



Industrial Development of 165 – 195 O'Herns
Road, Epping, Victoria (EPBC 2017/7930):
Preliminary Documentation

Final Documentation

Prepared for Department of the Environment and Energy on behalf of
Alliance Business Park Pty Ltd

19 January 2018

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- Andrea Fullagar for assistance in the field
- Sally Mitchell for mapping

Cover Photo: Edgars Creek traverses the southern half of the property.

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1 Background Information

1.1 Project background

Biosis Pty Ltd was commissioned by Alliance Business Park Pty Ltd to prepare the preliminary documentation prescribed by the Department of the Environment and Energy (DoEE) relating to Referral EPBC 2017/7930 (Industrial Development of 165-195 O'Herns Rd, Epping, Victoria). The request for additional information provided by DoEE can be found on the section of Department's website relating to Public Notices (referrals).

The proposed subdivision of 165-195 O'Herns Rd, Epping, was identified as a controlled action under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) for its potential impact on a number of Matters of National Environmental Significance (MNES) including:

- Golden Sun Moth *Synemon plana*;
- Growling Grass Frog *Litoria raniformis*;
- Matted Flax-lily *Dianella amoena*; and
- Natural Temperate Grassland of the Victorian Volcanic Plain community (NTGVVP).

1.2 Project Context

The site is located approximately 3 km west of Epping and 20 km north of the Melbourne central business district. The study area is bounded by O'Herns Road to the north, and is traversed by Edgars Creek in the south (Figure 1). It covers approximately 31.5 ha and is otherwise known as 165 – 195 O'Herns Road and SPI 8-4 \ PP3855 – TP265408.

Subdivision of the land for commercial / industrial development (Figure 2) will be in accordance with Schedule 2 to the Comprehensive Development Zone (Cooper Street Employment Area Comprehensive Development Plan) under the Whittlesea Planning Scheme.

Any development will be conducted in the context of, and consistent with, the broader Whittlesea Planning Scheme.

The approvals process under State and Local Government requirements are in their early stages. However, approvals will be required under the *Planning & Environment Act 1988* (Whittlesea Planning Scheme Permit No. 716886) which will include an assessment under Victoria's Biodiversity Assessment Guidelines (DEPI 2013a). Relevant referral authorities with input into this approvals process will include the Department of Environment, Water, Land and Planning (DEWLP – formally the Department of Environment and Primary Industries (DEPI)), VicRoads and Melbourne Water.

1.3 Description of the Action

The proposed action is an industrial subdivision of the property otherwise known as 165 – 195 O'Herns Road Epping. A general concept plan for the proposed industrial subdivision is provided in Figure 2.

The configuration of the development is influenced by the predefined alignment of Edgars Road provided by VicRoads and the configuration of existing roads associated with Alliance Business Park (on the western boundary) and an existing industrial subdivision on the southern boundary.

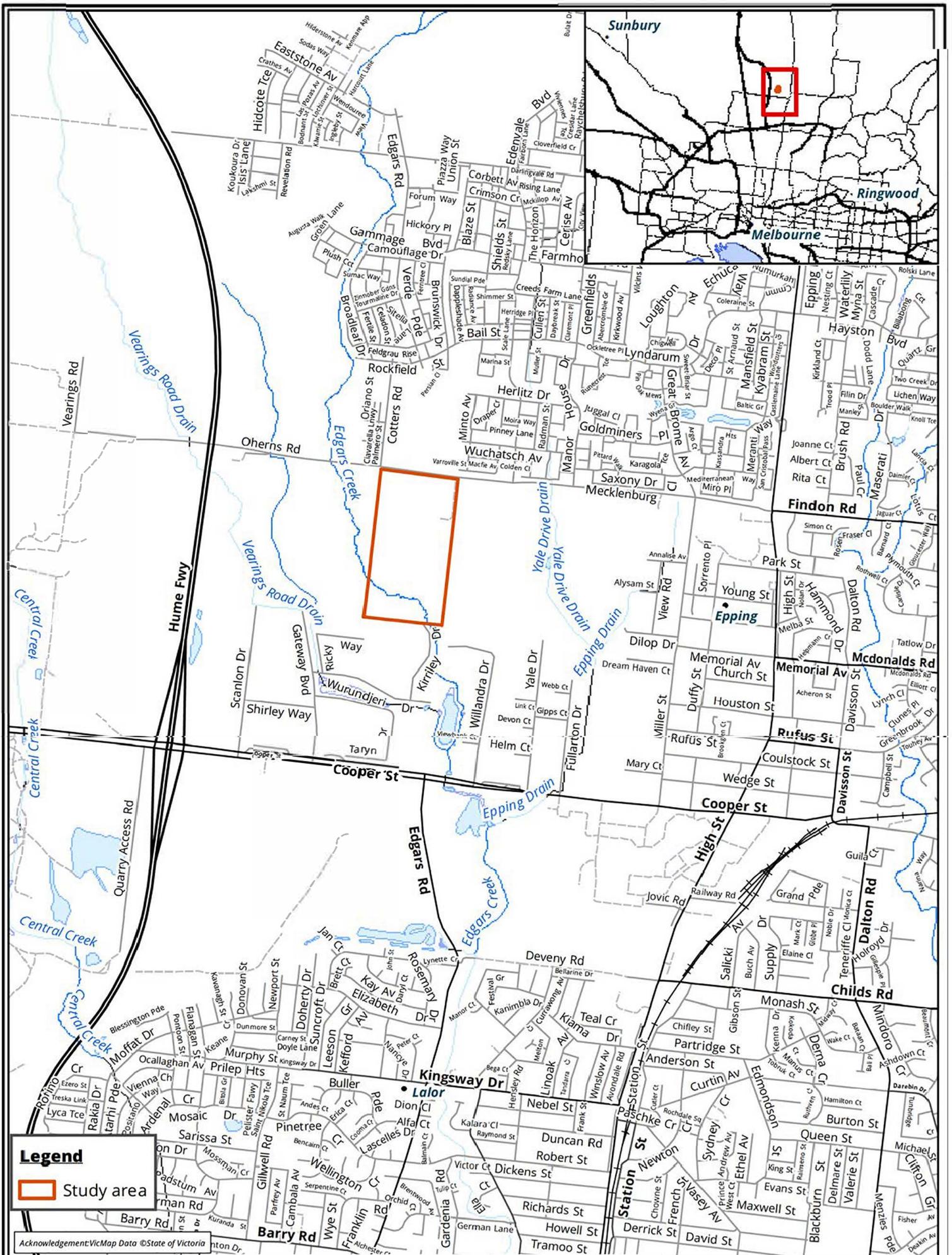
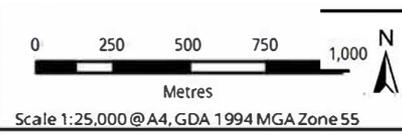


Figure 1 Location of the study area, 165 -195 O'Herns Road, Epping, Victoria

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Legend
 Study area



Legend

- Study area
- Extended design
- Drainage asset
- Proposed parcel
- Reserve
- Roadway
- Waterway reserve

