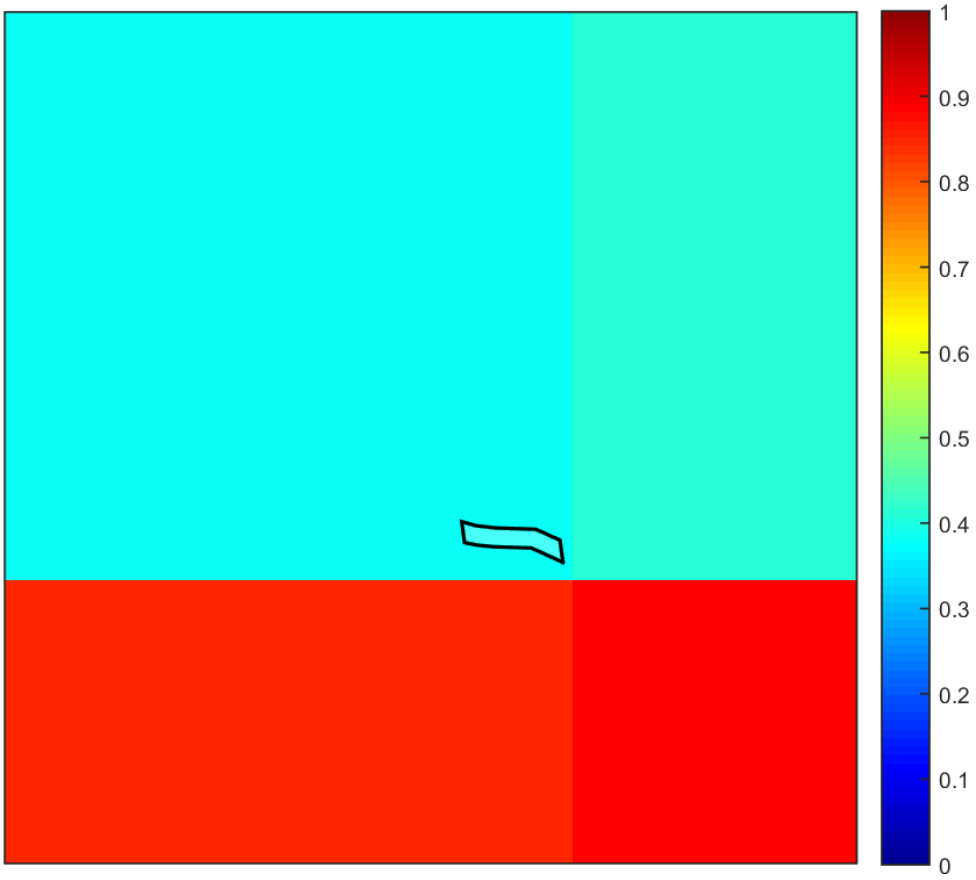
Information provided by or on behalf of the applicant in a GIS file							Information calculated by EnSym					
Zone	**Type**	**BioEVC**	**BioEVC conservation status**	**Large tree(s)**	**Partial removal**	**Condition score**	**Polygon Extent**	**Extent without overlap**	**SBV score**	**HI score**	**Habitat units**	**Offset type**
26-B	Patch	vvp_0641	Endangered	0	no	0.420	0.013	0.013	0.380		0.006	General

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

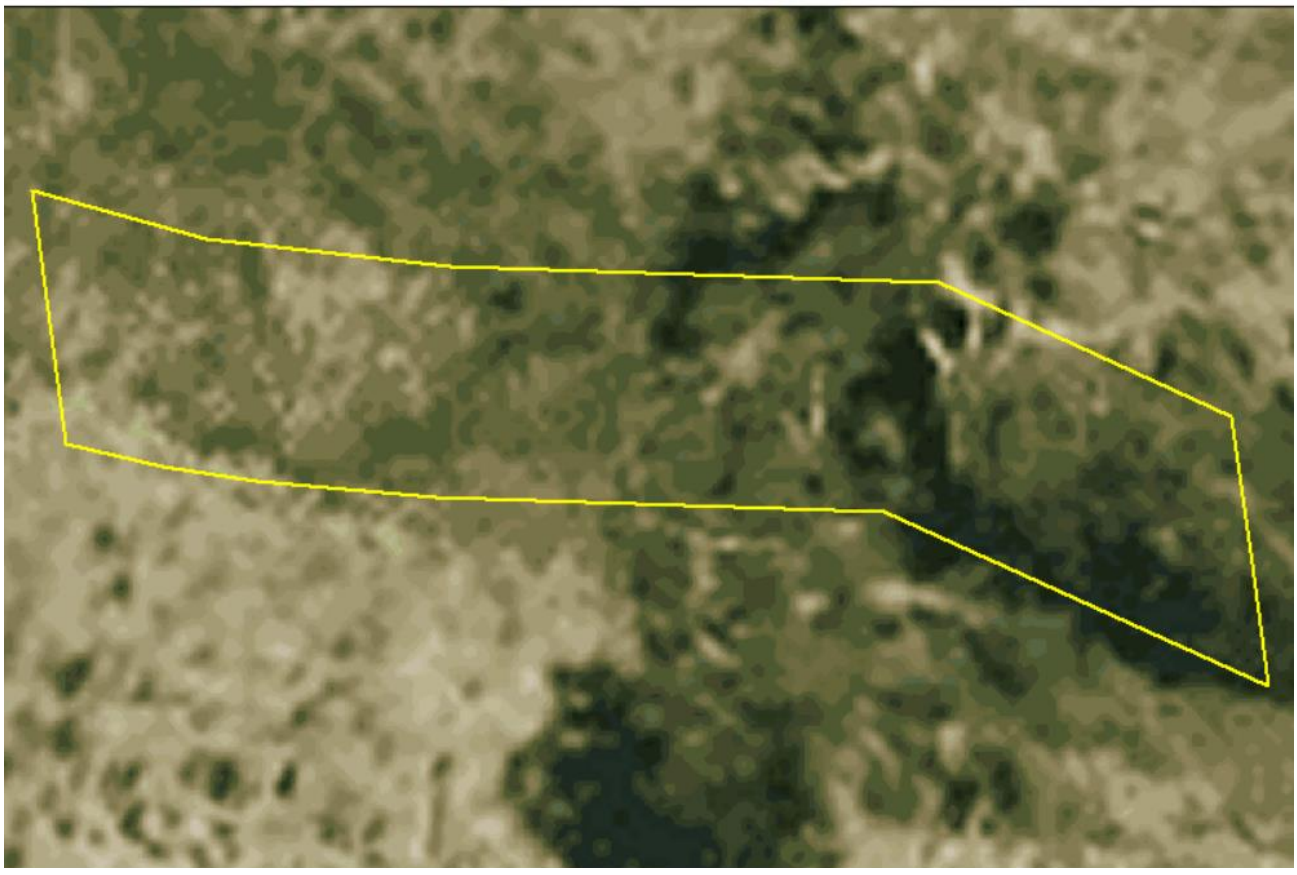
This is not applicable in the Intermediate Assessment Pathway.

Appendix 3 – Images of mapped native vegetation

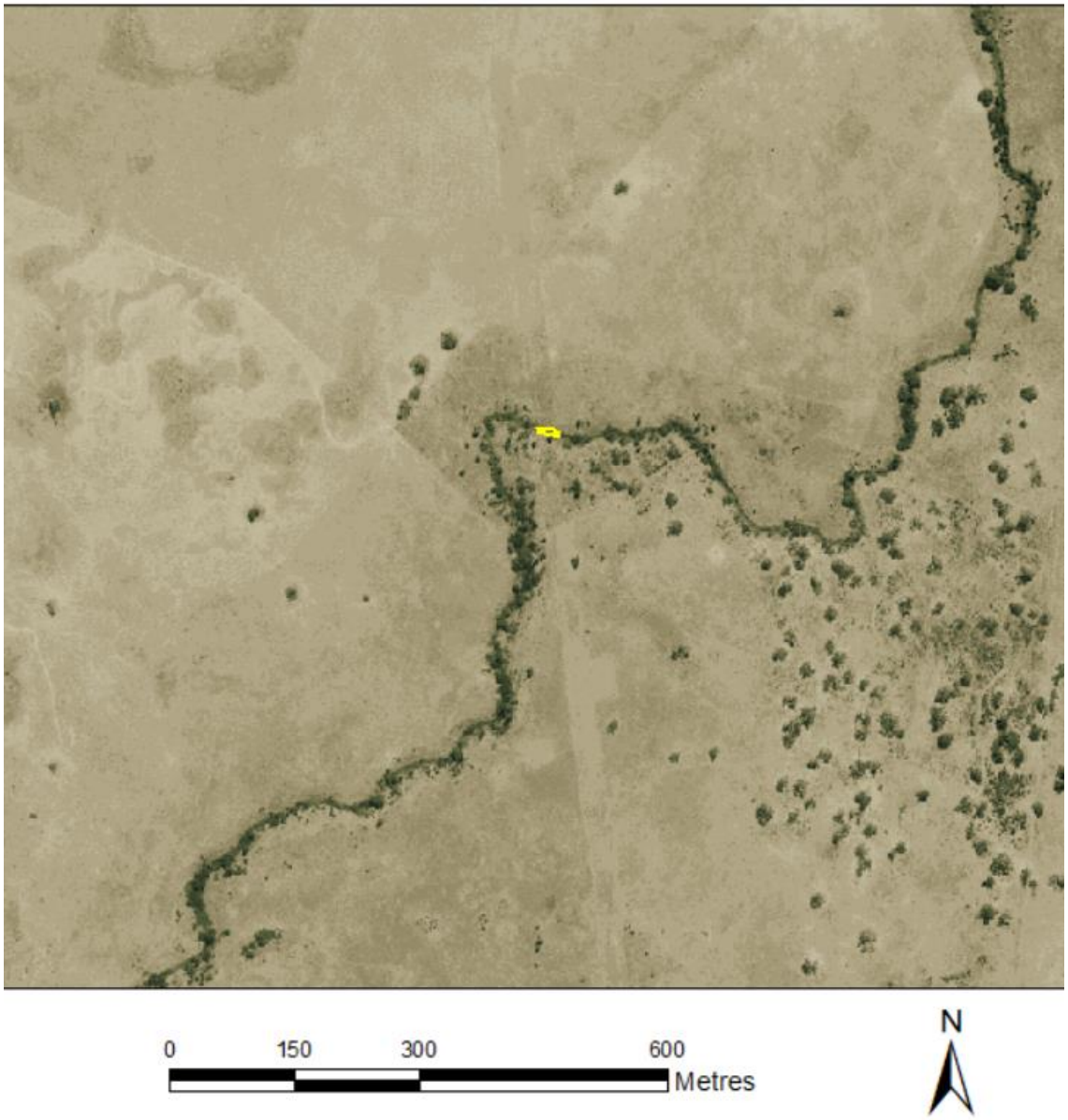
2. Strategic biodiversity values map



3. Aerial photograph showing mapped native vegetation



4. Map of the property in context



Yellow boundaries denote areas of proposed native vegetation removal.

