

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

Species name	Listing status	Area of value within the study area
Golden Sun Moth	Critically Endangered under EPBC Act Listed under FFG Act	Records shown in Figure 3. Within the study area 26.6 ha of land was assessed as providing habitat for GSM.
Growling Grass Frog	Vulnerable under EPBC Act Listed under FFG Act	Recorded from the wetlands to the north and south of the site. Edgars Creek environs provide a habitat corridor.
Matted Flax-lily	Endangered under EPBC Act Listed under FFG Act	Recorded from both this site and 275 O'Herns Road. Areas of native grassland and broader rocky platforms provide habitat. 19 plants recorded from the study area (Figure 2).
Tough Scurf-pea	Listed under FFG Act	Potential habitat within areas of gilgai soils and the Edgars Creek environs.
Small Scurf-pea	Listed under FFG Act	Potential habitat within areas of gilgai soils and the Edgars Creek environs. Recorded from 275 O'Herns Rd.
Grey-headed Flying-fox	Vulnerable under EPBC Act Listed under FFG Act	Scattered trees and areas of Plains Grassy Woodland
Lewin's Rail	Listed under FFG Act	Recorded from Edgars Creek environs
Black Falcon	Listed under FFG Act	Airspace above the study area
Barking Owl	Listed under FFG Act	Woodlands and scattered trees
Little Egret	Listed under FFG Act	Edgars Creek environs
Eastern Great Egret	Listed under FFG Act	Edgars Creek environs
Baillon's Crane	Listed under FFG Act	Edgars Creek environs
Latham's Snipe	Listed under FFG Act	Edgars Creek environs and areas of Plains Grassy Wetland

The targeted survey for Golden Sun Moth identified a total of 278 individuals (Figure 3). No Growling Grass Frogs were recorded within the study area.

Surveys also identified:

- 19 mats of Matted Flax-lily
- 5 individuals of Fragrant Saltbush.

Previous surveys at 275 O'Herns Road have identified Small Scurf Pea within areas similar environments to those present within the study area (Figure 3). Grazing by insects and Eastern Grey Kangaroo's *Macropus giganteus* make the detection of these species very difficult regardless of survey timing.

Areas of greatest value for significant species within the study area include:

- Plains Grassland: known to support populations of Golden Sun Moth and Matted Flax-lily.
- Edgars Creek environs: Considered to provide a habitat corridor for Growling Grass Frog and supports threatened flora in adjacent properties.

3.3.2 DELWP advisory list of rare and threatened species

To support decision making under the Guidelines, DELWP has produced models for Victoria describing the extent of habitat for most listed rare or threatened species. These models are called 'habitat importance models' and they assign a 'habitat importance score' to a location based on the importance of that location in the landscape as habitat for a particular rare or threatened species, in relation to other suitable habitat for that species (DEPI 2013a).

Under the Guidelines, these models form the basis for determining the impact of potential native vegetation clearing on rare and threatened species. The models only apply where a clearing proposal is considered on the moderate or high risk-based application pathways. The habitat importance scores are used to calculate the type and extent of biodiversity offsets required for native vegetation removal that impacts on individual rare or threatened species habitat for moderate or high risk application pathways.

Species for which habitat is modelled in the study area and are likely to suffer a significant impact from the potential clearing will be identified when a development proposal is identified. However, given the extent of native vegetation present and the broad nature of threatened species models considered likely to cover this property, it is considered unlikely that the impact threshold for a specific offset to be required would be exceeded.

Determination of the requirement for a specific offset based on the extent of impact on one or more rare or threatened species would be confirmed once a project footprint is determined.

3.3.3 Significant ecological communities

Areas of Plains Grassland (EVC 132) identified within this assessment are consistent with the Western (Basalt) Plains Grassland community listed under the FFG Act. Where areas of Habitat Zones 3 and 4 are greater than 0.05 ha, these areas also satisfy the definition of Natural Temperate Grassland of the Victorian Volcanic Plains (NTGVVP) Community listed under the EPBC Act.

Plains Grassy Woodland is endangered within the Victorian Volcanic Plains bioregion. This vegetation corresponds to the Western Basalt Plains (River Red Gum) Grassy Woodland floristic community 55-04 listed under the FFG Act but not the EPBC Act listed community Grassy Eucalypt Woodland of the Victorian Volcanic Plains (GEWVVP). The degraded nature of the understorey prevents the woodland from being classified as GEWVVP.

3.4 Other ecological values

The property is classified by DELWP's NaturePrint mapping as including areas of High Contribution of Strategic Natural Values, particularly in association with Edgars Creek and remnant woodlands.