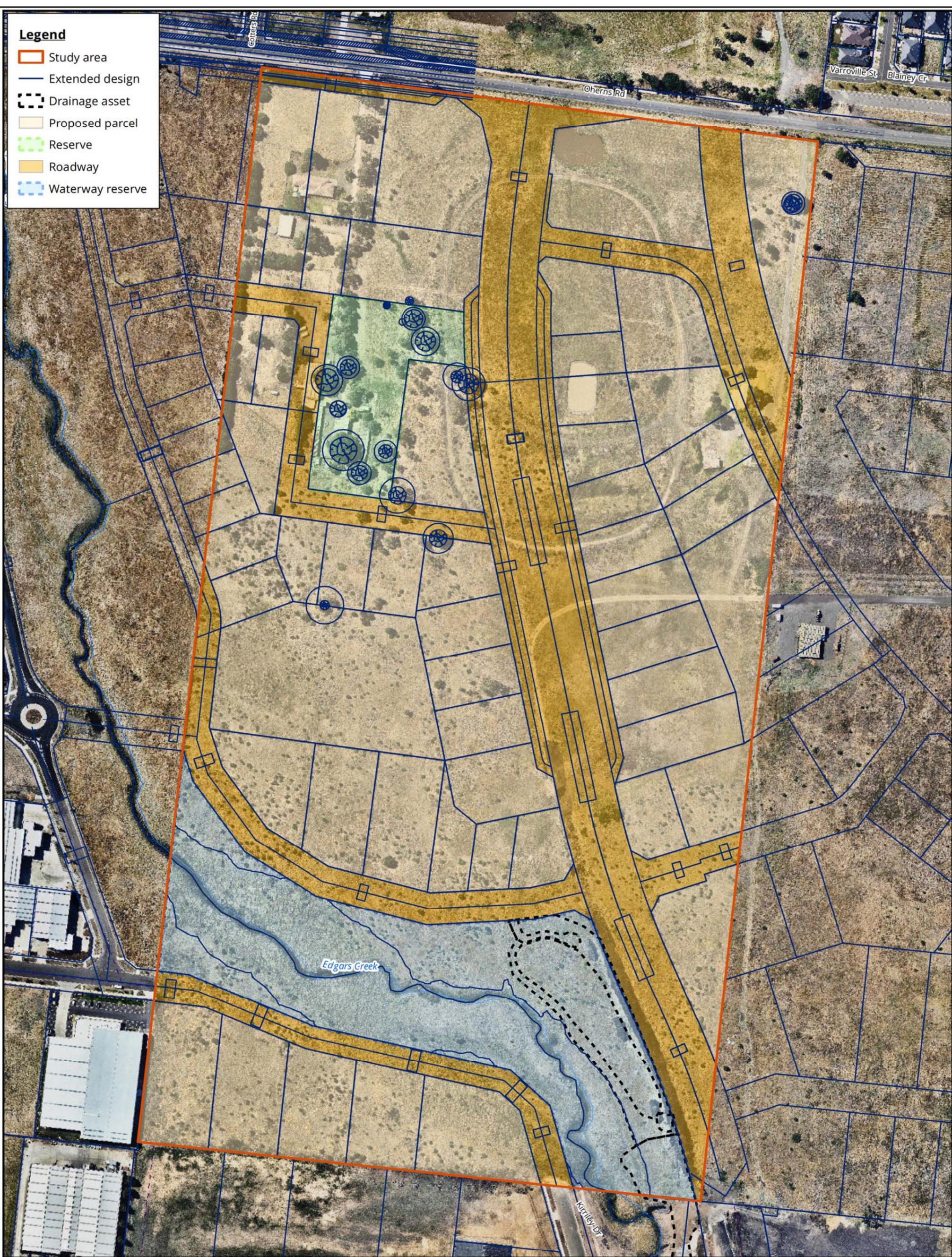


Figure 2 A concept plan for the development of 165-195 O'Herns Road, Epping, Victoria



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It is also influenced by Council requirements for a reserve to protect an area of woodland dominated by River Red-gums *Eucalyptus camaldulensis* in the north west of the property.

The subdivision will be progressed in stages. The extent of each stage will, to some extent, be governed by the market demand for land. All works and associated activities (including stockpiles and access points) will be restricted to the property or other land associated with Alliance Business Park approved for development and will utilise existing road infrastructure.

Melbourne Water has required the installation of stormwater management ponds within, and adjacent to Edgars Creek. These ponds will be established to maintain water quality for stormwater discharges into Edgars Creek. These will capture low flow stormwater and pass these flows through vegetated ponds to remove pollutants and nutrients prior to discharging into Edgars Creek. Ponds will be established to provide suitable habitat for Growling Grass Frog and to ensure the ongoing suitability for the Edgars Creek corridor to function as a habitat corridor for this species.

The proposed array of storm water treatment basin(s) will be transferred to either Whittlesea Council or another suitable public organisation (i.e. Melbourne Water) to ensure permanent maintenance of both its hydrological and ecological values. This transfer of land will include appropriate funds and management guidance provided by a conservation management plan prepared to the satisfaction of DEWLP and DoEE.

All works and operational requirements will be as required for a normal development of this type. Key construction activities associated with the subdivision will include the construction of roads and other infrastructure as per the subdivision plan, stormwater treatment and detention construction, and fill placement. While the site is relatively flat, gentle undulations will require some levelling and fill placement across the site. Beyond this no outstanding works are required other than that associated with a normal industrial subdivision.

Works are anticipated to begin as soon as practicable in 2018 and extend well into 2019. Works within each lot will be dependent on the purchaser. Depending on the demand for land the project is expected to be completed by the end of 2020.

No reasonable/feasible alternatives to the proposed development are available given the zoning of the land and the costs associated with holding land assigned this zoning. The property is within broader areas of land actively being developed for residential and industrial uses.

2 Environment and MNES

The following provides a general description of the environment of the development site and any areas which could otherwise be impacted by the proposed action in the short or long term.

2.1 Current Land Use

Currently the site is vacant land zoned as Comprehensive Development Zone – Schedule 2 (CDZ2) under the Whittlesea Planning Scheme. It is not subject to any biodiversity or vegetation protection related planning overlays (i.e. such as an Environmental Significance Overlay). Most recently the site has been grazed by domestic stock (cattle, sheep and horses) although these have been removed from the site. The site continues to be grazed by a significant number of Eastern Grey Kangaroos *Macropus giganteus* which also utilise the two on-site farm dams.

The site supports a mosaic of remnant native and exotic vegetation (Figure 3). Land to the west of this property is currently being developed by the same proponent (MAB Corporation) as Alliance Business Park (EPBC referral 2012/6298). Land to the north of the property is largely being developed for residential purposes. Land to the east and south of the property is part of the same industrial precinct and is progressively being subdivided and developed for industrial purposes.

The site has more recently been impacted by works associated with the construction of Stage 4B for the Epping Branch Sewer (EPBC 2015/7528) which has removed areas of native vegetation and habitat for Golden Sun Moth *Synemon plana*.

2.2 Physical Features

The site is within the Victoria Volcanic Plain Bioregion. The basalt soils are relatively shallow and support numerous areas of surface rock. The site is relatively flat, being traversed by the 130 m contour and local topography varies by only a few metres. Much of the central and southern portion of the land supports a well-defined gilgai topography with a diffuse drainage pattern directing any surface water to Edgars Creek which traverses the southern third of the property.

The site largely supports grassland vegetation although the north eastern quadrant supports remnant and regenerating River Red Gums *Eucalyptus camaldulensis*.

Edgars Creek continues to flow south from the property where it flows through an increasingly modified suburban landscape and has largely been channelised into an urban drain. It ultimately flows into Merri Creek and the Yarra River in urban Melbourne.

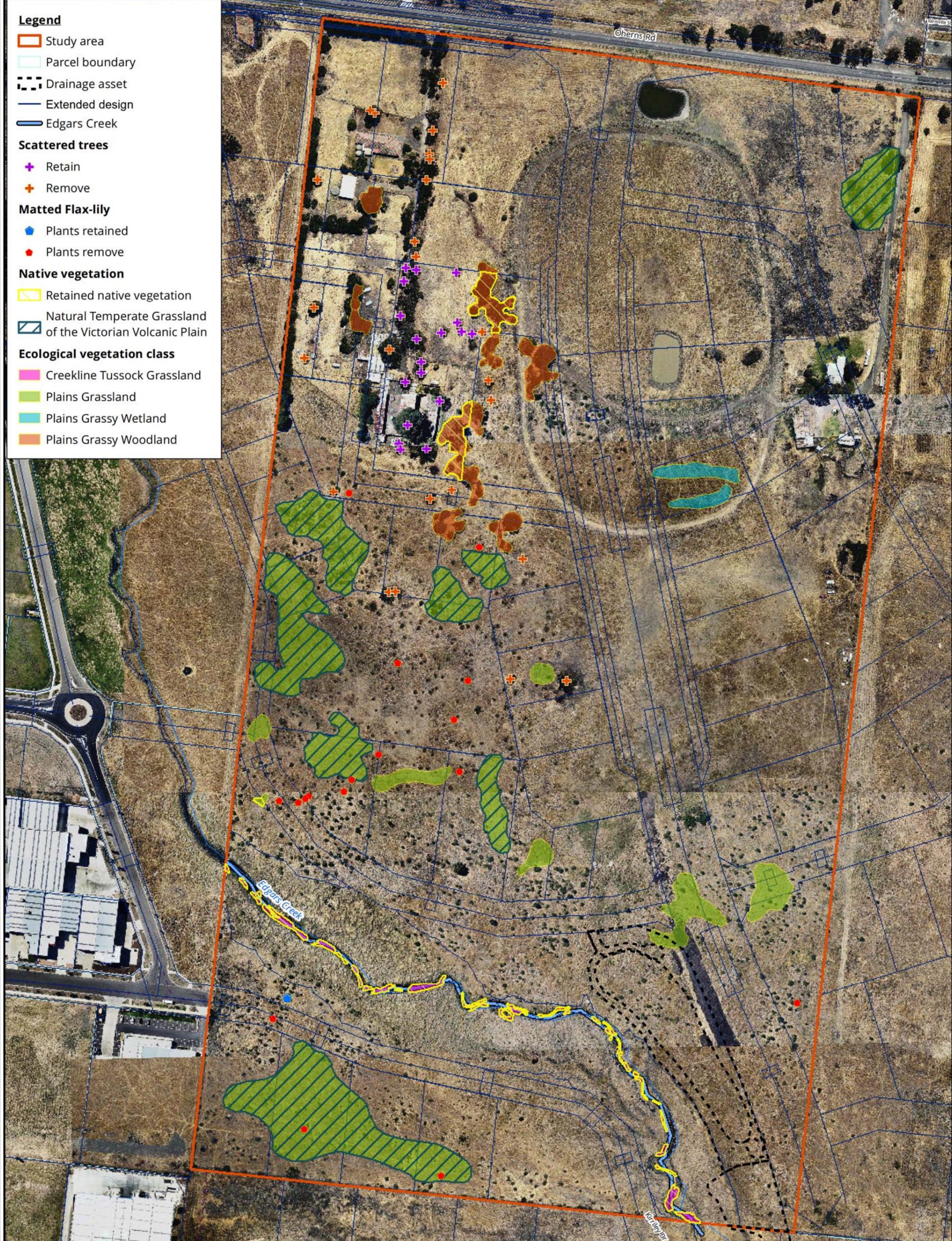
2.3 MNES

Existing database records for species classified as MNES within 5 km of the study area are displayed in Figure 4 (Flora) and Figure 5 (fauna).