Appendix C – Native Vegetation Removal report – Total project area with Crown land considered as past removal

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: **10/03/2021**
Time of issue: **2:04 pm**

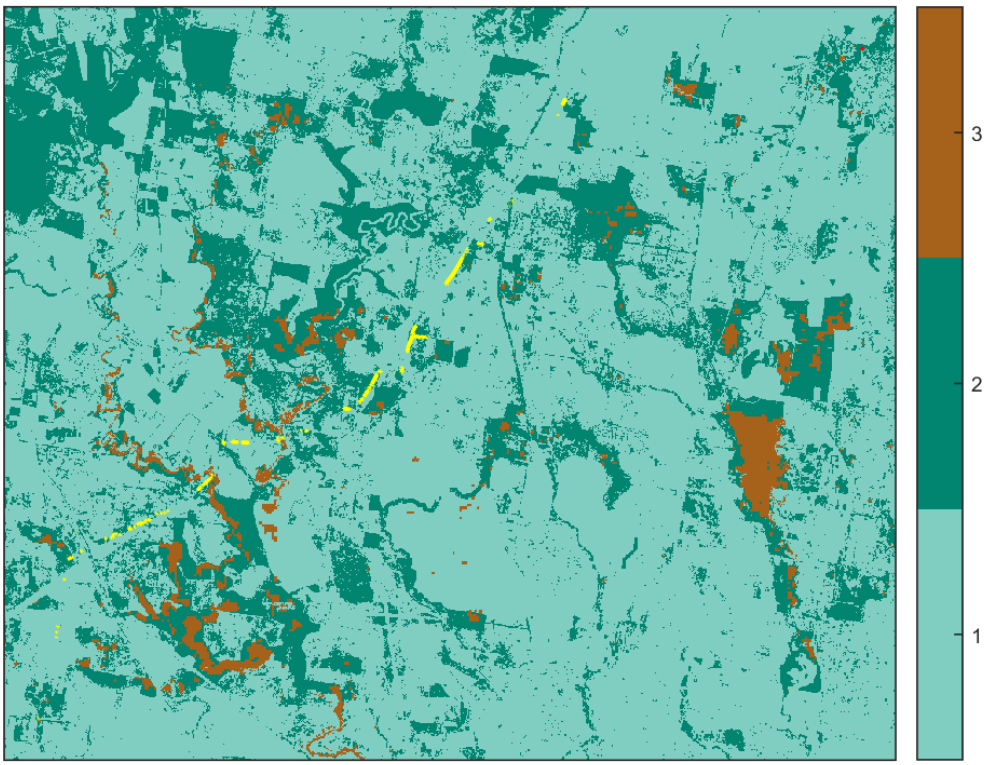
Report ID: GHD_2021_011

Project ID	12529997_DELWP_NVR_OutsideMSA_20210305

Assessment pathway

Assessment pathway	**Detailed Assessment Pathway**
Extent including past and proposed	14.789 ha
Extent of past removal	0.013 ha
Extent of proposed removal	14.775 ha
No. Large trees proposed to be removed	19
Location category of proposed removal	Location 3 The native vegetation is in an area where the removal of less than 0.5 hectares could have a significant impact on habitat for one or more rare or threatened species.The native vegetation is also in an area mapped as an endangered Ecological Vegetation Class (as per the statewide EVC map).

1. Location map



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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]	5.521 general habitat units
Vicinity	Port Phillip and Westernport Catchment Management Authority (CMA) or Hume City, Melton City Council
Minimum strategic biodiversity value score[2]	0.522
Large trees	19 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**
1-A	Scattered Tree	vvp_0132	Endangered	1	no	0.200	0.070	0.070	0.430		0.015	General
2-A	Scattered Tree	vvp_0132	Endangered	1	no	0.200	0.070	0.070	0.820		0.019	General
3-A	Scattered Tree	vvp_0055	Endangered	1	no	0.200	0.070	0.070	0.900		0.020	General
4-A	Scattered Tree	vvp_0055	Endangered	0	no	0.200	0.031	0.031	0.930		0.009	General
5-A	Scattered Tree	vvp_0055	Endangered	1	no	0.200	0.070	0.070	0.930		0.020	General
6-A	Scattered Tree	cvu_0055	Endangered	1	no	0.200	0.070	0.061	0.960		0.018	General
7-A	Scattered Tree	cvu_0055	Endangered	1	no	0.200	0.070	0.062	0.960		0.018	General
8-A	Scattered Tree	cvu_0055	Endangered	1	no	0.200	0.070	0.070	0.960		0.021	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
9-A	Scattered Tree	vvp_0132	Endangered	0	no	0.200	0.031	0.020	0.838		0.005	General
10-A	Scattered Tree	vvp_0132	Endangered	0	no	0.200	0.031	0.020	0.847		0.006	General
11-A	Scattered Tree	vvp_0132	Endangered	0	no	0.200	0.031	0.026	0.810		0.007	General
12-A	Scattered Tree	vvp_0132	Endangered	0	no	0.200	0.031	0.020	0.860		0.006	General
13-A	Scattered Tree	vvp_0132	Endangered	0	no	0.200	0.031	0.020	0.860		0.006	General
14-A	Scattered Tree	vvp_0132	Endangered	0	no	0.200	0.031	0.031	0.810		0.008	General
15-A	Scattered Tree	vvp_0132	Endangered	0	no	0.200	0.031	0.031	0.810		0.008	General
16-A	Scattered Tree	vvp_0132	Endangered	0	no	0.200	0.031	0.029	0.810		0.008	General
17-A	Scattered Tree	vvp_0055_61	Endangered	1	no	0.200	0.070	0.065	0.710		0.017	General
18-A	Scattered Tree	vvp_0055_61	Endangered	1	no	0.200	0.070	0.065	0.710		0.017	General
19-A	Scattered Tree	cvu_0055	Endangered	1	no	0.200	0.070	0.070	0.960		0.021	General
13-B	Scattered Tree	vvp_0132	Endangered	0	no	0.200	0.031	0.031	0.400		0.007	General
20-A	Patch	cvu_0132	Endangered	0	no	0.270	0.005	0.005	0.440		0.001	General
21-A	Patch	cvu_0132	Endangered	0	no	0.290	0.079	0.079	0.710		0.030	General
22-A	Patch	cvu_0132	Endangered	0	no	0.290	0.043	0.043	0.758		0.017	General
23-A	Patch	cvu_0132	Endangered	0	no	0.320	0.121	0.121	0.568		0.046	General
24-A	Patch	cvu_0641	Endangered	0	no	0.530	0.095	0.095	0.960		0.074	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
25-A	Patch	vvp_0055_61	Endangered	0	no	0.160	0.570	0.570	0.433		0.098	General
26-A	Patch	vvp_0055_61	Endangered	0	no	0.160	0.493	0.493	0.429		0.085	General
27-A	Patch	vvp_0055_61	Endangered	0	no	0.160	0.222	0.222	0.630		0.043	General
28-A	Patch	vvp_0055_61	Endangered	0	no	0.170	0.397	0.397	0.748		0.089	General
29-A	Patch	vvp_0055_61	Endangered	0	no	0.190	0.001	0.001	0.620		0.000	General
30-A	Patch	vvp_0055_61	Endangered	0	no	0.190	0.031	0.031	0.620		0.007	General
31-A	Patch	vvp_0055_61	Endangered	0	no	0.200	0.258	0.258	0.912		0.074	General
32-A	Patch	vvp_0055_61	Endangered	0	no	0.200	0.055	0.055	0.911		0.016	General
33-A	Patch	vvp_0055_61	Endangered	0	no	0.210	0.018	0.018	0.618		0.005	General
37-A	Patch	vvp_0055_61	Endangered	0	no	0.310	0.000	0.000	0.620		0.000	General
38-A	Patch	vvp_0055_61	Endangered	0	no	0.330	0.025	0.025	0.660		0.010	General
39-A	Patch	vvp_0055_61	Endangered	0	no	0.330	0.027	0.027	0.710		0.011	General
42-A	Patch	vvp_0055_61	Endangered	0	no	0.560	0.006	0.006	0.660		0.004	General
43-A	Patch	vvp_0055_61	Endangered	1	no	0.560	0.054	0.054	0.660		0.038	General
44-A	Patch	vvp_0055_61	Endangered	0	no	0.560	0.260	0.260	0.683		0.184	General
45-A	Patch	vvp_0132	Endangered	0	no	0.120	0.013	0.013	0.810		0.002	General
46-A	Patch	vvp_0132	Endangered	0	no	0.120	0.032	0.032	0.810		0.005	General
47-A	Patch	vvp_0132	Endangered	0	no	0.120	0.040	0.040	0.810		0.006	General
48-A	Patch	vvp_0132	Endangered	0	no	0.180	0.074	0.074	0.460		0.015	General
49-A	Patch	vvp_0132	Endangered	0	no	0.190	0.037	0.037	0.920		0.010	General
21-B	Patch	vvp_0132	Endangered	0	no	0.210	0.630	0.630	0.510		0.150	General
50-A	Patch	vvp_0132	Endangered	0	no	0.220	0.055	0.055	0.250		0.011	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
51-A	Patch	vvp_0132	Endangered	0	no	0.230	0.018	0.018	0.929		0.006	General
52-A	Patch	vvp_0132	Endangered	0	no	0.230	0.019	0.019	0.920		0.006	General
53-A	Patch	vvp_0132	Endangered	0	no	0.230	0.089	0.089	0.450		0.022	General
54-A	Patch	vvp_0132	Endangered	0	no	0.230	0.208	0.208	0.705		0.061	General
55-A	Patch	vvp_0132	Endangered	0	no	0.240	0.090	0.090	0.270		0.021	General
56-A	Patch	vvp_0132	Endangered	0	no	0.250	0.007	0.007	0.190		0.002	General
57-A	Patch	vvp_0132	Endangered	0	no	0.250	0.000	0.000	0.190		0.000	General
58-A	Patch	vvp_0132	Endangered	0	no	0.260	0.006	0.006	0.880		0.002	General
59-A	Patch	vvp_0132	Endangered	0	no	0.260	0.001	0.001	0.880		0.001	General
60-A	Patch	vvp_0132	Endangered	0	no	0.260	0.214	0.214	0.867		0.078	General
61-A	Patch	vvp_0132	Endangered	0	no	0.260	0.054	0.054	0.740		0.018	General
62-A	Patch	vvp_0132	Endangered	0	no	0.260	1.239	1.239	0.365		0.330	General
63-A	Patch	vvp_0132	Endangered	0	no	0.260	0.521	0.521	0.762		0.179	General
64-A	Patch	vvp_0132	Endangered	0	no	0.270	0.443	0.443	0.869		0.168	General
65-A	Patch	vvp_0132	Endangered	0	no	0.280	0.042	0.042	0.250		0.011	General
66-A	Patch	vvp_0132	Endangered	0	no	0.280	0.062	0.062	0.434		0.019	General
67-A	Patch	vvp_0132	Endangered	0	no	0.280	0.574	0.574	0.924		0.232	General
68-A	Patch	vvp_0132	Endangered	0	no	0.280	0.415	0.415	0.880		0.164	General
69-A	Patch	vvp_0132	Endangered	0	no	0.290	0.063	0.063	0.647		0.022	General
70-A	Patch	vvp_0132	Endangered	0	no	0.290	0.053	0.053	0.440		0.016	General
71-A	Patch	vvp_0132	Endangered	0	no	0.290	0.007	0.007	0.920		0.003	General
72-A	Patch	vvp_0132	Endangered	0	no	0.290	0.042	0.042	0.920		0.018	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
73-A	Patch	vvp_0132	Endangered	0	no	0.310	0.002	0.002	0.727		0.001	General
74-A	Patch	vvp_0132	Endangered	0	no	0.320	0.123	0.123	0.641		0.049	General
75-A	Patch	vvp_0132	Endangered	0	no	0.360	0.268	0.268	0.900		0.137	General
76-A	Patch	vvp_0132	Endangered	0	no	0.360	0.031	0.031	0.410		0.012	General
77-A	Patch	vvp_0132	Endangered	0	no	0.360	0.086	0.086	0.800		0.042	General
78-A	Patch	vvp_0132	Endangered	0	no	0.360	0.137	0.137	0.799		0.067	General
79-A	Patch	vvp_0132	Endangered	0	no	0.360	0.214	0.214	0.794		0.104	General
80-A	Patch	vvp_0132	Endangered	0	no	0.360	0.105	0.105	0.830		0.052	General
81-A	Patch	vvp_0132	Endangered	0	no	0.360	0.065	0.065	0.830		0.032	General
82-A	Patch	vvp_0132	Endangered	0	no	0.360	0.160	0.160	0.830		0.079	General
83-A	Patch	vvp_0132	Endangered	0	no	0.360	0.157	0.157	0.930		0.082	General
84-A	Patch	vvp_0132	Endangered	0	no	0.360	0.262	0.262	0.853		0.131	General
85-A	Patch	vvp_0132	Endangered	0	no	0.370	0.768	0.768	0.536		0.327	General
86-A	Patch	vvp_0132	Endangered	0	no	0.410	0.447	0.447	0.547		0.213	General
87-A	Patch	vvp_0132	Endangered	0	no	0.480	0.458	0.458	0.447		0.238	General
88-A	Patch	vvp_0132_61	Endangered	0	no	0.280	0.317	0.317	0.814		0.121	General
89-A	Patch	vvp_0132_61	Endangered	0	no	0.360	0.011	0.011	0.800		0.005	General
90-A	Patch	vvp_0132_61	Endangered	0	no	0.360	0.022	0.022	0.800		0.011	General
91-A	Patch	vvp_0132_61	Endangered	0	no	0.360	0.023	0.023	0.786		0.011	General
92-A	Patch	vvp_0132_61	Endangered	0	no	0.360	0.009	0.009	0.830		0.005	General
93-A	Patch	vvp_0641	Endangered	2	no	0.430	0.080	0.080	0.880		0.048	General
94-A	Patch	vvp_0653	Endangered	0	no	0.320	0.062	0.062	0.430		0.021	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
41-A	Patch	vvp_0055_61	Endangered	6	no	0.560	0.005	0.005	0.662		0.003	General
40-A	Patch	vvp_0055_61	Endangered	0	no	0.480	1.350	1.350	0.513		0.735	General
34-A	Patch	vvp_0055_61	Endangered	0	no	0.290	0.064	0.064	0.716		0.024	General
36-A	Patch	vvp_0055_61	Endangered	0	no	0.290	0.556	0.556	0.730		0.209	General
35-A	Patch	vvp_0055_61	Endangered	0	no	0.290	0.140	0.140	0.706		0.052	General
95-A	Patch	vvp_0132	Endangered	0	no	0.310	0.000	0.000	0.910		0.000	General
96-A	Patch	vvp_0132	Endangered	0	no	0.310	0.102	0.102	0.796		0.043	General
97-A	Patch	vvp_0125	Endangered	0	no	0.460	0.007	0.007	0.467		0.003	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
Bacchus Marsh Wattle	*Acacia rostriformis*	505136	Vulnerable	Dispersed	Habitat importance map	0.0040
Werribee Blue-box	*Eucalyptus baueriana subsp. thalassina*	507580	Endangered	Dispersed	Habitat importance map	0.0027
Heath Spear-grass	*Austrostipa exilis*	503984	Rare	Dispersed	Habitat importance map	0.0027
Small Golden Moths	*Diuris basaltica*	501473	Endangered	Dispersed	Habitat importance map	0.0019
Fragrant Saltbush	*Rhagodia parabolica*	502929	Rare	Dispersed	Habitat importance map	0.0019
Melbourne Yellow-gum	*Eucalyptus leucoxylon subsp. connata*	504484	Vulnerable	Dispersed	Habitat importance map	0.0014
Large-headed Fireweed	*Senecio macrocarpus*	503116	Endangered	Dispersed	Habitat importance map	0.0013
Large-flower Crane's-bill	*Geranium sp. 1*	505342	Endangered	Dispersed	Habitat importance map	0.0013
Plump Swamp Wallaby-grass	*Amphibromus pithogastrus*	503624	Endangered	Dispersed	Habitat importance map	0.0012
Werribee Blue-box	*Eucalyptus baueriana subsp. thalassina*	507580	Endangered	Dispersed	Top ranking map	0.0012
Brackish Plains Buttercup	*Ranunculus diminutus*	504314	Rare	Dispersed	Habitat importance map	0.0011
Grassland Earless Dragon	*Tympanocryptis pinguicolla*	12922	Critically endangered	Dispersed	Habitat importance map	0.0009
Matted Flax-lily	*Dianella amoena*	505084	Endangered	Dispersed	Habitat importance map	0.0007
Pale-flower Crane's-bill	*Geranium sp. 3*	505344	Rare	Dispersed	Habitat importance map	0.0007
Tough Scurf-pea	*Cullen tenax*	502776	Endangered	Dispersed	Habitat importance map	0.0006
Rye Beetle-grass	*Tripogon loliiformis*	503455	Rare	Dispersed	Habitat importance map	0.0006
Brittle Greenhood	*Pterostylis truncata*	502821	Endangered	Dispersed	Habitat importance map	0.0006