While much of the property has a biodiversity location risk classified by DELWP as Location A, substantial areas are also identified as Location B. Most of the property is also rated by DELWP as having a strategic biodiversity score of between 0.21 and 0.40.

3.5 Previous Assessments

An industrial subdivision of 275 O'Herns Road, Epping (Alliance Business Park) assessed by Biosis Research (2012) was determined to be a controlled action under the EPBC Act (Referral 2012/6298). This assessment identified a range of biodiversity issues relating to that property which are relevant to 165-195 O'Herns Road.

These include:

- the broad-scale presence of Golden Sun Moth;
- scattered occurrences of patches of native vegetation, particularly Plains Grassland which also corresponds to the EPBC Act listed NTGWV;
- the identification of Edgars Creek and its environs as a habitat corridor for Growling Grass Frog;
- the presence of a small population of Matted Flax-lily;
- the local absence of a population of Striped Legless Lizard *Delma impar*;
- the presence of scattered individuals of Small Scurf-pea adjacent to Edgars Creek;
- potential habitat for Curly Sedge *Carex tasmanica* along Edgars Creek; and
- the broad-scale presence of a variety of noxious weeds including the State prohibited Lobed Needle-grass *Nassella charruana*.

Jacobs (2015) identified the presence of habitat for Golden Sun Moth along the proposed alignment of a new sewer within 165-195 O'Herns Road. While no targeted surveys were completed for this species, the entire proposed construction footprint within the property was assessed as Golden Sun Moth habitat in association with the referral under the EPBC Act (2015/7528). The footprint of the project within the study area was identified (worst case) as a strip of land 750 m long and 40 m wide providing a total area of 3 ha of GSM habitat to be impacted with the final approval limiting the impact to 3.18 ha of GSM habitat.

Jacobs (2015) did not record any patches of native vegetation along the sewer alignment within 165-195 O'Herns Road, but did note a potential impact on some remnant River Red-gums. However, one of the trees identified by Jacobs (2015) as a River Red Gum potentially impacted by the proposed sewer was identified by this assessment as a Swamp Gum *Eucalyptus ovata*.

Jacobs (2015) did not consider the potential presence of Lobed Needle-grass within the study area, despite this species being clearly noted by Biosis Research (2012). Similarly, the recorded presence of Matted Flax-lily and Small Scurf-pea by Biosis (2012) did not influence Jacobs (2015) assessment that these threatened species were unlikely to occur within the footprint of the sewer alignment at 165-195 O'Herns Road. This assessment subsequently identified a local population of Matted Flax-lily within this site and the habitat impacted by the sewer currently being constructed supports high quality habitat for Matted Flax-lily.

Since the Jacobs (2015) assessment, Curly Sedge has been de-listed as a threatened species under the EPBC Act but remains a species listed under the FFG Act. Assessments by Jacobs (2015) that the potential presence of other state listed fauna, such as Tussock Skink, is Low are not considered justifiable.

The proposed development plan for the study area (Figure 4) was developed in manner to be consistent with the guidelines provided by the Cooper Street Employment Area Development Plan (City of Whittlesea 2013). The development plan identifies remnants of grassland and grassy woodland within the study area and while these are mapped at a much coarser scale, they are generally consistent with the vegetation mapping produced by this assessment.