The study area includes a matrix of remnant native vegetation and disturbed agricultural land dominated by exotic species (Figure 3).

The assessment to document the extent and condition of the MNES present within the site was conducted and reported by Biosis (2017a). Assessments were conducted on 2 December 2016 (general survey), 28 & 29 March, 5 April and 3 August 2017 (targeted flora species surveys and vegetation condition assessments) and during December 2016 and January 2017 (two targeted surveys for Growling Grass Frog and one for Golden Sun Moth)

Targeted surveys were conducted in a manner consistent with the requirements of the Biodiversity Precinct Structure Planning Kit (DSE 2010) for Matted Flax-lily, Growling Grass Frog and Golden Sun Moth.



Legend

- Study area
- Parcel boundary
- Drainage asset
- Extended design
- Edgars Creek
- Scattered trees**
- + Retain
- + Remove
- Matted Flax-lily**
- Plants retained
- Plants remove
- Native vegetation**
- Retained native vegetation
- Natural Temperate Grassland of the Victorian Volcanic Plain
- Ecological vegetation class**
- Creekline Tussock Grassland
- Plains Grassland
- Plains Grassy Wetland
- Plains Grassy Woodland

Figure 3 The extent of native vegetation at 165-195 O'Herns Road, Epping, Victoria

Legend

- Study area
- Search Area

Nationally significant flora

- 1473 - Diuris basaltica
- 3623 - Amphibromus fluitans
- 5084 - Dianella amoena

Figure 4 Existing records of threatened flora species (MNES) within 5 km of the study area

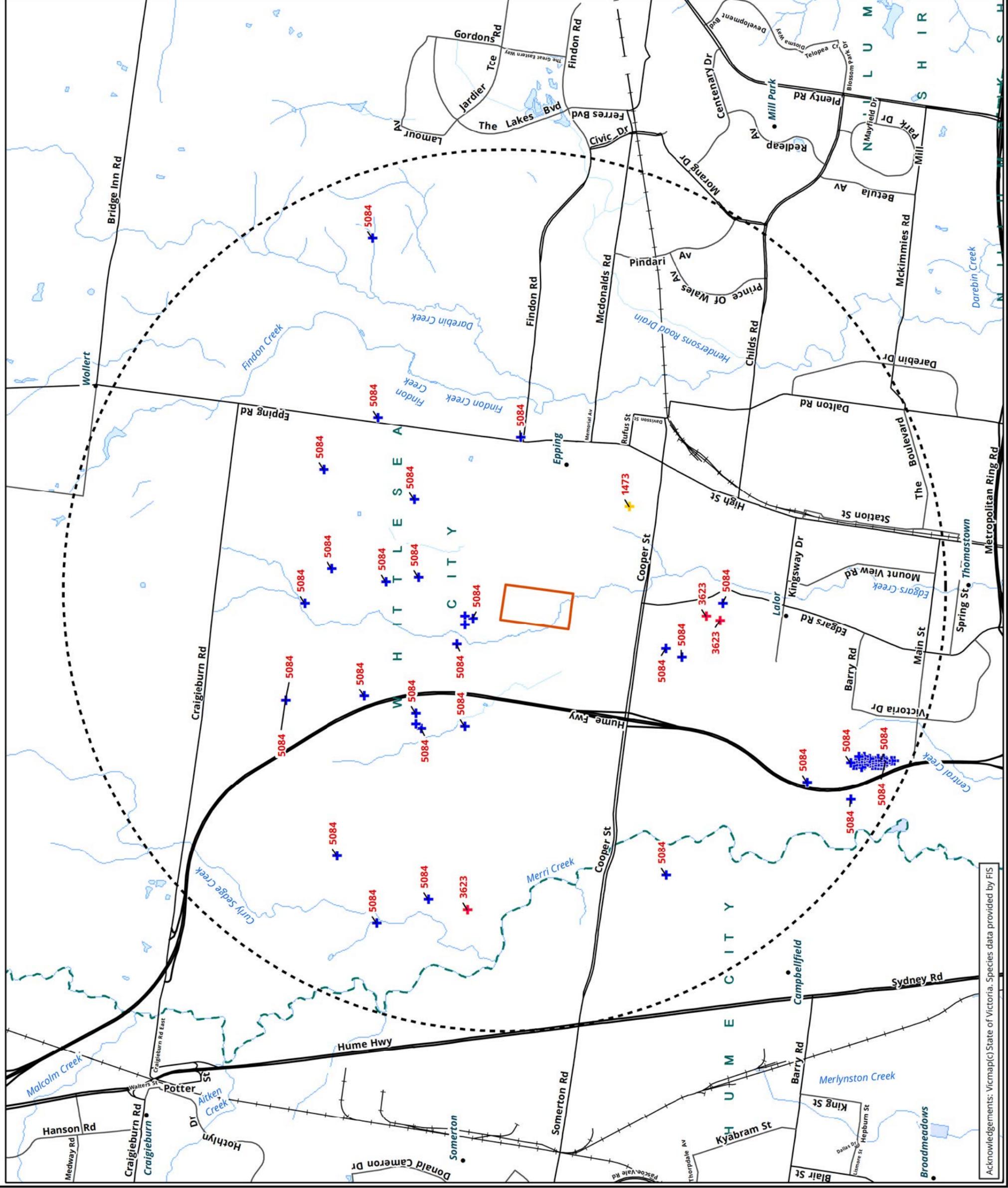


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Location: P:\25300\25346\Mapping\25346_F4_ThrFlora



Acknowledgements: Vicmap(c) State of Victoria. Species data provided by FIS

Study area
Search area

Amphibian

+ 13207 - Litoria raniformis

Bird

● 10020 - Pedionomus torquatus

● 10277 - Polytelis swainsonii

● 10309 - Lathamus discolor

● 10603 - Anthochaera phrygia

Invertebrate

▲ 15021 - Synemona plana

Mammal

★ 11008 - Dasyurus maculatus

★ maculatus (SE mainland population)

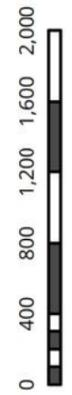
★ 11009 - Dasyurus viverrinus

★ 11280 - Pteropus poliocephalus

Reptile

▲ 12159 - Delma impar

Figure 5 Existing records of threatened fauna species (MNES) within 5km of the study area