Spiny Rice-flower	*Pimelea spinescens subsp. spinescens*	504823	Endangered	Dispersed	Habitat importance map	0.0006
Arching Flax-lily	*Dianella sp. aff. longifolia (Benambra)*	505560	Vulnerable	Dispersed	Habitat importance map	0.0005
Austral Tobacco	*Nicotiana suaveolens*	502275	Rare	Dispersed	Habitat importance map	0.0005
Velvet Daisy-bush	*Olearia pannosa subsp. cardiophylla*	502317	Vulnerable	Dispersed	Habitat importance map	0.0005
Pale Swamp Everlasting	*Coronidium gunnianum*	504655	Vulnerable	Dispersed	Habitat importance map	0.0005
Small Scurf-pea	*Cullen parvum*	502773	Endangered	Dispersed	Habitat importance map	0.0005
Rosemary Grevillea	*Grevillea rosmarinifolia subsp. rosmarinifolia*	504066	Rare	Dispersed	Habitat importance map	0.0005
Cane Spear-grass	*Austrostipa breviglumis*	503268	Rare	Dispersed	Habitat importance map	0.0004
Snowy Mint-bush	*Prostanthera nivea var. nivea*	502746	Rare	Dispersed	Habitat importance map	0.0004
Button Wrinklewort	*Rutidosis leptorhynchoides*	502982	Endangered	Dispersed	Habitat importance map	0.0004
Fragrant Saltbush	*Rhagodia parabolica*	502929	Rare	Dispersed	Top ranking map	0.0004
Basalt Podolepis	*Podolepis linearifolia*	504658	Endangered	Dispersed	Habitat importance map	0.0004
Small Golden Moths	*Diuris basaltica*	501473	Endangered	Dispersed	Top ranking map	0.0004
Heath Spear-grass	*Austrostipa exilis*	503984	Rare	Dispersed	Top ranking map	0.0003
Plains Yam-daisy	*Microseris scapigera s.s.*	504657	Vulnerable	Dispersed	Habitat importance map	0.0003
Golden Sun Moth	*Synemon plana*	15021	Critically endangered	Dispersed	Habitat importance map ; special site	0.0003
Button Wrinklewort	*Rutidosis leptorhynchoides*	502982	Endangered	Dispersed	Top ranking map	0.0003
Shiny Leionema	*Leionema lamprophyllum subsp. obovatum*	505478	Rare	Dispersed	Habitat importance map	0.0003
Western Golden-tip	*Goodia medicaginea*	501518	Rare	Dispersed	Habitat importance map	0.0003
Dark Wire-grass	*Aristida calycina var. calycina*	503630	Rare	Dispersed	Habitat importance map	0.0003
Purple Blown-grass	*Lachnagrostis punicea subsp. punicea*	504206	Rare	Dispersed	Habitat importance map	0.0003
Swamp Fireweed	*Senecio psilocarpus*	504659	Vulnerable	Dispersed	Habitat importance map	0.0003

Basalt Podolepis	*Podolepis linearifolia*	504658	Endangered	Dispersed	Top ranking map	0.0003
Small Milkwort	*Comesperma polygaloides*	500798	Vulnerable	Dispersed	Habitat importance map	0.0003
Austral Crane's-bill	*Geranium solanderi var. solanderi s.s.*	505337	Vulnerable	Dispersed	Habitat importance map	0.0002
Large-headed Fireweed	*Senecio macrocarpus*	503116	Endangered	Dispersed	Top ranking map	0.0002
Clover Glycine	*Glycine latrobeana*	501456	Vulnerable	Dispersed	Habitat importance map	0.0002
Late-flower Flax-lily	*Dianella tarda*	505085	Vulnerable	Dispersed	Habitat importance map	0.0002
Melbourne Yellow-gum	*Eucalyptus leucoxylon subsp. connata*	504484	Vulnerable	Dispersed	Top ranking map	0.0002
Curly Sedge	*Carex tasmanica*	500650	Vulnerable	Dispersed	Habitat importance map	0.0002
Purple Diuris	*Diuris punctata*	501084	Vulnerable	Dispersed	Habitat importance map	0.0002
Yellow Burr-daisy	*Calotis lappulacea*	500598	Rare	Dispersed	Habitat importance map	0.0001
Clumping Golden Moths	*Diuris gregaria*	504887	Endangered	Dispersed	Habitat importance map	0.0001
Branching Groundsel	*Senecio cunninghamii var. cunninghamii*	503104	Rare	Dispersed	Habitat importance map	0.0001
Swamp Everlasting	*Xerochrysum palustre*	503763	Vulnerable	Dispersed	Habitat importance map	0.0001
Bearded Dragon	*Pogona barbata*	12177	Vulnerable	Dispersed	Habitat importance map	0.0001
Waterbush	*Myoporum montanum*	502240	Rare	Dispersed	Habitat importance map	0.0001
Hairy Tails	*Ptilotus erubescens*	502825	Vulnerable	Dispersed	Habitat importance map	0.0001
Growling Grass Frog	*Litoria raniformis*	13207	Endangered	Dispersed	Habitat importance map	0.0001
Black Falcon	*Falco subniger*	10238	Vulnerable	Dispersed	Habitat importance map ; special site	0.0001
Striped Legless Lizard	*Delma impar*	12159	Endangered	Dispersed	Habitat importance map	0.0001
Golden Cowslips	*Diuris behrii*	501061	Vulnerable	Dispersed	Habitat importance map	0.0001
Dwarf Brooklime	*Gratiola pumilo*	503753	Rare	Dispersed	Habitat importance map	0.0001
Buloke	*Allocasuarina luehmannii*	500678	Endangered	Dispersed	Habitat importance map	0.0001
Port Lincoln Snake	*Parasuta spectabilis*	12813	Vulnerable	Dispersed	Habitat importance map	0.0000