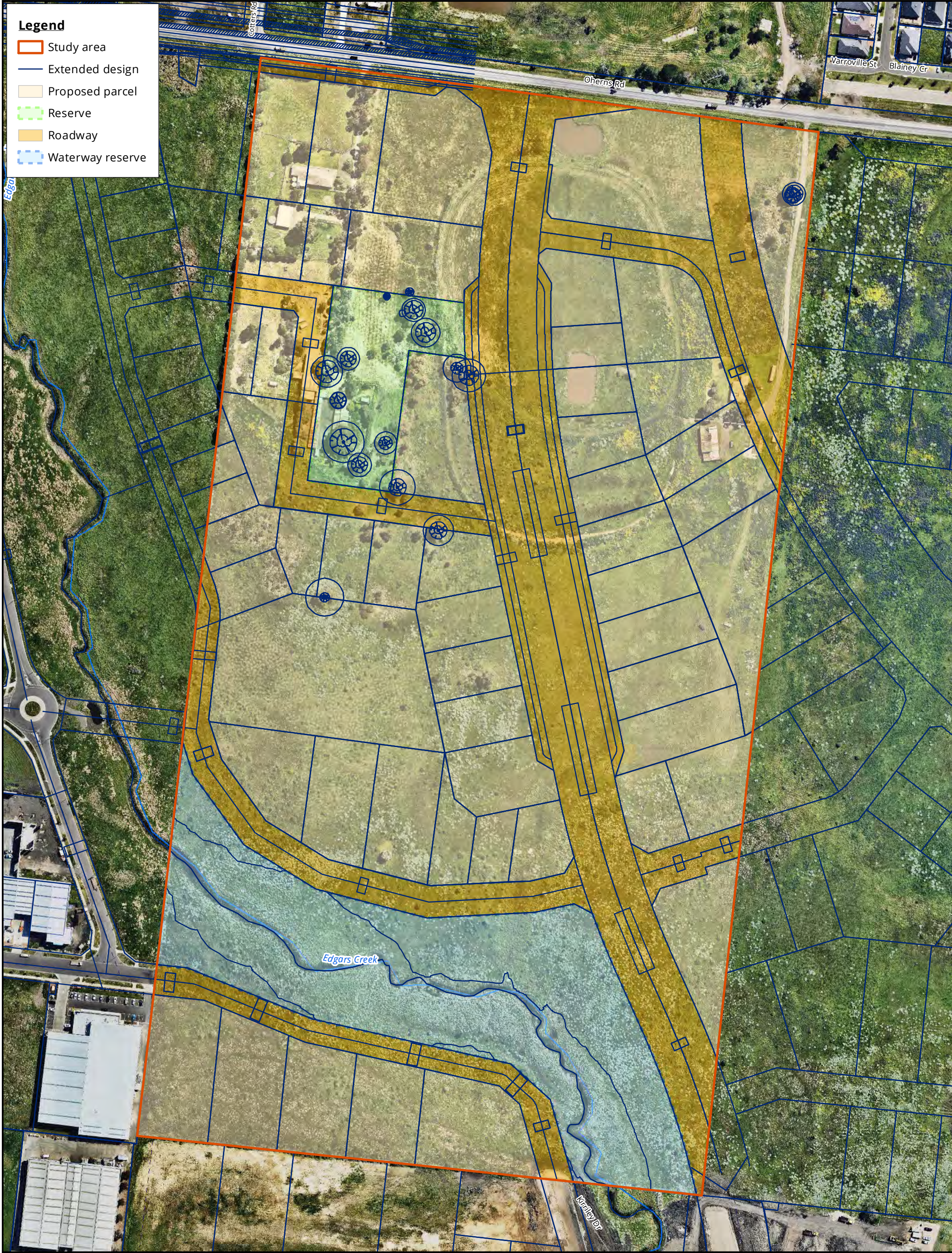


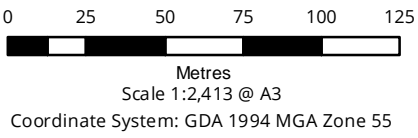
Figure 4 The proposed development footprint at 165-195 O'Herns Road, Epping, Victoria

Acknowledgements: Vicmap ©State of Victoria

Matter: 23682
Date: 11 April 2017
Checked by: SGM, Drawn by: LDM, Last edited by: Imilne
Location: P:\23600s\23682\Mapping\23682_F4_DevelopmentFootprint



Ballarat, Brisbane, Canberra, Hobart, Melbourne, Newcastle, Sydney, Wangaratta & Wollongong



The proposed central reserve was located in the area identified by the Whittlesea Development Plan as an indicative area of open space with priority for retention of conservation values. The location and extent of this reserve was based on detailed data collected by an arborist, this biodiversity assessment and liaison with Council officers.

The proposed creek corridor is also consistent with the development plan's requirement for a habitat corridor and open space link along Edgars Creek.

4. Biodiversity legislation and government policy

This section provides an assessment of the project in relation to key biodiversity legislation and government policy. This section does not describe the legislation and policy in detail. Where available, links to further information are provided. The proposed development footprint is provided in Figure 4.

4.1 Commonwealth

4.1.1 Environment Protection and Biodiversity Conservation Act 1999

The EPBC Act applies to developments and associated activities that have the potential to significantly impact on Matters of National Environmental Significance (MNES) protected under the Act (DoE 2013).

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

Matters of National Environmental Significance relevant to the project are summarised in Table 4. It includes an assessment against the EPBC Act policy statements published by the Australian Government which provide guidance on the practical application of EPBC Act.