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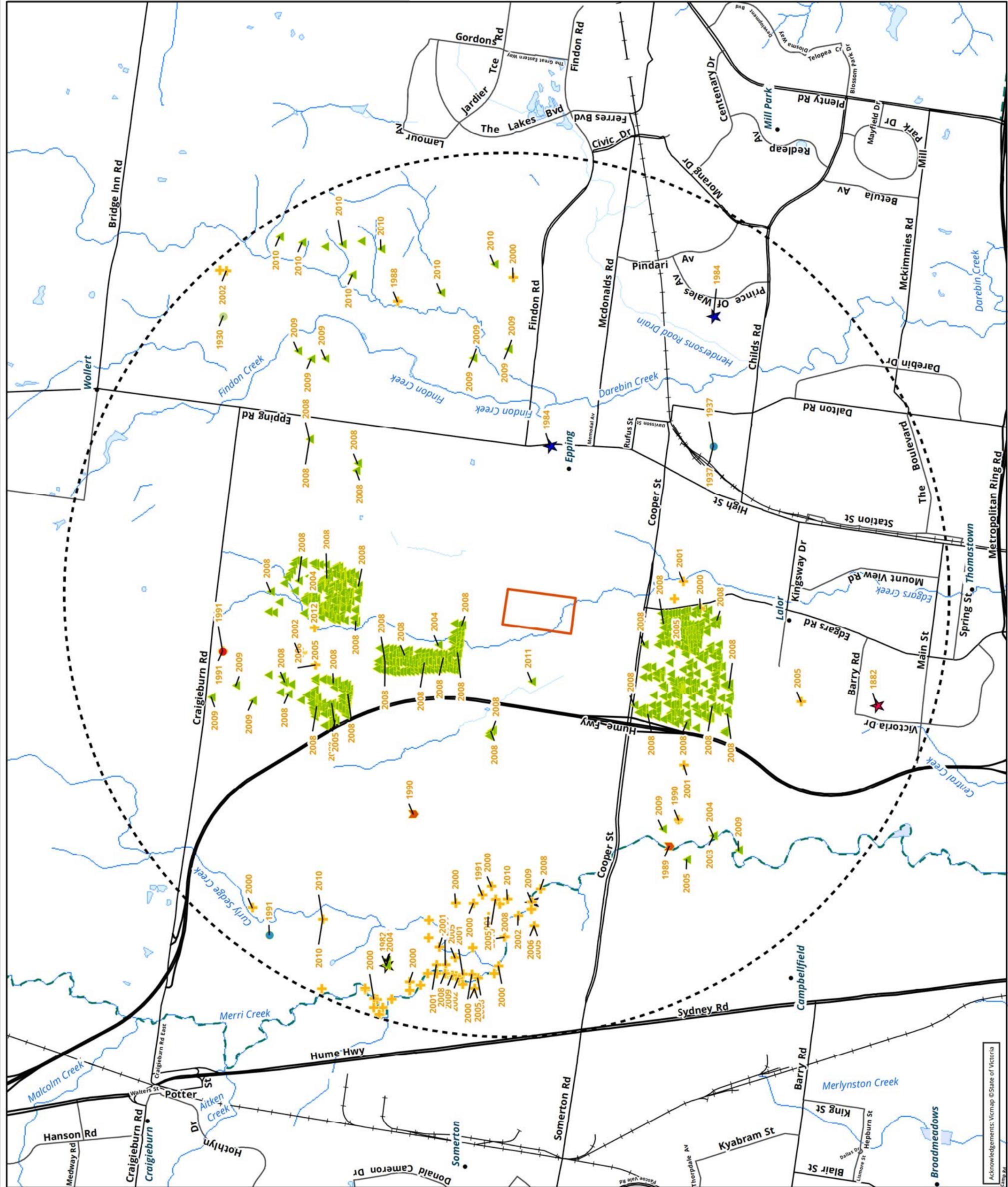
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The majority of the site supports disturbed areas dominated by exotic grasses and herbs such as Chilean Needle-grass *Nassella neesiana*, Toowoomba Canary-grass *Phalaris aquatica*, Artichoke Thistle *Cynara cardunculus*, Cocksfoot *Dactylis glomerata*, Squirrel-tail Fescue *Vulpia bromoides*, Sweet Briar *Rosa rubiginosa* and Ribwort *Plantago lanceolata*. This exotic vegetation covers approximately 29 ha of the roughly 31.5 ha site (i.e. 92%).

However, the study area does support remnants of four Ecological Vegetation Classes (EVCs) (Figure 3):

- Plains Grassy Woodland (EVC 55)
- Plains Grassland (EVC 132);
- Plains Grassy Wetland (EVC 125); and
- Creekline Tussock Grassland (EVC 654).

DEWLP's existing and pre-1750 EVC mapping provided by its online database (NatureKit) identifies the expected native vegetation within the site to include Plains Grassy Woodland (EVC 55), Plains Grassland (EVC 132) and Creekline Grassy Woodland (EVC 654) in this location. However, that EVC mapping is based on assessments produced at a scale of 1:25,000, which is too coarse to identify the remnants of native vegetation identified at the scale of this assessment. DEWLP's mapping suggests the site only supports a few small woodland remnants and no remnant native grassland or riparian vegetation.

Overall the assessments conducted are considered to be detailed and intensive and provide a high level of confidence in the habitat values the site provides and the presence, abundance and condition of relevant MNES.

The overall impacts to these MNES are also considered to be predictable with a high degree of confidence. While the majority of these direct impacts are predictable and will be irreversible (i.e. once an area of NTGVVP is cleared it cannot be recovered), management of these impacts will occur through the application of on-site management plans (i.e. a creek corridor management plan), a translocation program for Matted Flax-lily and implementation of the EPBC Act Offsets Policy (DSEWPaC 2012).

2.3.1 Natural Temperate Grassland

Areas of native vegetation within the site were documented by Biosis (2017a).

Where areas of Plains Grassland identified within the study area occur as a patch of native vegetation greater than 0.05 ha that vegetation satisfies the definition of the MNES Natural Temperate Grassland of the Victorian Volcanic Plain (NTGVVP) (Figure 3). As such the proposed development footprint supported eight patches of NTGVVP (excluding areas otherwise impacted by the Epping Sewer construction).

The industrial subdivision will therefore impact 1.608 ha of NTGVVP. No indirect impacts are anticipated on remnants of this community within the broader landscape as these remnants are isolated from any other surrounding remnants of native vegetation.

The quality/condition of remnant areas of native vegetation was assessed using the Victorian habitat hectare assessment protocols (DSE 2004). Using this methodology, two condition classes of NTGVVP were identified. These were attributed scores of 48/100 (0.958 ha in three patches) and 52/100 (0.650 ha in five patches).

Beyond the property remnants of native grassland identifiable as NTGVVP within private property are restricted to small scattered remnants. Any such remnants are typically less than 0.5 ha in extent and are increasingly rare within this highly urbanised landscape. The closest larger remnants of native vegetation, including areas of NTGVVP and Plains Grassy Woodland, occur to the west and south along the Merri Creek. These include the Cooper Street Grassland (about 3 km to the west), the Craigieburn Grassland (about 3.5 km to the north-west) and Central Creek Grassland (about 5.5 km to the south). An array of relatively small suburban reserves also occur within the Aurora residential subdivision within one to three kilometres to the north of the property.

More generally in the Melbourne region, impacts to NTGVP associated with the expansion of Melbourne's urban Growth Boundary are being managed through the creation of Melbourne's Western Grassland Reserve and a series of conservation reserves defined by Melbourne's Biodiversity Conservation Strategy (DEPI 2013).

2.3.2 Golden Sun Moth

Prior to the site assessments at 165 – 195 O'Herns Road, Epping by Biosis (2017a) Golden Sun Moth (GSM) had been recorded in neighbouring properties including the Aurora residential subdivision on the northern side of O'Herns Road and the neighbouring property to the west (275 O'Herns Road). GSM were also known from the western side of the Hume Freeway in properties to the north and south of O'Herns Road.

While much of 275 O'Herns Road has been subject to industrial development, the species is known to persist within the Edgars Creek reserve retained and managed as part of that approval. The species also persists in the 12 reserves associated with the Aurora residential subdivision (2007/3524) and along the Hume Freeway either side of O'Herns Road (EPBC 2017/8008).

Conservation of the species is also catered for in the Melbourne region in association with the Melbourne Strategic Assessment and associated reserves identified within the Biodiversity Conservation Strategy for Melbourne's Growth Corridors (DEPI 2013), part of which covers the northern side of the road reserve for O'Herns Road.

Overall impacts to the species are therefore expected to be confined to a local scale with an array of reserves supporting this species protected in the Melbourne region including the local northern suburbs and expanded urban growth areas.

GSM were recorded within the site during the first targeted survey conducted for this species. Transects were sampled over the entire site to document the broader distribution of the species and its habitat (two observers walking transects separated by 50m). Areas noted as unsuitable habitat included farm dams, areas subject to intensive development (i.e. buildings, driveways, roads and garden beds) and areas otherwise subject to seasonal inundation (i.e. areas of Plains Grassy Wetland) or otherwise lacking any cover of potential food plants (areas influenced by soil salinity).

Overall the site supports 26.60 ha of GSM habitat (84% of the property) of which 19.90 ha (75% of the habitat present) would be impacted by the proposed subdivision (Figure 6). All of the habitat present is considered to provide the same quality of habitat for GSM as the common indigenous (Spear-grass *Austrostipa* spp. and Wallaby-grass *Rytidosperma* spp.) and introduced (Chilean Needle-grass *Nassella neesiana*) grasses are all known food plants for this species. As the site is a relatively large area of occupied habitat which is contiguous with other areas of habitat, it was assessed as supporting habitat rated as 7 out of 10.

No indirect habitat loss is anticipated as all physical disturbance associated with the development of the site will be contained within the site. Note that VicRoads is proposing to upgrade O'Herns Road and this is subject to another referral EPBC 2017/8008. Site access for the development of 165 – 195 O'Herns Road does not require access from O'Herns Road as access is available from the existing road network to the south of the property.

Retained GSM habitat along Edgars Creek will be managed to maintain its suitability for this species. This will also remain contiguous with similar habitat retained in association with the development of 275 O'Herns Road. This will roughly double the area of retained and managed GSM habitat at this locality to about 12 ha.

2.3.3 Matted Flax-lily

Targeted searches were conducted for this species within the study area. Searches were designed to comply with the survey requirements identified by DSE (2010) (two observers walking transects separated by 5m).