Lewin's Rail	*Lewinia pectoralis pectoralis*	10045	Vulnerable	Dispersed	Habitat importance map	0.0000
Silky Kidney-weed	*Dichondra sp. 1*	505786	Rare	Dispersed	Habitat importance map	0.0000
Australian Painted Snipe	*Rostratula australis*	10170	Critically endangered	Dispersed	Habitat importance map	0.0000
Floodplain Fireweed	*Senecio campylocarpus*	507136	Rare	Dispersed	Habitat importance map	0.0000
White-bellied Sea-Eagle	*Haliaeetus leucogaster*	10226	Vulnerable	Dispersed	Habitat importance map	0.0000
Australian Little Bittern	*Ixobrychus dubius*	10195	Endangered	Dispersed	Habitat importance map	0.0000
Musk Duck	*Biziura lobata*	10217	Vulnerable	Dispersed	Habitat importance map	0.0000
Blue-billed Duck	*Oxyura australis*	10216	Endangered	Dispersed	Habitat importance map	0.0000
Little Egret	*Egretta garzetta nigripes*	10185	Endangered	Dispersed	Habitat importance map	0.0000
Baillon's Crake	*Porzana pusilla palustris*	10050	Vulnerable	Dispersed	Habitat importance map	0.0000
Brown Toadlet	*Pseudophryne bibronii*	13117	Endangered	Dispersed	Habitat importance map	0.0000
Australasian Bittern	*Botaurus poiciloptilus*	10197	Endangered	Dispersed	Habitat importance map	0.0000
Hardhead	*Aythya australis*	10215	Vulnerable	Dispersed	Habitat importance map	0.0000
Speckled Warbler	*Chthonicola sagittatus*	10504	Vulnerable	Dispersed	Habitat importance map	0.0000
Freckled Duck	*Stictonetta naevosa*	10214	Endangered	Dispersed	Habitat importance map	0.0000
Brolga	*Grus rubicunda*	10177	Vulnerable	Dispersed	Habitat importance map	0.0000
Australasian Shoveler	*Anas rhynchotis*	10212	Vulnerable	Dispersed	Habitat importance map	0.0000
Painted Honeyeater	*Grantiella picta*	10598	Vulnerable	Dispersed	Habitat importance map	0.0000
Eastern Great Egret	*Ardea modesta*	10187	Vulnerable	Dispersed	Habitat importance map	0.0000
Swift Parrot	*Lathamus discolor*	10309	Endangered	Dispersed	Habitat importance map	0.0000
Intermediate Egret	*Ardea intermedia*	10186	Endangered	Dispersed	Habitat importance map	0.0000
Slender Mint-bush	*Prostanthera saxicola var. bracteolata*	502750	Rare	Dispersed	Habitat importance map	0.0000
Barking Owl	*Ninox connivens connivens*	10246	Endangered	Dispersed	Habitat importance map	0.0000

Grey Goshawk	*Accipiter novaehollandiae novaehollandiae*	10220	Vulnerable	Dispersed	Habitat importance map	0.0000
Elegant Parrot	*Neophema elegans*	10307	Vulnerable	Dispersed	Habitat importance map	0.0000
White-throated Needletail	*Hirundapus caudacutus*	10334	Vulnerable	Dispersed	Habitat importance map	0.0000
Buloke Mistletoe	*Amyema linophylla subsp. orientalis*	500217	Vulnerable	Dispersed	Habitat importance map	0.0000

Habitat group

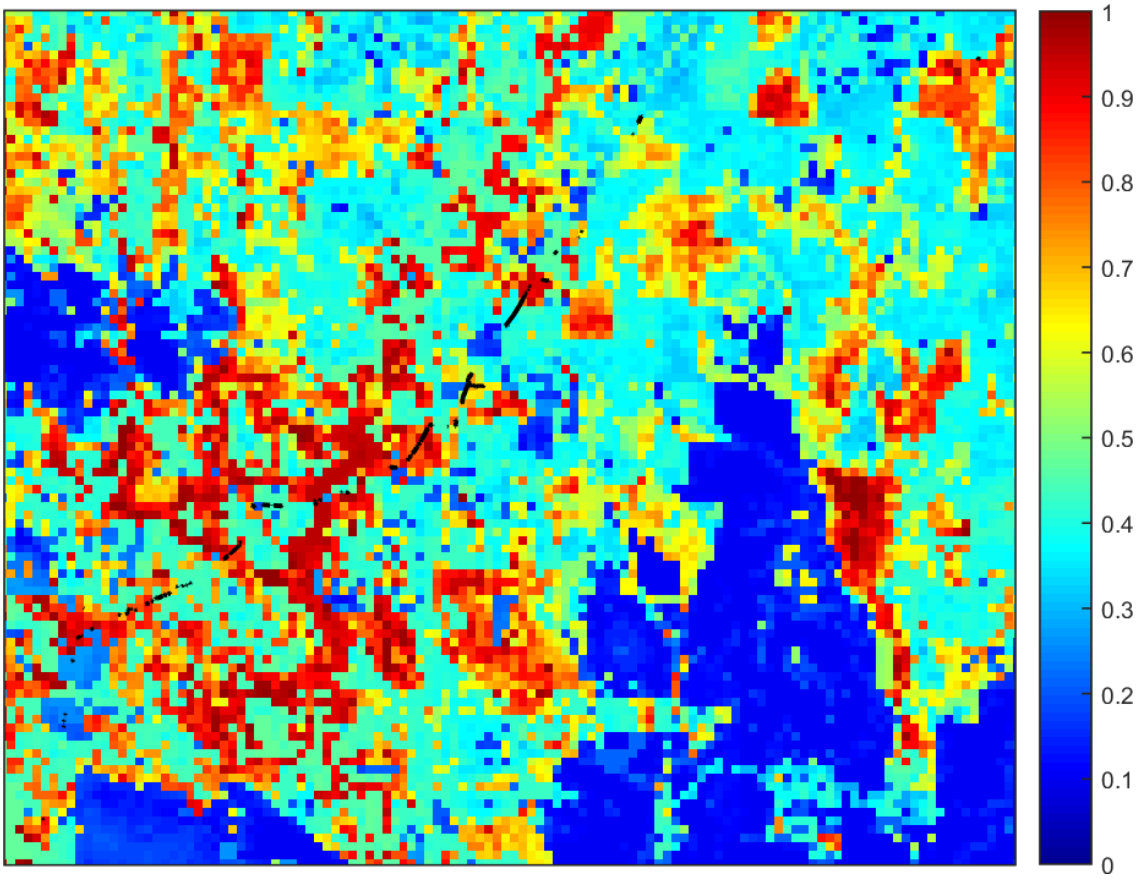
- Highly localised habitat means there is 2000 hectares or less mapped habitat for the species
- Dispersed habitat means there is more than 2000 hectares of mapped habitat for the species

Habitat impacted

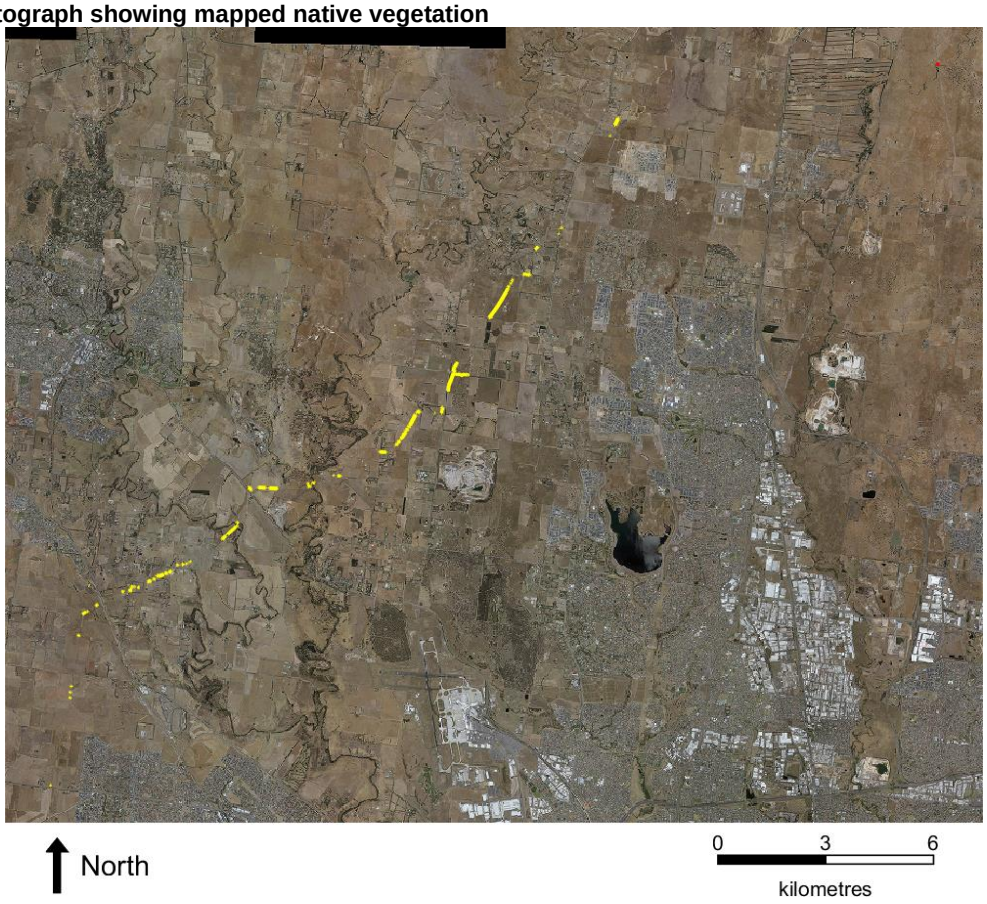
- Habitat importance maps are the maps defined in the Guidelines that include all the mapped habitat for a rare or threatened species
- Top ranking maps are the maps defined in the Guidelines that depict the important areas of a dispersed species habitat, developed from the highest habitat importance 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