Table 4 Assessment of potential development within the site in relation to the EPBC Act

Matter of NES	Project specifics	Assessment against significant impact guidelines
Threatened species and ecological communities	<p>28 listed species have been recorded or predicted to occur in the project search area. The likelihood of these species occurring in the study area is assessed in Appendix 1 (flora) and Appendix 2 (fauna).</p> <p>Five threatened ecological communities have been predicted to occur within the study area.</p>	<p>Two listed species, Golden Sun Moth and Matted Flax-lily, have been recorded on site.</p> <p>Previously identified corridor for Growling Grass Frog is present along Edgars Creek.</p> <p>Small remnants of one significant community (NTGVVP) is present (Total area of 1.608 ha).</p> <p>Development of the site would likely constitute a significant impact on MNES.</p>
Migratory species	<p>11 migratory species have been recorded or predicted to occur in the project search area (Appendix 2).</p>	<p>While some of these species would be expected to use the study area on occasions, and some of them may do so regularly or may be resident, it does not provide important habitat for an ecologically significant proportion of any of these species.</p>
Wetlands of international importance (Ramsar sites).	<p>The study area is not identified as being within the catchment of a Ramsar site.</p>	<p>The study area does not drain directly into a Ramsar site and the development is not likely to result in a significant impact.</p>

On the basis of criteria outlined in the relevant *Significant Impact Guidelines* (DEWHA 2009, DSEWPaC 2011, DoE 2013) it is considered likely that a significant impact on a MNES would result from development associated with this site (Figure 4). A proponent should therefore refer any proposed development of the site to the Commonwealth Minister for the Environment.

Note that part of the site has been assessed in association with Referral 2015/7528 and offsets prescribed for Golden Sun Moth habitat to be cleared by Yarra Valley Water within the nominated footprint of the new Epping branch sewer. This includes 3 ha of defined Golden Sun Moth habitat within 165 – 195 O'Herns Road.

4.2 State

4.2.1 Flora and Fauna Guarantee Act 1988 (FFG Act)

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

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

Native vegetation on the site is a listed community, and contains listed and protected flora and fauna species, or habitat for them (Appendix 1 and 2).

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

4.2.2 Catchment and Land Protection Act 1994 (CaLP Act)

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

Declared noxious weeds identified in the study area are listed in Appendix 1 and established pest animals are known from the site (rabbit and fox).

The proponent/land owner must take all reasonable steps to eradicate regionally prohibited weeds, prevent the growth and spread of regionally controlled weeds, and prevent the spread of and as far as possible eradicate established pest animals. The State is responsible for eradicating State prohibited weeds from all land in Victoria.

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

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

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

Reforms to the native vegetation permitted clearing regulations were gazetted on 20 December 2013 through planning scheme amendment VC105. The reforms made changes to the Victoria Planning Provisions including the State Planning Policy Framework (SPPF), Clause 52.16 and 52.17 of all planning scheme within

Victoria and introduced the Permitted clearing of native vegetation: Biodiversity Assessment Guidelines (DEPI 2013a).

Of particular relevance to any proposed development within the Study Area are controls relating to the removal, destruction or lopping of native vegetation contained within the Whittlesea Planning Scheme (the Scheme), including permit requirements. The Scheme (Clause 72) defines 'native vegetation' as 'Plants that are indigenous to Victoria, including trees, shrubs, herbs and grasses'. It is an objective of Clause 12.01-2 (Native vegetation management) of the SPPF that permitted clearing of native vegetation results in no net loss in the contribution made by native vegetation to Victoria's biodiversity. For more information on these reforms refer to <http://www.depi.vic.gov.au/environment-and-wildlife/biodiversity/native-vegetation>.

Clause 52.17 (Native Vegetation) requires a planning permit to remove, destroy or lop native vegetation including some dead native vegetation. Decision guidelines are contained in Clause 52.17-5. It should be noted that where native vegetation does not meet the definition of a remnant patch or scattered trees, as described in Section 3.1, the Guidelines do not apply. However, a permit may still be required to remove, destroy or lop native vegetation under the provisions of the Scheme.

Clause 65.02 (Approval of an application to subdivide land) requires consideration of native vegetation retention in a subdivision application and siting of open space areas.

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

- the area of native vegetation to be removed is greater than 0.5 hectares
- the class of application is on the high risk-based pathway
- a property vegetation precinct plan applies to the site or
- the native vegetation is on Crown land occupied or managed by the Responsible Authority.

The site is not included in any biodiversity related overlay such as an Environmental Significance Overlay or Vegetation Protection Overlay.

Victoria's Biodiversity Assessment Guidelines

The Guidelines are incorporated into the Victoria Planning Provisions and all planning schemes in Victoria (DEPI 2013a). The Guidelines replace Victoria's Native Vegetation Management – A Framework for Action.

The purpose of the Guidelines is to guide how impacts to biodiversity should be considered when assessing a permit application to remove, destroy or lop native vegetation. The objective for permitted clearing of native vegetation in Victoria is 'No net loss in the contribution made by native vegetation to Victoria's biodiversity'.