A total of 19 Matted Flax-lily were recorded from the site, predominantly from the central western portions of the site. Of these, 18 fall within the proposed development footprint. These plants are proposed to be salvaged and translocated to a managed reserve as approved by DELWP and DoEE.

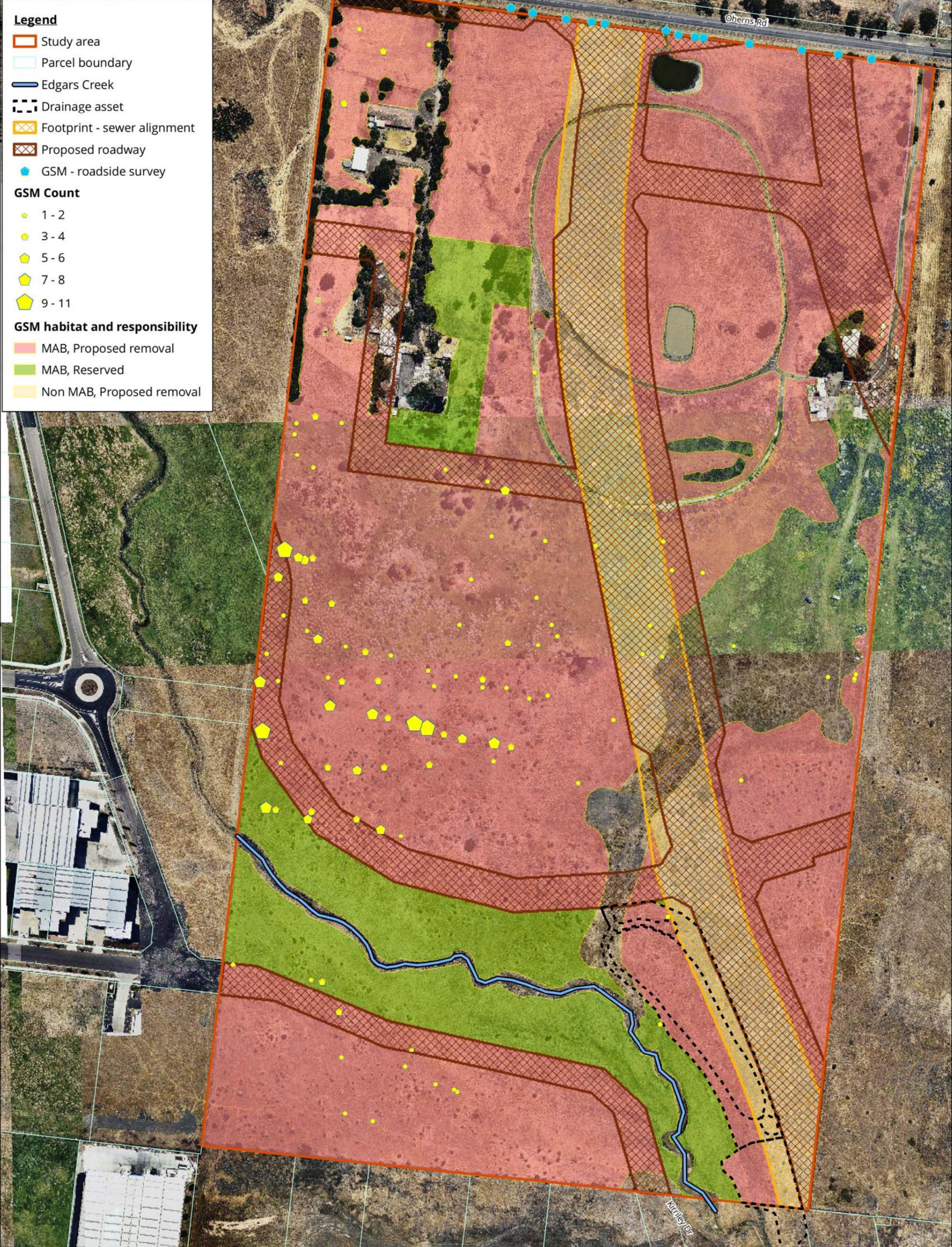


Figure 6 The extent of Golden Sun Moth records and habitat within the study area



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Metres

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Coordinate System: GDA 1994 MGA Zone 55



The extent of potential habitat for Matted Flax-lily was based on the results of the targeted survey and the extent of the local habitat types in which this species was identified. Based on the survey, the site supports 12.36 ha of Matted Flax-lily habitat (Figure 7). Of this, the Edgars Road sewer impacted 1.28 ha and the Edgars Creek reserve would retain 1.19 ha. The proposed development would therefore impact 9.89 ha of Matted Flax-lily habitat.

Two of four plants recorded within 275 O'Herns Road were retained within the reserved creek corridor. The two retained plants along Edgars Creek have persisted to date (S. Mueck pers. obs.).

Other local populations persist within the fourteen conservation reserves managed in association with the Aurora residential subdivision to the north of O'Herns Road. These reserves support in excess of 100 plants. Populations are also known from the Craigieburn Grassland and Cooper Street Grassland reserves roughly five kilometres to the west of the site.

No indirect loss of individuals or habitat is anticipated as all physical disturbance associated with the development of the site will be contained within the site and retained areas along the creek corridor will be protected from direct and indirect physical impacts.

Overall impacts to the species are therefore expected to be confined to a local scale with an array of reserves supporting this species protected in Melbourne's northern suburbs and expanded urban growth areas.

2.3.4 Growling Grass Frog

No individuals of Growling Grass Frog were recorded along this section of Edgars Creek (Biosis 2017a). Two targeted surveys were conducted for this species (December 2016 and January 2017) in a manner consistent with the requirements of the Biodiversity Precinct Structure Planning Kit (DSE 2010).

The results of this survey are consistent with previous surveys along Edgars Creek at 275 O'Herns Road (Biosis Research 2012).

Growling Grass Frog has otherwise previously been recorded from the Aurora residential development to the north of O'Herns Road and have been recorded recently (2016/2017) from artificial wetlands constructed adjacent to Edgars Creek just north of Cooper Street (about 500m south of the study area).

Edgars Creek therefore potentially still serves as a movement corridor for the species.

As part of this development, the creek corridor will be retained as a potential habitat corridor for Growling Grass Frog. As far as practicable, the design objectives for the corridor were the same as used for the development of 275 O'Herns Road (i.e. an average of 50m either side of the creek providing a total corridor width of 100m. However, existing fixed infrastructure, such as the VicRoads defined alignment of Edgars Road and Melbourne Water requirements for storm water retention ponds, have resulted in a narrower corridor at the southern end of the development and a requirement for some physical works within the corridor.

However, the proposed storm water treatment ponds to be constructed on the northern side of Edgars Creek within the creek corridor of this development are also likely to provide additional breeding habitat for this species once established. This is considered highly likely give the colonisation of similar stormwater ponds just north of Cooper Street soon after their construction.

The creek corridor would be maintained in a condition suitable for the movement of Growling Grass Frogs and additional potential breeding habitat would be created. Therefore, no significant local impact on this species is anticipated and the final configuration of the development is expected to provide additional breeding habitat for this species.

Legend

-  Study area
-  MFL observation
-  Edgars Creek
-  Parcel boundary
-  Drainage asset
-  Footprint - sewer alignment
-  Proposed roadway
-  Matted Flax-lily potential habitat