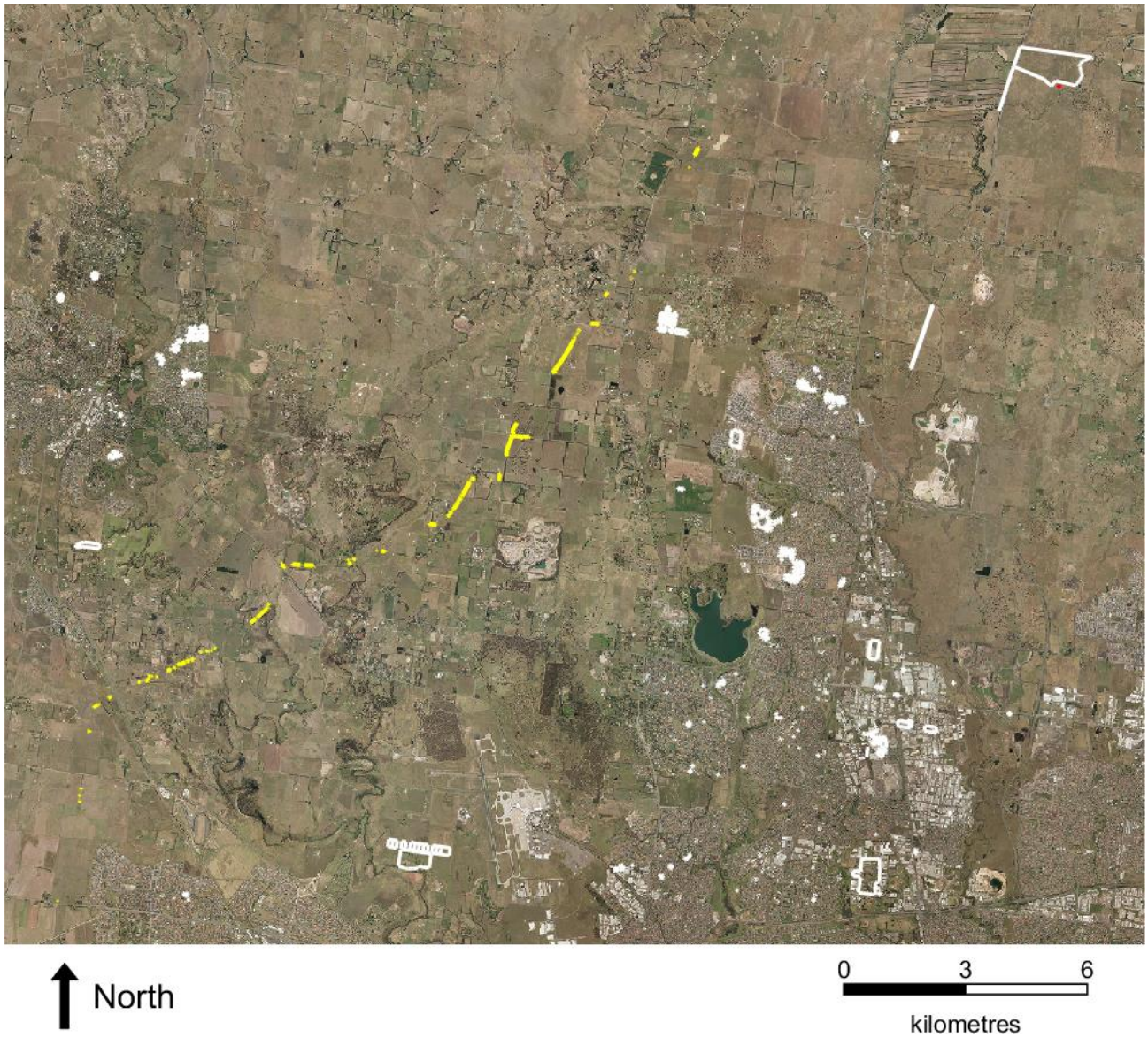
2. Strategic biodiversity values map



3. Aerial photograph showing mapped native vegetation



4. Map of the property in context



Yellow boundaries denote areas of proposed native vegetation removal.

Red boundaries denote areas of past removal.

Appendix D – Offset Availability Report for NVRR of Crown land within MSA

Report of available native vegetation credits

This report lists native vegetation credits available to purchase through the Native Vegetation Credit Register.

This report is **not evidence** that an offset has been secured. An offset is only secured when the units have been purchased and allocated to a permit or other approval and an allocated credit extract is provided by the Native Vegetation Credit Register.

Date and time: 23/02/2021 02:51 **Report ID: 7899**

What was searched for?

General offset

General habitat units	Strategic biodiversity value	Large trees	Vicinity (Catchment Management Authority or Municipal district)	
0.006	0.304	0	CMA	Port Phillip and Westernport
			or LGA	Mitchell Shire
			or LGA	Whittlesea City

Details of available native vegetation credits on 23 February 2021 02:51

These sites meet your requirements for general offsets.

Credit Site ID	GHU	LT	CMA	LGA	Land owner	Trader	Fixed price	Broker(s)
BBA-0277	8.820	466	Port Phillip and Westernport	Mornington Peninsula Shire	No	Yes	No	Abezco, Ethos, VegLink
BBA-0670	18.774	167	Port Phillip and Westernport	Cardinia Shire	No	Yes	No	Abezco, VegLink
BBA-0677	20.754	1529	Port Phillip and Westernport	Whittlesea City	No	Yes	No	Abezco, VegLink
BBA-0678	49.450	2666	Port Phillip and Westernport	Nillumbik Shire	No	Yes	No	Contact NVOR
BBA-0678_2	0.388	59	Port Phillip and Westernport	Nillumbik Shire	No	Yes	No	Contact NVOR
BBA-0931	0.073	0	Port Phillip and Westernport	Moorabool Shire	Yes	Yes	No	Bio Offsets
BBA-1052	0.058	3	Port Phillip and Westernport	Cardinia Shire	Yes	Yes	No	Contact NVOR
BBA-1145	0.111	0	Goulburn Broken	Mitchell Shire	Yes	Yes	No	VegLink
BBA-1145	1.441	58	Goulburn Broken	Mitchell Shire	No	Yes	No	Ethos
BBA-2774	0.021	11	Port Phillip and Westernport	Greater Geelong City	Yes	Yes	No	VegLink
BBA-2789	1.317	14	Port Phillip and Westernport	Baw Baw Shire	Yes	Yes	No	Contact NVOR
BBA-2790	2.911	116	Port Phillip and Westernport	Baw Baw Shire	Yes	Yes	No	Contact NVOR
BBA-2832	0.781	1	Port Phillip and Westernport	Nillumbik Shire	Yes	Yes	Yes	Nillumbik SC

BBA-2841	0.047	0	Port Phillip and Westernport	Nillumbik Shire	Yes	Yes	No	Abezco
BBA-2853	0.010	46	Port Phillip and Westernport	Greater Geelong City	Yes	Yes	No	Contact NVOR
BBA-2870	0.044	0	Port Phillip and Westernport	Yarra Ranges Shire	No	Yes	No	Contact NVOR
BBA-2870	2.544	431	Port Phillip and Westernport	Yarra Ranges Shire	Yes	Yes	No	Contact NVOR
BBA-2871	16.335	1668	Port Phillip and Westernport	Yarra Ranges Shire	Yes	Yes	No	Contact NVOR
BBA-3013	0.117	141	Port Phillip and Westernport	Moorabool Shire	Yes	Yes	No	VegLink
BBA-3014	0.386	0	Goulburn Broken	Mitchell Shire	Yes	Yes	No	VegLink
BBA-3014	0.037	96	Goulburn Broken	Mitchell Shire	No	Yes	No	Ethos
BBA-3030	11.705	4	Port Phillip and Westernport	Moorabool Shire	Yes	Yes	No	VegLink
BBA-3030	0.217	0	Port Phillip and Westernport	Moorabool Shire	Yes	Yes	No	VegLink
BBA-3045	0.133	8	Port Phillip and Westernport	Melton City	Yes	Yes	No	Bio Offsets
TFN-C0287	0.158	0	Port Phillip and Westernport	Cardinia Shire	Yes	Yes	No	TFN
TFN-C1636	1.608	150	Port Phillip and Westernport	Yarra Ranges Shire	Yes	Yes	Yes	Yarra Ranges SC
TFN-C1650	0.975	27	Port Phillip and Westernport	Yarra Ranges Shire	Yes	Yes	Yes	Yarra Ranges SC
TFN-C1663	0.127	28	Port Phillip and Westernport	Yarra Ranges Shire	Yes	Yes	Yes	Yarra Ranges SC
TFN-C1664	3.623	96	Port Phillip and Westernport	Yarra Ranges Shire	Yes	Yes	Yes	Yarra Ranges SC
TFN-C1667	0.285	5	Port Phillip and Westernport	Yarra Ranges Shire	Yes	Yes	Yes	Yarra Ranges SC
TFN-C1750	2.285	11	Port Phillip and Westernport	Cardinia Shire	Yes	Yes	No	Bio Offsets
TFN-C1763_3	11.231	0	Port Phillip and Westernport	Mornington Peninsula Shire	Yes	Yes	No	Ecocentric
TFN-C1782	0.030	1	Port Phillip and Westernport	Macedon Ranges Shire	Yes	Yes	No	VegLink
TFN-C1962	0.850	19	Goulburn Broken, Port Phillip and Westernport	Macedon Ranges Shire	No	Yes	No	Contact NVOR
TFN-C1962_2	0.011	0	Goulburn Broken, Port Phillip and Westernport	Macedon Ranges Shire	No	Yes	No	VegLink
TFN-C1962_2	0.052	3	Port Phillip and Westernport	Macedon Ranges Shire	No	Yes	No	Ethos
TFN-C1980	0.019	0	Port Phillip and Westernport	Mornington Peninsula Shire	Yes	Yes	No	Ecocentric
VC_CFL-0838_01	0.787	739	Port Phillip And Westernport	Yarra Ranges Shire	Yes	Yes	No	VegLink
VC_CFL-0838_01	0.416	0	Port Phillip And Westernport	Yarra Ranges Shire	Yes	Yes	Yes	VegLink
VC_CFL-0838_01	0.436	4	Port Phillip And Westernport	Yarra Ranges Shire	No	Yes	No	Contact NVOR
VC_CFL-3016_01	0.213	36	Port Phillip And Westernport	Yarra Ranges Shire	Yes	Yes	No	VegLink
VC_CFL-3054_01	2.252	12	Port Phillip and Westernport	Moorabool Shire	Yes	Yes	No	Ethos

VC_CFL-3084_01	0.983	645	Port Phillip And Westernport	Cardinia Shire	Yes	Yes	No	VegLink
VC_CFL-3687_01	1.759	128	Port Phillip And Westernport	Baw Baw Shire	Yes	Yes	No	Baw Baw SC
VC_CFL-3700_01	4.314	3	Port Phillip And Westernport	French-Elizabeth-Sandstone Islands (Uninc)	Yes	Yes	No	Contact NVOR
VC_CFL-3705_01	0.167	19	Port Phillip And Westernport	Melton City	Yes	Yes	No	VegLink
VC_CFL-3708_01	4.697	662	Port Phillip And Westernport	Yarra Ranges Shire	Yes	Yes	No	VegLink
VC_CFL-3709_01	3.555	515	Port Phillip And Westernport	Yarra Ranges Shire	Yes	Yes	No	VegLink
VC_TFN-C2047_01	9.059	47	Goulburn Broken	Mitchell Shire	Yes	Yes	No	VegLink

These sites meet your requirements using alternative arrangements for general offsets.

Credit Site ID	GHU	LT	CMA	LGA	Land owner	Trader	Fixed price	Broker(s)

There are no sites listed in the Native Vegetation Credit Register that meet your offset requirements when applying the alternative arrangements as listed in section 11.2 of the Guidelines for the removal, destruction or lopping of native vegetation.

These potential sites are not yet available, land owners may finalise them once a buyer is confirmed.

Credit Site ID	GHU	LT	CMA	LGA	Land owner	Trader	Fixed price	Broker(s)
VC_CFL-3729_01	8.422	17	Port Phillip And Westernport	Melton City	Yes	Yes	No	VegLink

LT - Large Trees *CMA - Catchment Management Authority* *LGA - Municipal District or Local Government Authority*

Next steps

If applying for approval to remove native vegetation
Attach this report to an application to remove native vegetation as evidence that your offset requirement is currently available.

If you have approval to remove native vegetation
Below are the contact details for all brokers. Contact the broker(s) listed for the credit site(s) that meet your offset requirements. These are shown in the above tables. If more than one broker or site is listed, you should get more than one quote before deciding which offset to secure.