A detailed assessment of the implications for a project development scenario under the Guidelines is provided in Section 5 of this report. Under the Guidelines, there are three risk-based pathways for assessing an application for a permit to remove native vegetation: low, moderate and high.

A detailed determination of the risk-based pathway for the planning application scenario proposed is provided in Section 5.1.3. In summary, any such a planning application for removal of native vegetation must meet the requirements of, and be assessed in, the high risk-based pathway.

4.2.4 Environment Effects Act 1978

The *Environment Effects Act 1978* establishes a process to assess the environmental impacts of a project. If applicable, the Act requires that an Environment Effects Statement (EES) be prepared by the proponent. The EES is submitted to the Minister for Planning and enables them to assess the potential environmental effects of the proposed development.

The general objective of the assessment process is *to provide for the transparent, integrated and timely assessment of the environmental effects of projects capable of having a significant effect on the environment* (DSE 2006).

The 'Ministerial Guidelines for Assessment of Environmental Effects under the Environment Effects Act 1978' (DSE 2006) provide a range of criteria that can be used to determine whether an EES may be required for a project. These criteria relate to individual potential environmental effects and a combination of (two or more) potential environmental effects.

A preliminary self-assessment of the project against the individual and combined criteria was undertaken and concluded that a proposal to develop the Study Area is unlikely to require referral under the *Environmental Effects Act 1978*, as the removal of native vegetation remains below 10 ha and the impact on Golden Sun Moth habitat represents a low percentage of the available habitat for this species in Victoria.

However, the Guidelines are not binding, and the decision as to whether an EES is required is ultimately at the discretion of the Victorian Minister for Planning.

5. Potential Impacts and offsets

5.1 Victoria's biodiversity assessment guidelines

The Guidelines were introduced in December 2013, and they describe the following objective for permitted clearing of native vegetation in Victoria:

"No net loss in the contribution made by native vegetation to Victoria's biodiversity"

This objective is to be achieved through Victoria's planning system using a risk-based approach that relies on strategic planning and the permit and offset system. The key strategies for achieving no net loss at the permit level are:

- avoiding the removal of native vegetation that makes a significant contribution to Victoria's biodiversity
- minimising impacts to Victoria's biodiversity from the removal of native vegetation
- where native vegetation is permitted to be removed, ensuring it is offset in a manner that makes a contribution to Victoria's biodiversity that is equivalent to the contribution made by the native vegetation to be removed.

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

- the retention of a habitat corridor along Edgars Creek
- Designing the proposed subdivision to retain trees and patches of native vegetation where possible (design yet to be finalised).

DELWP has provided biodiversity information tools to assist with determining the risk associated with permitted clearing and the contribution that native vegetation within the study area makes to Victoria's biodiversity.

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

The biodiversity information tools have two components:

Site-based information

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

Landscape scale information

Landscape scale information requires consideration of information beyond the site. This information is managed by DELWP and can be accessed via the NVIM. Biosis has submitted the site-based data and location information for the nominated development scenario to DELWP and a Biodiversity Information and Offset Requirements (BIOR) report has been prepared to accompany the main development planning scenario identified.

The following section summarises the results of the site-based assessment and the outputs generated by the BIOR report. The BIOR report identifies the risk-based pathway on which the example planning application would be assessed.

5.1.1 Extent of native vegetation

The extent of native vegetation patches and scattered trees were mapped within the study area (Figure 2) and the condition was assessed in relation to standard methods provided by DSE (2004). The condition of native vegetation was assessed using the DSE Vegetation Quality Assessment Sheet (DSE 2004) and pre-determined EVC benchmarks: <http://www.dse.vic.gov.au/conservation-and-environment/ecological-vegetation-class-evc-benchmarks-by-bioregion>.

The potential removal of native vegetation was assessed in accordance with the area nominated for development (Figure 4). The habitat hectare (Hha) scores for native vegetation identified within the study area is outlined in Appendix 4. Spatial data (shapefiles) for the nominated area for vegetation removal were submitted to DELWP's native vegetation support team, who provided a BIOR report for the project. This is provided in Appendix 5 and summarised in the following sections.

5.1.2 Habitat hectares

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

A total of seven habitat zones covering 2.455 ha were identified as supporting 1.048 hha. The results of the condition assessment are provided in Appendix 4, with the number of habitat hectares calculated for each habitat zone.

There are also 39 scattered remnant trees within the study area (note that other trees within patches are also present). These trees equate to 0.554 habitat hectares (Table 5). The trees recorded within the study area are identified in Figure 2.