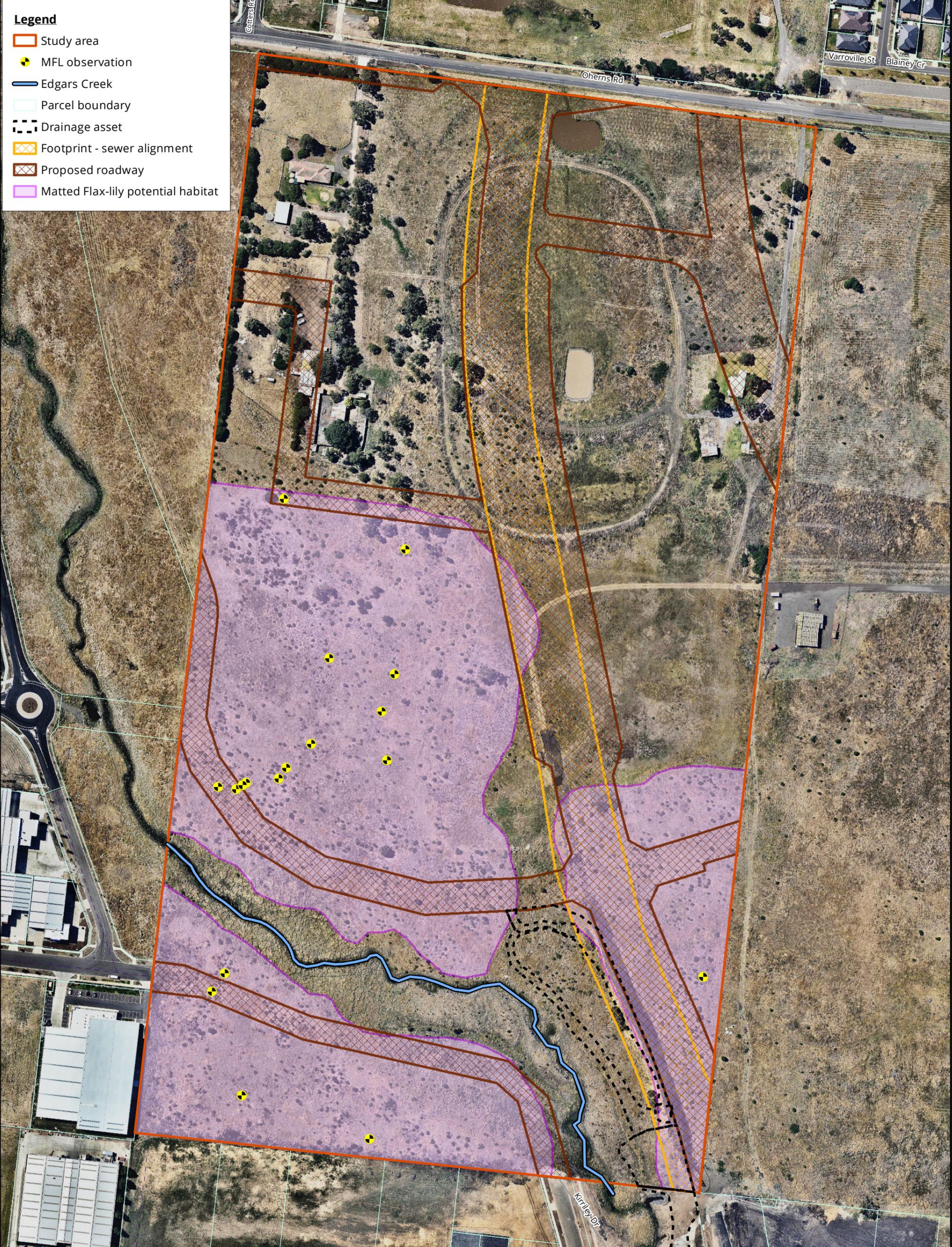


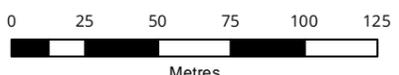
Figure 7 The extent of Matted Flax-lily records and habitat within the study area



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Scale 1:2,415 @ A3
Coordinate System: GDA 1994 MGA Zone 55



3 Proposed Avoidance and On Site Mitigation Measures

3.1 Avoidance

The main avoidance measure associated with the proposed development is the retention of a broad habitat corridor along Edgars Creek (Figure 2). This corridor is contiguous with a similar creek corridor established on the property adjacent to the western boundary of the site (275 O'Herns Road). While a creek corridor does extend to the south of this development, it narrows significantly. The corridor here includes a series of recently constructed (within the last 5 to 10 years) stormwater wetlands which are known to have been colonised by Growling Grass Frog (Mark Venosta, Senior Consultant Zoologist, 2016/17 observations).

The proposed on-site creek corridor will also retain habitat for Golden Sun Moth (2.82 ha) and retain one individual of Matted Flax-lily within 1.9 ha of habitat (Figure 6).

An additional woodland reserve in the north west of the subdivision would retain an additional 0.63ha of Golden Sun Moth habitat. However, due to the relative isolation of the reserve and potential for a stochastic event to result in the local extinction of GSM from this reserve, this habitat is considered to be an incidental loss.

Protection of retained areas during construction and ongoing management of the retained areas of habitat by subsequent managers of public land, are expected to maintain local populations of Golden Sun Moth within the creek corridor. Within the creek corridor, ongoing conservation management is also expected to maintain the suitability of the creek corridor as a movement corridor for Growling Grass Frog and to protect the occurrence of Matted Flax-lily (Biosis 2017b & c).

3.2 On Site Mitigation Measures

Outside of the construction footprint for the required stormwater wetlands, the creek corridor will be established as a construction No Go Zone. This zone will be clearly delineated by exclusion fencing when any construction works are within 20m of the corridor.

A conservation management plan will also be prepared and approved for the ongoing management of the creek corridor to ensure the persistence of Matted Flax-lily and Golden Sun Moth (Biosis 2017b).

The stormwater wetlands will be constructed, stabilised and revegetated in a manner consistent with the habitat requirements of Growling Grass Frog. Protection of Edgars Creek during the construction of these stormwater wetlands and the surrounding infrastructure will be conducted in a manner consistent with best practice (i.e. referring to EPA 1996 as amended, EPA 1991 and EPA 2004).

This creek reserve will be transferred from private ownership to the relevant public authority (either Melbourne Water or the City of Whittlesea) before the completion of the subdivision.

The woodland reserve will be managed for its biodiversity values, including Golden Sun Moth (Biosis 2017c). It will be established and maintained as a construction No Go Zone and clearly protected by exclusion fencing during the construction of surrounding infrastructure. The reserve will be transferred to the City of Whittlesea at or near the completion of the subdivision. Ongoing management of the reserve will be consistent with the approved conservation management plan (Biosis 2017c).

3.3 Contingency Measures

Construction works have a relatively low likelihood for chemical spills which could impact on retained habitat and Edgars Creek. The site is relatively flat and the heavy clay soils impede the rapid dispersal of liquids. Any

fuel storage on site will be conducted in a legal manner and be remote from Edgars Creek. This will offer significant protection for the creek from accidental spills.

The potential for chemical spills from industry that establish on site will depend on what industries purchase land at this location. However, these will be controlled by existing regulations controlling such industries. In addition proposed infrastructure (i.e. single fronted roads) and proposed stormwater management system will provide a high level of protection for the creek corridor.

4 Residual Impacts and Proposed Offsets

This section provides an assessment of the project in relation to key biodiversity legislation and government policy.

Where available, links to further information are provided. This section does not describe the legislation and policy in detail and guidance provided here does not constitute legal advice.

The residual project impacts associated with the development are assessed as follows:

- The loss of 1.608 ha of NTGVVP
- The loss of 19.90 ha of Golden Sun moth habitat
- The loss of 18 Matted Flax-lily within 11 ha of habitat

These impacts will be offset as prescribe under the EPBC Act Offset Policy (DSEWPaC 2012, Appendix 1, 2 & 3). The Matted Flax-lilies will also be subject to a translocation and be established within a designated conservation reserve approved by DoEE and DELWP.

External offsets are proposed for MNES which are impacted by the project. While preferred offset options have been identified and the manner in which these offsets would be secured, managed and monitored has been defined in relatively specific terms, MAB Corporation prefers to operate in an approval process driven by outcomes. In that context the identified offset options could change, subject to the approval of the Australian Government Minister for the Environment, should better and/or more cost effective options become available to achieve the same outcome.

Offsets proposed include those for NTGVVP, Matted Flax-lily and Golden Sun Moth. No external offsets are proposed for Growling Grass Frog as significant negative impacts on this species are not anticipated as part of this development. Ongoing management of the retained creek corridor and proposed stormwater treatment ponds will maintain the site habitat values for Growling Grass Frog.

4.1 EPBC Act Offsets

4.1.1 NTGVVP

Impacts associated with the loss of 1.608 ha NTGVVP have been assessed as requiring an offset of 7.0 ha under the assumptions identified in the EPBC Act offset calculator provided in Appendix 1.

The quality of these patches of NTGVVP was assessed by using the Victorian Government's 'habitat hectare' assessment protocols developed by DELWP (DSE 2004). The 'habitat hectare' assessment considers a number of factors including weed cover, organic matter, recruitment and species richness to define a score for vegetation which is then provided as a score out of 100.

This assessment uses the habitat hectare scores calculated by Biosis (2017 – Appendix 4) for each habitat zone (52/100 for HZ3 and 48/100 for HZ4) rounded to the nearest equivalent quality value required by the DoEE Offset Assessment Guide under the "Area of Community" component. The score used in the EPBC Act offset calculator for all of the 1.608 ha of NTGVVP is therefore 5/10.

Other settings in the offset calculator are as follows. The risk related time horizon for the offset is set at its maximum level of 20 years. This parameter deals with the life of the offset which is otherwise capped at 20 years. As offsets are protected in perpetuity the maximum value has been selected.

Offset site management plans typically cover the initial 10 year management period for a site and therefore the time until ecological benefit is set at 10 years.

The site quality score of the potential offset site is set at 6/10. Experience suggests that the likely offset area will be a portion of a larger area of NTGVVP and that this quality score is a reasonable assumed starting point.