Broker contact details

Broker Abbreviation	Broker Name	Phone	Email	Website
Abezco	Abzeco Pty. Ltd.	(03) 9431 5444	offsets@abzeco.com.au	www.abzeco.com.au
Baw Baw SC	Baw Baw Shire Council	(03) 5624 2411	bawbaw@bawbawshire.vic.gov.au	www.bawbawshire.vic.gov.au
Bio Offsets	Biodiversity Offsets Victoria	0452 161 013	info@offsetsvictoria.com.au	www.offsetsvictoria.com.au
Contact NVOR	Native Vegetation Offset Register	136 186	nativevegetation.offsetregister@delwp.vic.gov.au	www.environment.vic.gov.au/native-vegetation
Ecocentric	Ecocentric Environmental Consulting	0410 564 139	ecocentric@me.com	Not avaliable
Ethos	Ethos NRM Pty Ltd	(03) 5153 0037	offsets@ethosnrm.com.au	www.ethosnrm.com.au
Nillumbik SC	Nillumbik Shire Council	(03) 9433 3316	offsets@nillumbik.vic.gov.au	www.nillumbik.vic.gov.au
TFN	Trust for Nature	8631 5888	offsets@tfn.org.au	www.trustfornature.org.au
VegLink	Vegetation Link Pty Ltd	(03) 8578 4250 or 1300 834 546	offsets@vegetationlink.com.au	www.vegetationlink.com.au
Yarra Ranges SC	Yarra Ranges Shire Council	1300 368 333	biodiversityoffsets@yarraranges.vic.gov.au	www.yarraranges.vic.gov.au

For more information contact the DELWP Customer Service Centre 136 186 or the Native Vegetation Credit Register at nativevegetation.offsetregister@delwp.vic.gov.au

Appendix E – Offset Availability Report for NVRR of total project area with Crown land considered as past removal

Report of available native vegetation credits

This report lists native vegetation credits available to purchase through the Native Vegetation Credit Register.

This report is **not evidence** that an offset has been secured. An offset is only secured when the units have been purchased and allocated to a permit or other approval and an allocated credit extract is provided by the Native Vegetation Credit Register.

Date and time: 11/03/2021 01:46 **Report ID: 8077**

What was searched for?

General offset

General habitat units	Strategic biodiversity value	Large trees	Vicinity (Catchment Management Authority or Municipal district)	
5.521	0.522	19	CMA	Port Phillip and Westernport
			or LGA	Hume City
			or LGA	Melton City

Details of available native vegetation credits on 11 March 2021 01:46

These sites meet your requirements for general offsets.

Credit Site ID	GHU	LT	CMA	LGA	Land owner	Trader	Fixed price	Broker(s)
BBA-0277	8.805	466	Port Phillip and Westernport	Mornington Peninsula Shire	No	Yes	No	Abezco, Ethos, VegLink
BBA-0670	18.774	167	Port Phillip and Westernport	Cardinia Shire	No	Yes	No	Abezco, VegLink
BBA-0677	20.754	1529	Port Phillip and Westernport	Whittlesea City	No	Yes	No	Abezco, VegLink
BBA-0678	49.450	2666	Port Phillip and Westernport	Nillumbik Shire	No	Yes	No	Contact NVOR
BBA-2871	15.600	1605	Port Phillip and Westernport	Yarra Ranges Shire	Yes	Yes	No	Contact NVOR

These sites meet your requirements using alternative arrangements for general offsets.

Credit Site ID	GHU	LT	CMA	LGA	Land owner	Trader	Fixed price	Broker(s)

There are no sites listed in the Native Vegetation Credit Register that meet your offset requirements when applying the alternative arrangements as listed in section 11.2 of the Guidelines for the removal, destruction or lopping of native vegetation.

These potential sites are not yet available, land owners may finalise them once a buyer is confirmed.

Credit Site ID	GHU	LT	CMA	LGA	Land owner	Trader	Fixed price	Broker(s)

There are no potential sites listed in the Native Vegetation Credit Register that meet your offset requirements.

LT - Large Trees *CMA - Catchment Management Authority* *LGA - Municipal District or Local Government Authority*

Next steps

If applying for approval to remove native vegetation
Attach this report to an application to remove native vegetation as evidence that your offset requirement is currently available.

If you have approval to remove native vegetation
Below are the contact details for all brokers. Contact the broker(s) listed for the credit site(s) that meet your offset requirements. These are shown in the above tables. If more than one broker or site is listed, you should get more than one quote before deciding which offset to secure.

Broker contact details

Broker Abbreviation	Broker Name	Phone	Email	Website
Abezco	Abzeco Pty. Ltd.	(03) 9431 5444	offsets@abzeco.com.au	www.abzeco.com.au
Baw Baw SC	Baw Baw Shire Council	(03) 5624 2411	bawbaw@bawbawshire.vic.gov.au	www.bawbawshire.vic.gov.au
Bio Offsets	Biodiversity Offsets Victoria	0452 161 013	info@offsetsvictoria.com.au	www.offsetsvictoria.com.au
Contact NVOR	Native Vegetation Offset Register	136 186	nativevegetation.offsetregister@delwp.vic.gov.au	www.environment.vic.gov.au/native-vegetation
Ecocentric	Ecocentric Environmental Consulting	0410 564 139	ecocentric@me.com	Not avaliable
Ethos	Ethos NRM Pty Ltd	(03) 5153 0037	offsets@ethosnrm.com.au	www.ethosnrm.com.au
Nillumbik SC	Nillumbik Shire Council	(03) 9433 3316	offsets@nillumbik.vic.gov.au	www.nillumbik.vic.gov.au
TFN	Trust for Nature	8631 5888	offsets@tfn.org.au	www.trustfornature.org.au
VegLink	Vegetation Link Pty Ltd	(03) 8578 4250 or 1300 834 546	offsets@vegetationlink.com.au	www.vegetationlink.com.au
Yarra Ranges SC	Yarra Ranges Shire Council	1300 368 333	biodiversityoffsets@yarraranges.vic.gov.au	www.yarraranges.vic.gov.au

For more information contact the DELWP Customer Service Centre 136 186 or the Native Vegetation Credit Register at nativevegetation.offsetregister@delwp.vic.gov.au

Report of available native vegetation credits

This report lists native vegetation credits available to purchase through the Native Vegetation Credit Register.

This report is **not evidence** that an offset has been secured. An offset is only secured when the units have been purchased and allocated to a permit or other approval and an allocated credit extract is provided by the Native Vegetation Credit Register.

Date and time: 27/01/2021 12:10 **Report ID: 7608**

What was searched for?

General offset

General habitat units	Strategic biodiversity value	Large trees	Vicinity (Catchment Management Authority or Municipal district)	
6.115	0.498	28	CMA	Port Phillip and Westernport
			or LGA	Hume City
			or LGA	Melton City
			or LGA	Mitchell Shire
			or LGA	Whittlesea City

Details of available native vegetation credits on 27 January 2021 12:10

These sites meet your requirements for general offsets.

Credit Site ID	GHU	LT	CMA	LGA	Land owner	Trader	Fixed price	Broker(s)
BBA-0277	8.820	466	Port Phillip and Westernport	Mornington Peninsula Shire	No	Yes	No	Abezco, Ethos, VegLink
BBA-0670	18.774	167	Port Phillip and Westernport	Cardinia Shire	No	Yes	No	Abezco, VegLink
BBA-0677	20.754	1529	Port Phillip and Westernport	Whittlesea City	No	Yes	No	Abezco, VegLink
BBA-0678	49.472	2666	Port Phillip and Westernport	Nillumbik Shire	No	Yes	No	Contact NVOR
BBA-2871	16.063	1644	Port Phillip and Westernport	Yarra Ranges Shire	Yes	Yes	No	Contact NVOR
VC_CFL-3708_01	6.613	735	Port Phillip And Westernport	Yarra Ranges Shire	Yes	Yes	No	VegLink
VC_CFL-3709_01	7.358	559	Port Phillip And Westernport	Yarra Ranges Shire	Yes	Yes	No	VegLink
VC_TFN-C2047_01	9.462	59	Goulburn Broken	Mitchell Shire	Yes	Yes	No	VegLink

These sites meet your requirements using alternative arrangements for general offsets.

Credit Site ID	GHU	LT	CMA	LGA	Land owner	Trader	Fixed price	Broker(s)

There are no sites listed in the Native Vegetation Credit Register that meet your offset requirements when applying the alternative arrangements as listed in section 11.2 of the Guidelines for the removal, destruction or lopping of native vegetation.

These potential sites are not yet available, land owners may finalise them once a buyer is confirmed.

Credit Site ID	GHU	LT	CMA	LGA	Land owner	Trader	Fixed price	Broker(s)

There are no potential sites listed in the Native Vegetation Credit Register that meet your offset requirements.

LT - Large Trees *CMA - Catchment Management Authority* *LGA - Municipal District or Local Government Authority*

Next steps

If applying for approval to remove native vegetation
Attach this report to an application to remove native vegetation as evidence that your offset requirement is currently available.

If you have approval to remove native vegetation
Below are the contact details for all brokers. Contact the broker(s) listed for the credit site(s) that meet your offset requirements. These are shown in the above tables. If more than one broker or site is listed, you should get more than one quote before deciding which offset to secure.

Broker contact details

Broker Abbreviation	Broker Name	Phone	Email	Website
Abezco	Abzeco Pty. Ltd.	(03) 9431 5444	offsets@abzeco.com.au	www.abzeco.com.au
Baw Baw SC	Baw Baw Shire Council	(03) 5624 2411	bawbaw@bawbawshire.vic.gov.au	www.bawbawshire.vic.gov.au
Bio Offsets	Biodiversity Offsets Victoria	0452 161 013	info@offsetsvictoria.com.au	www.offsetsvictoria.com.au
Contact NVOR	Native Vegetation Offset Register	136 186	nativevegetation.offsetregister@delwp.vic.gov.au	www.environment.vic.gov.au/native-vegetation
Ecocentric	Ecocentric Environmental Consulting	0410 564 139	ecocentric@me.com	Not avaliable
Ethos	Ethos NRM Pty Ltd	(03) 5153 0037	offsets@ethosnrm.com.au	www.ethosnrm.com.au
Nillumbik SC	Nillumbik Shire Council	(03) 9433 3316	offsets@nillumbik.vic.gov.au	www.nillumbik.vic.gov.au
TFN	Trust for Nature	8631 5888	offsets@tfn.org.au	www.trustfornature.org.au
VegLink	Vegetation Link Pty Ltd	(03) 8578 4250 or 1300 834 546	offsets@vegetationlink.com.au	www.vegetationlink.com.au
Yarra Ranges SC	Yarra Ranges Shire Council	1300 368 333	biodiversityoffsets@yarraranges.vic.gov.au	www.yarraranges.vic.gov.au

For more information contact the DELWP Customer Service Centre 136 186 or the Native Vegetation Credit Register at nativevegetation.offsetregister@delwp.vic.gov.au