Table 5 Habitat hectare conversion for scattered remnant canopy trees within the study area

No. of scattered trees	Weighted average condition multiplier*	Standard extent (ha)	Habitat hectares (Hha)
39	0.2	0.071	0.554

*From DELWP NVIM

Summary of Habitat hectares within the broad study area

In summary, the study area supports a total of 1.602 hha.

5.1.3 Determining the risk-based pathway

To determine the risk based pathway for any proposed clearing of native vegetation, two factors are considered: **location risk** and **extent risk**.

Location risk has been pre-determined by DELWP for all locations in Victoria. The location of a particular site is determined using the *Native vegetation location risk map* available in the Native Vegetation Information Management (NVIM) system (<http://nvim.depi.vic.gov.au>).

The extent risk is based on the extent of native vegetation proposed to be removed. Extent risk is determined with reference to the:

- area of any remnant patches of native vegetation proposed to be removed
- number of any scattered trees proposed to be removed.

In line with a likely scenario for future development at 165-195 O'Herns Road (excluding the approved impacts associated with the Epping Sewer), development would likely result in the loss of 2.130 ha of native vegetation all of which is classified as either Plains Grassland, Plains Grassy Wetland or Plains Grassy

Woodland and 1.608 ha as NTGVVP. This amounts to an impact of 0.97 Hha. When combined with the loss of 24 scattered trees this amounts to a total loss of 1.310 hha from within an area classified as both Location A and B. Therefore any such application for removal of this native vegetation must meet the requirements of, and be assessed in, the high risk-based pathway. This report provides the relevant information required to be submitted to DELWP to quantify the offset requirements associated with any potential development footprint for the study area.

5.1.4 Potential state offsets

In order to ensure a gain to Victoria's biodiversity that is equivalent to the loss resulting from permitted clearing of native vegetation, compensatory offsets are required. Losses and gains are measured in biodiversity equivalence scores or units.

For a high risk-based pathway application, the specific-general offset test will determine if a general offset, specific offset or combination of both is required.

The offset requirements for the proposed planning outcome are provided in Appendix 5 and summarised in Table 6. The results of the specific-general offset test are also provided in Appendix 5.

Note: a glossary of terms used in relation to the Guidelines and habitat hectares assessments is provided in Appendix 6.

5.2 Potential EPBC Act offsets

Any potential development of the study area would require a referral under the EPBC Act and is likely to be considered a controlled action.

Indicative offsets using the EPBC Act offset calculator and a series of assumptions imbedded within that calculator are also provided in Appendix 5. Separate offsets would be required for each MNES to be impacted. This would include impacts to Golden Sun Moth, Matted Flax-lily and NTGVVP. Note that the habitat requirements for Golden Sun Moth are not restricted to native vegetation.

The impacts on relevant MNES are outlined as follows:

- 18 of the population of 19 Matted Flax-lily are within the development footprint
- The loss of 1.608 ha of NTGVVP (excludes areas identified within the Yarra Valley Sewer footprint)
- The loss of 19.28 ha of GSM habitat (excludes the GSM habitat lost in association with the Yarra Valley Sewer provided for in association with Referral 2015/7528).

The potential EPBC Act offset requirements for each MNES associated with the areas identified for development planning approval is as follows:

- NTGVVP: Protect and manage 8.15 ha of the community
- Golden Sun Moth: Protect and manage 86.8 ha of habitat
- Matted Flax-lily: Protect and manage a population of 72 plants

5.3 Offset strategy

5.3.1 The Guidelines

A third-party offset site(s) would be required as part of any development proposal. The proponent would need to make an agreement with a landholder for the landholder to retain and manage the defined area of native vegetation as a third party offset site.

Table 6 Summary of DELWP Biodiversity Impacts and Offset Requirements report

Attribute	Outcome	Notes
Location risk	A & B	Areas of vegetation classified as Location A & B
Native vegetation removal extent	3.818 ha	Includes 24 scattered trees
Risk-based pathway	High	
Habitat hectares to be removed	1.310	Includes 24 scattered trees
Strategic Biodiversity Score	0.243	
Modelled habitat for rare or threatened species	Modelled habitat present	The proposed impact exceeds the threshold for two species
Specific-general offset test result	General and Specific offset	Clearing exceeds the specific offset threshold for Matted Flax-lily
General/Specific Biodiversity Equivalence Scores	0.000 – 0.195	Patches cover a range of values
Offset type	General & Specific	
Offset risk factor	1.5 / 2	
Offset amount: General Biodiversity Equivalence Units	0.012	Must be identified in the permit application
Offset amount: Specific Biodiversity Equivalence Units	1.703 (Matted Flax-lily)	Must be identified in the permit application
Offset habitat for species	One species	Matted Flax-lily
Offset Vicinity	Port Phillip And Westernport CMA or Whittlesea City Council	Specific offsets can be secured where ever they are available in Victoria
Offset minimum Strategic Biodiversity Score	0.152	

The offset site providing the general offset is expected to be on freehold land located in the City of Whittlesea or the Port Phillip and Westernport Catchment Management Authority area. The general offset site would also require a minimum strategic biodiversity score of 0.152.