The quality of such areas when managed in a manner with little or no consideration for the biodiversity values can deteriorate very quickly. In Victoria, there are no restrictions to practices such as the application of fertiliser, high stocking rates, seeding areas with exotic pasture or changing the type of animal traditionally raised within a property (i.e. changing from sheep to cattle or horses). All of such practices are considered as of right uses associated with farming land, whether or not such areas support native vegetation. While remnants of NTGVVP within an agricultural setting may have survived the development of agricultural land around them, the gradual increase in weed cover, the number of weed species, nutrient loads etc. can result in the rapid loss of vegetation quality in response to changes or disturbances (i.e. fire and drought). A decline in condition from a score of 6/10 to 3/10 is considered conservative for a 10 year period.

The future quality with offset for the nominated offset vegetation is retained at a score of 6/10. This decision is based on experience which dictates that the effort required to improve the quality of a grassland already in quite good condition is extreme and a good result for active ecological management over a ten year period is stasis.

The risk of loss for the vegetation without the offset is set at 10%. This is based on the existing land-use (grazing) and the low likelihood that this area of native vegetation would be cleared in the next 20 years, since it is protected under national environment law. However, remnants such as these still illegally or inadvertently cleared, so there is still some residual risk of loss given that the site does not have formal protection. The proposed offset would continue to be used for grazing purposes if not protected under a legal mechanism. While Victoria's native vegetation clearing regulations offer some existing protection to the native vegetation within the proposed offset site, continued agricultural uses such as grazing may lead to its continued degradation.

The risk of loss with offset is set at 2% because the site would be protected in perpetuity and the relatively low probability of the vegetation deteriorating in the presence of active management to promote the improvement of native vegetation through active weed control works and biomass management. The risk is not considered zero as there is a small probability that the invasion of new high threat weeds or the influence of climate change could have negative impacts on this vegetation.

These assessments are made with a relatively high degree of confidence (set at 80%) because of observations associated with other NTGVVP offsets in Victoria's western district. Similarly, there is a high confidence (80%) for the time to ecological benefit being achieved based on observations from similar management regimes for NTGVVP offset areas managed under Trust for Nature covenants.

Based on the assumptions outlined in these spreadsheets an offset protecting 7.0 ha of NTGVVP would satisfy the current policy requirements for the loss of the 1.608 ha of NTGVVP contained in the sections of Habitat Zones 3 and 4 impacted and classified as NTGVVP. The output of the offset calculator for NTGVVP using these parameters identifies an offset of 7.0 ha as providing in excess of a 100% direct offset.

The prescribed offset of 7.0 ha of NTGVVP will need to be provided offsite. A potential site has been identified at Shelford in close proximity to existing offsets provided for both NTGVVP and Golden Sun Moth (BL&A 2017). MAB are currently in negotiations with this landowner in an attempt to secure the required offsets. If baseline data is not available from an appropriate site then that data will be collected in due course. It is anticipated that any selected NTGVVP offset will also support a population of Golden Sun Moth and as such a concurrent offset would be sought for this additional MNES which will reduced the Golden Sun Moth offset requirements required from an additional site.

The offset for NTGVVP will be established before the development proceeds and protected under a **Trust for Nature Covenant** within one year of project commencement. Ecological **management** of the offset area will be governed by an approved **offset management plan** (OMP) tailored for the specific conditions of the selected site. A typical OMP for an offset area of NTGVVP is provided by Biosis (2017f). This management includes regular **monitoring** (Section 3.7 of Biosis 2017f) and reporting to the Trust for Nature. The Trust also conducts annual inspections of covenanted sites and provides advice to covenant landholders on request.

4.1.2 Matted Flax-lily

The 18 Matted Flax-lily plants within the proposed development footprint (Figure 2) cannot be avoided by the project. These plants are widely scattered within the site and protection of these individuals within a reasonable area of habitat would render a significant portion of the site undevelopable and undermine the economic viability of the project.

The output of the DoEE Offset Assessment Guide for Matted Flax-lily is provided in Appendix 2.

The quality of the existing habitat for Matted Flax-lily is somewhat subjective. The species is known from numerous sites within the local area and it is likely that Matted Flax-lily was a common species in this environment prior to its development for agriculture and subsequently residential and industrial development. Some of the plants recorded within the development site occur in areas identified as native vegetation but most persist in close association with the noxious weed Briar Rose *Rosa rubiginosa*. The spiny nature of this weed provides protection from disturbance from domestic animals and pest animals such as rabbits but leaves plants vulnerable to inadvertent loss during weed control works. While the population is considered relatively substantial, the poor context of the environment they inhabit suggests a habitat quality score of 4/10 is appropriate. With 9.89 ha of the site considered as potential habitat for Matted Flax-lily, the total quantum of impact is assessed as 3.96 ha.

The offset calculator settings for time over which the loss is averted and the time until ecological benefit are as used for NTGVVP and for the same reasons (20 years and 10 years respectively).

The risk of loss for Matted Flax-lily within the proposed offset vegetation without the offset is set at 20%. This is based on the existing land-use (grazing) and greater risk associated with the loss of an individual species as opposed to the loss of the vegetation as a whole. The likelihood that this area of native vegetation would be cleared in the next 20 years would still be assessed as 10% (as for NTGVVP), although the inadvertent loss of this single species is considered to be higher (elevated to 20%). Remnants such as these are still illegally or inadvertently cleared or otherwise impacted, so there is still some residual risk of loss given that the site does not have formal protection. The proposed offset would be used for grazing purposes (predominantly by cattle) if not protected under a legal mechanism and such activity is considered to provide an elevated risk to Matted Flax-lily. While Victoria's native vegetation clearing regulations offer some existing protection to the native vegetation within the proposed offset site, continued agricultural uses such as grazing would lead to its continued degradation.

The site quality score of the potential offset site is set at 6/10 based on a reasonable average for the condition of the vegetation at the nominated New Gisborne offset site (Biosis 2017g). As indicated for NTGVVP, the condition of such vegetation can deteriorate significantly without management and it is difficult to achieve better than condition stasis without highly intensive ecological management. The future quality without offset is therefore set at 3/10 and the future quality with offset is maintained at 6/10.

Again these assumptions are provided with a relatively high degree of confidence (set at 80%) because of observations associated with other grassland and grassy woodland offsets in Victoria's Volcanic Plain bioregion and the management of areas supervised under Trust for Nature covenants.

Based on the assumptions outlined in that spreadsheet, an offset protecting either 60 Matted Flax-lily plants or 16.8 ha of suitable habitat would satisfy the current policy requirements (i.e. provide a 100% or greater direct offset).

This offset will be established before the development proceeds and protected under a **Trust for Nature Covenant** within one year of project commencement. Ecological management of the offset area will be governed by an approved **offset management plan** (OMP) tailored for the specific conditions of the selected site. The offset site will invariably be an area of native grassland or grassy woodland. A typical OMP for such an offset area is provided by Biosis (2017f). This management includes regular **monitoring** (Section 3.7 of Biosis 2017f) and reporting to the Trust for Nature. The Trust also conducts annual inspections of covenanted sites and provides advice to covenant landholders on request.

4.1.3 Golden Sun Moth

Impacts associated with the loss of 20.53 ha of Golden Sun Moth (GSM) habitat have been assessed as requiring an offset of 98.3 ha (4.8 times the loss) under the assumptions identified in the offset calculator provided in Appendix 3.

The development site supports a relatively large population of GSM but is currently isolated by development and pending development (i.e. the residential subdivision of Aurora to the north and existing industrial subdivisions to the south). Given the size, extent and context of the GSM population and its ability to utilise vegetation dominated by weeds such as Chilean Needle-grass *Nassella neesiana*, the habitat quality within the development site is rated as relatively high (6/10). This results in a calculated total quantum of impact of 12.32 ha.

Again, the risk related time horizon for the offset site has been set at 20 years with the time until ecological benefit set at 10 years to match the timeframe of the OMP.

The site quality score of the potential offset site is set at 6/10 based on the presence of a large population of GSM within an area of modified but suitable habitat otherwise imbedded within a broader area of unsuitable habitat. Again, given the agricultural nature of such habitat it has the potential to suffer significant declines in condition within a relatively short period of time. Potential changes which could readily influence the population include over-grazing, a change in the type of animals grazed (changing from sheep to cattle) or the application of superphosphate which would significantly alter the ground cover species composition. The future quality of such a site without offset is therefore set at 4/10.

As with the other MNES above it is considered relatively difficult to improve the quality of habitat. However in this instance the elevated level of weed control and permanent application of targeted management to improve the habitat for Golden Sun Moth, the future quality with offset is elevated to 7/10.

Given the persistence of GSM in the offset environment and the extent of change required to remove this species, the risk of loss without offset is set relatively low at 10%. When such a site is secured for an offset the risk of loss is set at 1% because the site would be protected in perpetuity and the relatively low probability of the vegetation deteriorating in the presence of active management to maintain this habitat in appropriate condition through active weed control works and biomass management. The risk is not considered zero as there is a small probability that the invasion of new high threat weeds or the influence of climate change could have negative impacts on this vegetation.