Appendix F – Preliminary offsets assessment guide calculations

Protected Matter Attribute	Quantum of Impact -Area (hectares)	Quantum of Impact -Quality (Scale 0-10)	Total Quantum of Impact-Adjusted hectares	Time horizon	Start area and quality	Future area and quality without offset	Future area and quality with offset	Raw Gain	Confidence in result %	Adjusted gain	Net present value (adjusted hectares)		% of impact offset
Natural Temperate Grassland of the Victorian Volcanic Plain Community	3.81	3/10	1.14	Risk related time horizon =20	Start area = 13	Risk of loss = 10% Future area without offset = 11.7 ha	Risk of loss = 1% Future area with offset= 12.9 ha	1.17	80	0.94	0.25	1.17	102.4 %
				Time until ecological benefit = 10	Start quality = 7/10	Future quality= 6/10	Future quality = 8/10	2.00	80	1.60	0.83		
Grassy Eucalypt Woodland of the Victorian Volcanic Plain Community	2.29	4/10	0.92	Risk related time horizon =20	Start area = 10.5	Risk of loss = 10% Future area without offset = 9.5 ha	Risk of loss = 1% Future area with offset = 10.4 ha	0.94	80	0.76	0.20	0.93	100.99 %
				Time until ecological benefit = 10	Start quality = 6/10	Future quality= 5/10	Future quality = 7/10	2.00	80	1.60	0.83		
Golden Sun Moth Habitat	19.93	5/10	9.97	Risk related time horizon =20	Start area = 113.5	Risk of loss = 10% Future area without offset = 102.2 ha	Risk of loss = 1% Future area with offset= 112.4 ha	10.22	80	817	2.19	10	100.35%
				Time until ecological benefit = 10	Start quality = 6/10	Future quality= 5/10	Future quality = 7/10	2	80	1.60	0.83		

Protected Matter Attribute	Quantum of Impact -Area (hectares)	Quantum of Impact -Quality (Scale 0-10)	Total Quantum of Impact-Adjusted hectares	Time horizon	Start area and quality	Future area and quality without offset	Future area and quality with offset	Raw Gain	Confidence in result %	Adjusted gain	Net present value (adjusted hectares)		% of impact offset
Striped Legless Lizard Habitat	39.34	6/10	23.60	Risk related time horizon =20	Start area = 125	Risk of loss = 10% Future area without offset = 112.5 ha	Risk of loss = 1% Future area with offset= 123.8 ha	11.25	80	9	8.65	23.7	100.39%
				Time until ecological benefit = 10	Start quality = 6/10	Future quality= 5/10	Future quality = 7/10	2	80	1.60	1.57		

Appendix G – Offset calculations

Table 9 Attribute values entered in the preliminary offset assessment guide calculations for Natural Temperature Grassland on the Victorian Volcanic Plains (NTGVVP)

Offset assessment guide attribute	NTGVVP community	Justification
Impact calculator - Quantum of impact - Area	3.81	Removal of this TEC was calculated in Section 3.2.1 of this report based on results from ecological assessments conducted in the proposed impact area (see Section 8.3.3 of the EES Technical Report A - Biodiversity and Habitats Report (GHD 2021)).
Impact Calculator - Quantum of impact – Quality	3/10	The patches of NTGVVP to be impacted by the project were of moderate quality, had significant threats and were considerably isolated from large and continuous patches of the community. Details of the quality scoring are described in section 3.2.1.
Offset calculator – Time horizon –Risk related time horizon	20 years	The proposed offset site would be protected and managed in perpetuity under a legal covenant. 20 years is the maximum timeframe for averting loss in the guide.
Offset calculator – Time horizon – Time until ecological benefit	10 years	The offset sites would be managed through agreement with private landholders. Potential management activities may include, but are not limited to ecological burning, tactical grazing, bush regeneration and treatment of pest fauna. Improving vegetation structure and composition (e.g., regrowth of native grasses and herbs) could be achieved over relatively short time periods (i.e., 2 - 5 years), however ecological benefits arising from management would be conservatively assessed after a 10-year period to allow sufficient time for native species to regenerate and weeds and pests to be under management control.
Offset calculator - Future area and quality without offset – Risk of loss without offset	10 %	NTGVVP within the offset site is at risk of removal as a result of agricultural activities, land clearance and other factors (e.g., bush fire hazard reduction). Given there is a limited extent of this community in any region, selecting a risk of loss without offset of 10% is considered both conservative and realistic for this community.
Offset calculator - Future area and quality with offset – Risk of loss with offset	1 %	The proposed offset site would be protected and managed in perpetuity under a legal covenant. Despite an offset site being secured, there is still potential for unforeseen events (e.g., bushfire) to impact on the persistence of NTGVVP at the site. Therefore, the risk of loss for the offset is set at the lowest level above zero (i.e., 1%) to reflect the low probability of the vegetation community deteriorating.
Confidence in result – Averted loss of offset	80 %	There is a relatively high degree of confidence that that areas managed for the protection and maintenance of NTGVVP will be effective in avoiding loss of the community. The risk settings are conservatively set at 80% due to the uncertainty surrounding the use of some adjacent properties and the threat of unforeseen events (e.g., natural disaster) impacting on the success of the offset.
Offset calculator – Start area and quality – Area	13	The area and quality of NTGVVP was assessed by the VQA method during a field assessment by GHD in 2021.

Offset assessment guide attribute	NTGVVP community	Justification
Offset calculator – Start area and quality – Start quality	7/10	Start quality for NTGVVP in the proposed offset site was scored as 7/10, comprising: • Site condition 5/7.5, reflecting the quality of the key attributes (Based on vegetation structure, native plant cover, species richness and presence of habitat resources). However, some impact from weed infestation and grazing. • Site context 2/2.5, reflecting the continuity of native vegetation to the south, which comprises Blacks Creek Nature Conservation Reserve (NCR) managed by Parks Victoria. However, windfarms are present in the surrounding area.
Offset calculator - Future area and quality without offset – Future quality without offset (1-10)	6/10	Future quality of habitat without offset for the proposed offset site was scored as 6/10 comprising: • Site condition 4/7.5, reflecting a conservative decline in the condition of the key attributes through degradation of native grassland structure and cover due to grazing and weed infestation. • Site context 2/2.5, reflecting the unchanged continuity of native vegetation to the south, and location of windfarm.
Offset calculator - Future area and quality with offset – Future quality with offset (1-10)	8/10	Future quality of habitat with offset for the proposed offset site was scored as 8/10 comprising: • Site condition 6/7.5, reflecting improvements in the quality of the key attributes through: purposeful management of vegetation structure through fire and/or tactical grazing; and management of weed infestations and potentially pest fauna. • Site context 2/2.5, which is unchanged, because these areas would continue to be adjacent to Blacks Creek NCR and unfavourable windfarm aspects.
Confidence in result – Change in quality	80 %	A higher level of confidence is provided for the habitat quality settings because of past observations that active environmental management will improve quality of the NTGVVP community and that failing to manage habitat will result in habitat quality declining.
Percentage of impact offset	**102.40 %**	

Table 10 Attribute values entered in the preliminary offset assessment guide calculations for Grassy Eucalypt Woodland of the Victorian Volcanic Plains (GEWVVP)

Offset assessment guide attribute	GEWVVP community	Justification
Impact calculator - Quantum of impact - Area	2.29	Removal of this TEC was calculated in Section 3.2.2 of this report based on results from ecological assessments conducted in the proposed impact area (see Section 8.3.3 of the EES Technical Report A - Biodiversity and Habitats Report (GHD 2021)).
Impact Calculator - Quantum of impact – Quality	4/10	The patches of GEWVVP to be impacted by the project were of were of moderate quality and had significant threats and were part of a larger patch which is not continuous with other patches of the community. Details of the quality scoring are described in section 3.2.2.
Offset calculator – Time horizon –Risk related time horizon	20 years	The proposed offset site would likely be protected and managed in perpetuity under a legal covenant. 20 years is the maximum timeframe for averting loss in the guide.
Offset calculator – Time horizon – Time until ecological benefit	10 years	The offset sites would be managed through agreement with private landholders. Potential management activities may include, but are not limited to ecological burning, tactical grazing, bush regeneration and treatment of pest fauna. Improving vegetation structure and composition (e.g., regrowth of native grasses and herbs) could be achieved over relatively short time periods (i.e., 2 - 5 years), however ecological benefits arising from management would be conservatively assessed after a 10-year period to allow sufficient time for native species to regenerate and weeds and pests to be under management control.
Offset calculator - Future area and quality without offset – Risk of loss without offset	10 %	GEWVVP within the offset site is at risk of removal as a result of agricultural activities, land clearance and other factors (e.g., bush fire hazard reduction). Given there is a limited extent of this community in any region, selecting a risk of loss without offset of 10% is considered both conservative and realistic for this community.
Offset calculator - Future area and quality with offset – Risk of loss with offset	1 %	The proposed offset site would be protected and managed in perpetuity under a legal covenant. Despite an offset site being secured, there is still potential for unforeseen events (e.g., bushfire) to impact on the persistence of GEWVVP at the site. Therefore, the risk of loss for the offset is set at the lowest level above zero (i.e. 1%) to reflect the low probability of the vegetation community deteriorating.
Confidence in result – Averted loss of offset	80 %	There is a relatively high degree of confidence that that areas managed for the protection and maintenance of GEWVVP will be effective in avoiding loss of the community. The risk settings are conservatively set at 80% due to the uncertainty surrounding the use of some adjacent properties and the threat of unforeseen events (e.g., natural disaster) impacting on the success of the offset.

Offset assessment guide attribute	GEWVVP community	Justification
Offset calculator – Start area and quality – Area	10.5	The area and quality of GEWVVP at the offset site has been estimated based on information provided by the Offset Broker
Offset calculator – Start area and quality – Start quality	6/10	Start quality for GEWVVP in the proposed offset site was estimated as 6/10, comprising: • Site condition 4.5/7.5, however, the land is used for farming so some impact from weeds and grazing is expected. • Site context 1.5/2.5, reflecting the continuity of native vegetation and landscape features.
Offset calculator - Future area and quality without offset – Future quality without offset (1-10)	5/10	Future quality of habitat without offset for the proposed offset site was scored as 5/10 comprising: • Site condition 3.5/7.5, reflecting a conservative decline in the condition of the key attributes through degradation of native grassland/woodland structure and cover due to grazing and weed infestation. Also potential for native vegetation clearing to occur for agricultural purposes. • Site context 1.5/2.5, reflecting the unchanged continuity of vegetation and landscape features.
Offset calculator - Future area and quality with offset – Future quality with offset (1-10)	7/10	Future quality of habitat with offset for the proposed offset site was scored as 7/10 comprising: • Site condition 5.5/7.5, reflecting improvements in the quality of the key attributes through purposeful management of vegetation structure through fire and/or tactical grazing; and management of weed infestations and potentially pest fauna. • Site context 1.5/2.5, which is unchanged, because these areas would continue to have similar vegetation connectivity and landscape features.
Confidence in result – Change in quality	80 %	A higher level of confidence is provided for the habitat quality settings because of past observations that active environmental management will improve quality of the GEWVVP community and that failing to manage habitat will result in habitat quality declining.
Percentage of impact offset	**100.99%**	

Table 11 Attribute values entered in the preliminary offset assessment guide calculations for Golden Sun Moth (GSM) habitat