Specific offsets for Matted Flax-lily (1.703 SBEU) are required to be secured. These can be provided from modelled species habitat anywhere within Victoria.

Any development would be required to provide evidence of the availability of the prescribed offset in the form of a quotation from a registered broker as part of any permit application under the high risk pathway.

5.3.2 Avoid and minimise

The proposed concept plan (Figure 4) is constrained by a number of fixed external developments which influence the location and extent of internal roads and their frontage with Edgars Creek. This includes a fixed

location for Edgars Road, the crossing of Edgars Creek associated with Alliance Business Park, the existing creek corridor and road frontage defined for Edgars Creek associated with Alliance Business Park and linkages with the road network to the south (Kimley Drive).

MAB have established a central reserve in a manner consistent with the Cooper Street Employment Area Development Plan and maintained the Edgars Creek corridor as a habitat corridor for Growling Grass Frog to provide consistency with approvals for Alliance Business Park. With the removal of these areas from the properties developable area, the retention of other areas of native vegetation has not been considered as it would otherwise compromise the economic viability of this parcel of land for development.

The balance of the land is therefore proposed for development, with areas of native vegetation and scattered trees proposed for offset in a manner consistent with both Victoria's Biodiversity Assessment Guidelines and, where relevant, the EPBC Act offset policy (DSEWPac 2012).

5.3.3 The EPBC Act

Offsets under the EPBC Act are unlikely to be available in the same offset site selected to provide the state prescribed GBEUs or SBEU.

EPBC Act offset requirements indicate a need for a site which supports 86.8 ha of habitat for Golden Sun Moth, a minimum of 8.15 ha of NTGVVP and the protection of a population of Matted Flax-lily (minimum of 72 plants). If this is not possible within a single site then multiple offset areas would need to be secured until the offsets for each MNES are secured.

5.3.4 Potential offset costs

Costs associated with the offset market are considered relatively volatile depending on demand and the species concerned. While based on some experience with transaction costs, assumptions used in determining the following offset costings are as follows:

- Specific Biodiversity Equivalence Units: \$200,000 per SBEU
- General Biodiversity Equivalence Units: \$135,000 per GBEU
- 1 ha of Golden Sun Moth habitat: \$15,000/ha (based on quote from Vegetation Link).
- 1 ha of NTGVVP: \$60,000

Actual offset costs may vary considerably from the values stated unless supported by a quotation.

Offset cost estimates for a development that would clear all vegetation outside of the nominated creek reserve are as follows:

- 0.012 GBEU: \$1620
- 1.703 SBEU for Matted Flax-lily: \$340,600* (assumed to support 72 Matted Flax-lily required)
- 8.15 ha of NTGVVP (likely to include Golden Sun Moth habitat): \$489,000
- 78.65 ha of Golden Sun Moth habitat (@\$15,000/ha): \$1,179,750

This provides a total offset estimate of **\$2,010,970.00**.

*** Vegetation Link quote dated 15 February 2017.**

6. Key ecological values and recommendations

This section identifies the key ecological features of the study area, provides an outline of potential implications of proposed development on those values and includes recommendations to assist Whittlesea Council during the planning process to evaluate impacts on biodiversity.

The primary measure to reduce impacts to biodiversity values within the study area is to minimise removal of native vegetation and terrestrial habitat. This has been considered by the proponent during the planning phase for the site, when key decisions have been made about the location of roads and services, parks and development areas. The results of this assessment have therefore be incorporated into the project design, by adding the flora and fauna mapping information into the project design considerations and investigating options to retain as much of the mapped vegetation/habitats as possible. Priority has been be given to highest value areas and retaining larger areas in preference to numerous smaller ones.

A summary of potential implications of development of the study area is provided in Table 7.

Table 7 Summary of key ecological values, potential implications of developing the study area.