Offset assessment guide attribute	GSM habitat	Justification
Impact calculator - Quantum of impact - Area	19.93	Removal of known or potential Golden Sun Moth habitat as detailed in Section 8.4.3 of the EES Technical Report - Biodiversity and Habitats Report (GHD 2021). This impact area was calculated based on the results of 2019/20 and 2020/21 targeted Golden Sun Moth surveys conducted by GHD and Biosis.
Impact Calculator - Quantum of impact – Quality	5/10	Golden Sun Moth habitat within the project area comprises remnant native vegetation in moderate condition and non-native vegetation of introduced species. The habitat quality score (5 out of 10) was determined according to DAWE's assessment guide, which includes three attributes 'site condition', 'site context' and 'species stocking rate'. Details of the weighting of these three attributes is described in section 3.2.3. Each characteristic was then scored based on the field assessment results presented within Section 8.4.3 of the EES Technical Report - Biodiversity and Habitats Report (GHD 2021).
Offset calculator – Time horizon –Risk related time horizon	20 years	The proposed offset site would be protected and managed in perpetuity under a legal covenant. 20 years is the maximum timeframe for averting loss in the guide.
Offset calculator – Time horizon – Time until ecological benefit	10 years	The offset sites would be managed through agreement with private landholders. Potential management activities may include, but are not limited to ecological burning, tactical grazing, bush regeneration and treatment of pest fauna. Golden Sun Moth relies upon native and/or non-native grassland habitat (especially those dominated by tussock forming grass species). Where suitable habitat is available, the species can tolerate grazing but requires areas without a recent history of cropping. Improving vegetation structure (e.g., regrowth of heavily grazed grassland) could be achieved over relatively short time periods (i.e., 2 - 5 years), however ecological benefits arising from management would be conservatively assessed after a 10-year period to allow the species sufficient time to re-stock the site following habitat improvements.
Offset calculator - Future area and quality without offset – Risk of loss without offset	10 %	Golden Sun Moth habitat within the offset site is potentially at risk of removal as a result of agricultural activities (e.g., grazing, cropping) and other factors (e.g., bush fire hazard reduction). Given there is a limited extent of habitat for this species throughout Victoria, selecting a risk of loss without offset of 10% is considered both conservative and realistic for this species.
Offset calculator - Future area and quality with offset – Risk of loss with offset	1 %	The proposed offset site would be protected and managed in perpetuity under a legal covenant. Despite an offset site being secured, there is still potential for unforeseen events (e.g., bushfire) to impact on the survivorship of Golden Sun Moth at the site. Therefore, the risk of loss for the offset is set at the lowest level above zero (i.e., 1%) to reflect the low probability of the vegetation, habitat and stocking density deteriorating.

Offset assessment guide attribute	GSM habitat	Justification
Confidence in result – Averted loss of offset	80 %	There is a relatively high degree of confidence that that areas managed for the protection and maintenance of Golden Sun Moth will be effective in avoiding loss of the species. The risk settings are conservatively set at 80% due to the uncertainty surrounding the ongoing declines of Golden Sun Moth and the threat of unforeseen events (e.g., natural disaster) impacting on the success of the offset.
Offset calculator – Start area and quality – Area	113.5	The area and quality of Golden Sun Moth habitat was mapped based on targeted Golden Sun Moth surveys conducted by Wildlife Experiences (in 2018) and AECOM (in 2020).
Offset calculator – Start area and quality – Start quality	6/10	Start quality for habitat in the proposed offset site was scored as 6/10, comprising: • Site condition 2/3, reflecting the quality of the key habitat attributes (large areas of native grassland and suitable non-native grassland - as confirmed by the presence of the Golden Sun Moth during targeted surveys). However, some impact from weed infestation and grazing. • Site context 2/3, reflecting the continuity of native vegetation to the south, which comprises Blacks Creek Nature Conservation Reserve (NCR) managed by Parks Victoria. However, most of the site is south facing. • Species stocking rate 2/4, reflecting the confirmed presence of Golden Sun Moth at Stockyard Hill, with 10 males being recorded per hectare. Golden Sun Moth were observed in 3 of 4 rounds of survey by AECOM in 2020.
Offset calculator - Future area and quality without offset – Future quality without offset (1-10)	5/10	Future quality of habitat without offset for the proposed offset site was scored as 5/10 comprising: • Site condition 1/3, reflecting a decline in the condition of the key habitat attributes through degradation of native and non-native grassland from grazing and weed infestation. • Site context 2/3, reflecting the unchanged continuity of native vegetation to the south, and aspect of the site. • Species stocking rate 2/4, because future occupation by the Golden Sun Moth cannot be predicted with confidence. The presence/absence and abundance of the Golden Sun Moth was variable during targeted surveys and appears to be a product of subtle environmental factors that cannot be consistently discerned from observation of habitat attributes alone. Therefore, this characteristic cannot be confidently scored as decreasing without management.

Offset assessment guide attribute	GSM habitat	Justification
Offset calculator - Future area and quality with offset – Future quality with offset (1-10)	7/10	Future quality of habitat with offset for the proposed offset site was scored as 7/10 comprising: • Site condition 3/3, reflecting improvements in the quality of the key habitat attributes through: purposeful management of vegetation structure through fire and/or tactical grazing; and management of weed infestations and potentially pest fauna. • Site context 2/3, which is unchanged, because the aspect and slope of the site will remain constant. • Species stocking rate 2/4, because future occupation by the Golden Sun Moth cannot be predicted with confidence. The presence/absence and abundance of the Golden Sun Moth was variable during targeted surveys and appears to be a product of subtle environmental factors that cannot be consistently discerned from observation of habitat attributes alone. Therefore, this characteristic cannot be confidently scored as increasing with management.
Confidence in result – Change in quality	80 %	A higher level of confidence is provided for the habitat quality settings because of past observations that active environmental management will improve habitat for Golden Sun Moth and that failing to manage habitat will result in habitat quality declining.
Percentage of impact offset	**100.35 %**	

Table 12 Attribute values entered in the preliminary offset assessment guide calculations for Striped Legless Lizard (SLL) habitat

Offset assessment guide attribute	SLL habitat	Justification
Impact calculator - Quantum of impact - Area	39.34	Removal of known or potential SLL habitat as detailed in Section 8.4.3 of the EES Technical Report - Biodiversity and Habitats Report (GHD 2021). This impact area was calculated based on the results of 2019/20 targeted SLL surveys conducted by Biosis.
Impact Calculator - Quantum of impact – Quality	6/10	SLL habitat within the project area comprises remnant native vegetation in moderate condition and non-native vegetation of introduced species. The habitat quality score (6 out of 10) was determined according to DAWE's assessment guide, which includes three attributes 'site condition', 'site context' and 'species stocking rate'. Details of the weighting of these three attributes is described in section 3.2.4. Each characteristic was then scored based on the field assessment results presented within Section 8.4.3 of the EES Technical Report - Biodiversity and Habitats Report (GHD 2021).
Offset calculator – Time horizon –Risk related time horizon	20 years	The proposed offset site would be protected and managed in perpetuity under a legal covenant. 20 years is the maximum timeframe for averting loss in the guide.

Offset assessment guide attribute	SLL habitat	Justification
Offset calculator – Time horizon – Time until ecological benefit	10 years	The offset sites would be managed through agreement with private landholders. Potential management activities may include, but are not limited to ecological burning, tactical grazing, bush regeneration and treatment of pest fauna. SLL relies upon native and/or non-native grassland habitat (especially those dominated by tussock forming grass species). Where suitable habitat is available, the species can tolerate grazing but requires areas without a recent history of cropping or other significant ground disturbance. Improving vegetation structure (e.g., regrowth of heavily grazed grassland) could be achieved over relatively short time periods (i.e., 2 - 5 years), however ecological benefits arising from management would be conservatively assessed after a 10-year period to allow the species sufficient time to re-stock the site following habitat improvements.
Offset calculator - Future area and quality without offset – Risk of loss without offset	10 %	SLL habitat within the offset site is potentially at risk of removal as a result of agricultural activities (e.g., grazing, cropping) and other factors (e.g., bush fire hazard reduction). Given there is a limited extent of habitat for this species in any region, selecting a risk of loss without offset of 10% is considered both conservative and realistic for this species.
Offset calculator - Future area and quality with offset – Risk of loss with offset	1 %	The proposed offset site would be protected and managed in perpetuity under a legal covenant. Despite an offset site being secured, there is still potential for unforeseen events (e.g., bushfire) to impact on the survivorship of SLL at the site. Therefore, the risk of loss for the offset is set at the lowest level above zero (i.e., 1%) to reflect the low probability of the vegetation, habitat and stocking density deteriorating.
Confidence in result – Averted loss of offset	80 %	There is a relatively high degree of confidence that that areas managed for the protection and maintenance of SLL will be effective in avoiding loss of the species. In addition, there is already an existing offset site for SLL within the area. The risk settings are conservatively set at 80% due to the uncertainty surrounding the ongoing declines of SLL and the threat of unforeseen events (e.g., natural disaster) impacting on the success of the offset.
Offset calculator – Start area and quality – Area	125	The area and quality of SLL habitat was mapped based on a field survey conducted by GHD in 2021.

Offset assessment guide attribute	SLL habitat	Justification
Offset calculator – Start area and quality – Start quality	6/10	Start quality for habitat in the proposed offset site was scored as 6/10, comprising: • Site condition 2/3, reflecting the quality of the key habitat attributes (large areas of native grassland and suitable non-native grassland - together with embedded and/or surface rock. However, current management actions being undertaken at the site for an existing offset site are unknown. • Site context 3/4, reflecting the continuity of native vegetation to the south, which comprises Blacks Creek Nature Conservation Reserve (NCR) managed by Parks Victoria. Only one threat is relevant within the assessment guidelines, 'Site currently not subject to any form of appropriate biomass reduction'. Given that current management practices are unknown this attribute has been conservatively scored as 3/4. • Species stocking rate 1/3, reflecting the known presence of SLL at the site and existing offset site. However, since recent tile surveys have not been conducted, SLL abundance is conservatively estimated, thus a rating of 1/3.
Offset calculator - Future area and quality without offset – Future quality without offset (1-10)	5/10	Future quality of habitat without offset for the proposed offset site was scored as 5/10 comprising: • Site condition 1/3, reflecting a decline in the condition of the key habitat attributes through degradation of native and non-native grassland from grazing and weed infestation. • Site context 3/4, reflecting the unchanged continuity of native vegetation to the south and lack of management practices. • Species stocking rate 1/3, because future occupation by the SLL cannot be predicted with confidence and the current abundance of SLL at the offset site is unknown and appears to be a product of subtle environmental factors that cannot be consistently discerned from observation of habitat attributes alone. Therefore, this characteristic cannot be confidently scored as decreasing without management intervention.
Offset calculator - Future area and quality with offset – Future quality with offset (1-10)	7/10	Future quality of habitat with offset for the proposed offset site was scored as 7/10 comprising: • Site condition 2/3, reflecting maintenance and improvements in the quality of the key habitat attributes through: purposeful management of vegetation structure through fire and/or tactical grazing; and management of weed infestations and potentially pest fauna. • Site context 4/4, reflecting management activity at the site constituting an appropriate biomass reduction, thus removing all attribute-specific threats. • Species stocking rate 1/3, because future occupation by the SLL cannot be predicted with confidence and the current abundance of SLL at the offset site is unknown and appears to be a product of subtle environmental factors that cannot be consistently discerned from observation of habitat attributes alone. Therefore, this characteristic cannot be confidently scored as increasing with management intervention.

Offset assessment guide attribute	SLL habitat	Justification
Confidence in result – Change in quality	80 %	A higher level of confidence is provided for the habitat quality settings because of past observations that active environmental management will improve habitat for SLL and that failing to manage habitat will result in habitat quality declining.
Percentage of impact offset	**100.39 %**	

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