Ecological feature	Existing values	Implications of development
Native vegetation	2.455 ha of native vegetation including 0.357 ha of Plains Grassy Woodland, 1.923 ha of Plains Grassland, 0.085 ha of Plains Grassy Wetland and 0.090 ha of Creekline Tussock Grassland.	<p>Loss of 2.130 ha of native vegetation, including areas of Plains Grassland, Plains Grassy Wetland and Plains Grassy Woodland and 24 scattered trees.</p> <p>The application will be assessed on the high risk-based pathway</p> <p>Proportional impacts to native vegetation below the specific offset threshold for rare and threatened species with modelled habitat covering the site.</p> <p>The Guidelines require an offset of 0.012 GBEU and 1.703 SBEU for Matted Flax-lily.</p>
Threatened Species and communities	<p>Habitat for significant species including: a large population of Golden Sun Moth and a population of 19 Matted Flax-lily.</p> <p>Threatened ecological community (NTGVVP) present.</p>	<p>Significant impacts to MNES including the loss of:</p> <p>1.608 ha of NTGVVP</p> <p>19.28 ha of habitat for Golden Sun Moth.</p> <p>A population of 18 Matted Flax-lily (1 plant retained within the Edgars Creek Corridor)</p> <p>Referral under the EPBC Act required.</p> <p>Offsets relating to each MNES impacted likely to be required.</p>
Other values	Site contributes to an existing fauna movement corridor	Habitat continuity along Edgars Creek should be maintained.

Any areas of native vegetation identified for retention should be managed to control weeds and maintain other ecological values. In the longer term such areas should have ownership transferred to the relevant government authority to allow for the ongoing ecological management of this conservation resource.

Areas of native and non-native vegetation within and adjacent to the study area contribute to a habitat corridor along Edgars Creek. This corridor provides habitat in its own right and also permits movement of fauna species such as Eastern Grey Kangaroos and a variety of birds that range quite widely in response to availability of resources and to variable environmental conditions such as rainfall. Connectivity along this corridor also provides an important function to more sedentary fauna and to flora by preventing isolation of fragmentary small populations that may then be subject to loss of genetic diversity. Retention of a continuous corridor along the riparian zone of Edgars Creek will be important for maintenance of these ecological functions.

References

- Biosis Research 2012. *275 O'Herns Road, Epping: Flora, fauna and Habitat Hectare assessment*. Report for Mab Corporation. Authors Mueck, S., Byrne, A. and Gilmore D. Biosis Research Melbourne. Project No. 13806.
- City of Whittlesea 2013. Cooper Street Employment Area Development Plan (adopted version October 2007 and amended 29 October 2013). City of Whittlesea.
- DEPI 2013. *Permitted clearing of native vegetation - Biodiversity assessment guidelines*. Victorian Government Department of Environment and Primary Industries, Melbourne (September 2013).
- DEPI 2014a. *Advisory List of Rare or Threatened Plants in Victoria – 2014*. Victorian Government Department of Environment & Primary Industries, East Melbourne.
- DEPI 2014b. *Permitted clearing of native vegetation – Biodiversity assessment handbook*. Version 0.2. Victorian Government Department of Environment and Primary Industries, Melbourne (January 2014).
- DEWHA 2009. *Significant impact guidelines for the critically endangered golden sun moth (Synemon plana)*. Nationally threatened species and ecological communities EPBC Act policy statement 3.12, Department of the Environment, Water, Heritage & the Arts. Australian Government, Canberra.
- DoE 2013. Matters of National Environmental Significance. Significant impact guidelines 1.1. *Environment Protection and Biodiversity Conservation Act 1999*. Australian Government Department of the Environment, Canberra.
- DSE 2004. *Native Vegetation: Sustaining a living landscape. Vegetation Quality Assessment Manual – Guidelines for applying the Habitat hectares scoring method. Version 1.3*. Victorian Government Department of Sustainability and Environment, Melbourne.
- DSE 2006. *Ministerial Guidelines for Assessment of Environmental Effects under the Environment Effects Act 1978*. Victorian Government Department of Sustainability and Environment, Melbourne.
- DSE 2010. *Biodiversity Precinct Structure Planning Kit*. Department of Sustainability and Environment, Melbourne.
- DSE 2013. *Advisory List of Threatened Vertebrate Fauna in Victoria – 2013*. Victorian Government Department of Environment & Primary Industries, Melbourne.
- DSE 2015. Victorian Biodiversity Atlas 'VBA_FAUNA25, FAUNA100 & FAUNARestricted, FLORA25, FLORA100 & FLORARestricted' August 2015 © The State of Victoria. Victorian Government Department of Sustainability & Environment, Melbourne.
- DSEWPaC 2011. *Nationally Threatened Ecological Communities of the Victorian Volcanic Plain: Natural Temperate Grassland & Grassy Eucalypt Woodland A guide to the identification, assessment and management of nationally threatened ecological communities*. Australian Government Department of Sustainability, Environment, Water, Population & Communities, Canberra.