Again these assumptions are provided with a relatively high degree of confidence (set at 80% for the risk settings and 90% for the quality settings) because of our observations over time in areas managed for the protection and maintenance of GSM populations.

Based on the assumptions outlined in the relevant spreadsheet, an offset protecting 98.3 ha of GSM habitat would satisfy the current policy requirements (i.e. provide a 100% or greater direct offset).

Offsets provided for NTGVVP are also anticipated to support GSM. The nominated offset for NTGVVP will therefore also contribute an offset of 7.0 ha of GSM habitat. The remaining 91.3 ha of GSM will therefore be secured at another site.

A potential GSM offset site has been identified on a property known as Glenhope (Sievers Lane Glenhope 3444) (Hamilton Environmental Services 2014). The site supports an extensive population of GSM and MAB is currently in negotiations with the landowner to secure the required 91.3 ha offset. Ecological management of the offset area will be governed by an approved **offset management plan** (OMP) tailored for the specific conditions of the selected site. If the existing survey data is not considered current then additional data will be collected in due course.

The site will be secured through a **Trust for Nature covenant**. The OMP will be subject to regular implementation **monitoring** and reporting (i.e. in years 1, 3, 5 and 10) and GSM populations will be **monitored** every two years including a baseline survey conducted during the first flight season after establishing the covenant (i.e. years 0, 2, 4, 6, 8 and 10).

4.2 Salvage and Translocation

The 18 Matted Flax-lily within the development footprint will be subject to salvage and translocation. This process is documented in the site Matted Flax-lily salvage and translocation plan (Biosis 2017d).

The plan and selection of an appropriate recipient site is also subject to approval by the Victorian Department of Environment, Land, Water and Planning (DELWP). The recipient site will be an area of land permanently secured for conservation, being either a Council managed conservation reserve or land managed by Parks Victoria. The site will be subject to regular conservation management works such as pest plant and animal control works and, where applicable, regular biomass control works (i.e. the application of an ecological burning regime).

Monitoring requirements for the translocated population are outlined in Biosis (2017d).

Previous translocations of Matted Flax-lily have been successful in the re-establishment of individuals at new locations. This includes the translocation of 48 individuals from the Melbourne Wholesale Market site into reserves within the Aurora residential subdivision (reserves will eventually be managed by the City of Whittlesea) (Biosis 2017e) and the movement of 5 plants from the development footprint of Lancaster Gate to a reserve within this subdivision (Biosis Research 2004 & 2009) (reserve now owned and managed by the City of Darebin).

There is therefore a high level of confidence that plants can be salvaged and maintained under nursery conditions and subsequently translocated into an acceptable recipient site with a high rate of survival. No incidence of disease or weed introduction has been noted in association with the translocation of this species (S. Mueck pers. obs.).

Note that the Woodland Reserve to be retained and managed on site is considered too small to provide a suitable Matted Flax-lily translocation site and plants will not be translocated into this reserve as part of the formally approved translocation plan.

5 Other Approvals and Conditions

Beyond the matters listed below no additional approvals, monitoring requirements, enforcement or review procedures are known or proposed to apply to the nominated action.

5.1 State assessment and offset requirements

Approval for the proposed industrial subdivision of 165-195 O'Herns Road Epping will also require a planning permit from the City of Whittlesea (Permit Application No. 716886). This permit will contain conditions provided by the Department of Environment, Land, Water & Planning (DELWP) relating to compliance with the State's Biodiversity Assessment Guidelines (the Guidelines) (DEPI 2013).

Under these Guidelines the proposed development will be assessed under the High Risk-based Pathway as the proposed development impacts native vegetation within Location C. The ecological assessment requirements under this process have been completed and are reported by Biosis (2017a).

The offset prescription provided by the guidelines is outlined by Biosis (2017a). These offsets amount to the provision of:

- 0.012 General Biodiversity Equivalence Units (GBEU)
- 1.706 Specific Equivalence Units (SBEU) for Matted Flax-lily.

Matted Flax-lily is listed as endangered in Victoria (DEPI 2014).

None of these State prescribed offsets can be generated on site. The SBEU offset can be obtained from any areas of modelled habitat within Victoria. However, in this instance MAB Corporation will seek to provide the SBEU for Matted Flax-lily at the selected external EPBC Act offset site under an alternative offset arrangement as this area is not included within the modelled habitat for this species. This site would also be able to provide the prescribed GBEU offset. Should this not be possible the GBEU will be purchased as an 'over the counter' offset from a registered broker.

These offsets are required to be confirmed as part of the planning approvals process. Without a clear definition of the availability of state offsets, DELWP will object to the issue of a Planning Permit by the City of Whittlesea. Note that the State prescribed offsets may be provided concurrently with any external offsets prescribed under the EPBC Act as long as all these environmental values are present, or are modelled to be present in the one location, and they are secured simultaneously and relate to the same action.

5.2 Other Planning Scheme and Policy Details

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

The proposed development area is existing vacant land zoned as Comprehensive Development Zone (CDZ) under the Whittlesea Planning Scheme (<http://planningschemes.dpcd.vic.gov.au/>). The land is not influenced by any vegetation protection or environmental significance overlay (VPO/ESO).

The objectives of the project are to develop the site in line with its existing CDZ designation while achieving consistency with other requirements for sustainable development through the use of water sensitive design and the protection and management of high conservation values identified within the creek corridor and proposed woodland reserve.

The land proposed for use as stormwater treatment and retention will be transferred to either Whittlesea Council or another suitable public organisation to ensure ongoing maintenance of its hydrological function and ecological values. This transfer of land will include appropriate funds and management guidance.

5.2.2 Environment Effects Act 1978

The proposed development of 165-195 O'Herns Road does not exceed the thresholds set under the guidelines for assessment under the *Environment Effects Act 1978* (DSE 2006). As a result planning approval for the project would not need a referral to the Victorian Minister for Planning under this legislation.

5.2.3 Other EPBC Act Approvals

The site has been impacted by the construction of the Epping Branch Sewer. Approval for this infrastructure project was provided to Yarra Valley Water under EPBC 2015/7528. Yarra Valley Water's compliance with the approval conditions for this project are not available to MAB Corporation or Biosis.

The project area effectively extends MAB's Alliance Business Park to the east. Alliance Business Park was approved under EPBC Act referral 2012/6298. Biosis has assisted MAB Corporation in maintaining compliance with the approval conditions associated with Alliance Business Park. Details of this review and our assessment of compliance is provided in Appendix 4.

6 Social and Economic Matters

Development of the site would provide local and regional economic benefits in the form of construction jobs and longer term jobs for the businesses which establish on this site.

In support of the region's Economic Development Strategy, this project will provide up to 2000 new employment opportunities making an important contribution to the challenge of reducing the number of Whittlesea residents who leave the region each day for work.

The net developable area of the site has a current value estimated at approximately \$55 million with an estimated equivalent value of economic activity involved in establishing the businesses which would purchase these properties.

The proposed offsets and management of on-site retained area would also require an estimated \$600,000 worth of management and monitoring works over the first ten years after their establishment.

The creek corridor and associated stormwater treatment ponds will also provide an area of passive, public open space.

The project achieves the desired outcomes of the Cooper Street Employment Area Development Plan.

To date no public consultation activities have been undertaken in relation to the proposed action.

7 Environmental Record

MAB Corporation have previously lodged four referrals under the EPBC Act including:

- 2001/169 for an industrial subdivision in Campbellfield, Melbourne.
- 2009/4721 for commercial developments north of Donnybrook Road, Mickleham.
- 2012/6298 for Alliance Business Park (275 O'Herns Road, Epping).
- 2015/7516 for a proposed residential subdivision at Mickleham in northern Melbourne. This project was identified as a controlled action but has subsequently been sold to another developer and the approvals process has yet to be transferred.

MAB Corporation has operated in the Melbourne area for over 20 years and during that period has maintained an exemplary record in both the environmental and commercial regulatory environment. There are no proceedings current or pending under a Commonwealth or State law relating to the protection of the environment or the conservation and sustainable use of natural resources.

MAB Corporation does not have a formal environmental policy and planning framework.

8 Conclusion

The extension of Alliance Business Park to include 165 to 195 O'Herns Road Epping is considered to have an acceptable environmental impact in the context of the broader development within Melbourne's Urban Growth boundary and the development plan for the Cooper Street Employment Area (City of Whittlesea 2013).

Approval of this project is in-line with broader approvals within the Melbourne urban growth boundary (UGB) and the concept of ecologically sustainable development (ESD). Given the developed nature of the broader environs, containing this type of development within the UGB and mitigating existing negative environmental impacts at defined offset sites is a cost effective and flexible instrument to progress the objectives of ESD. This process provides for economic development while providing environmental protection and enhancement for relevant matters of national environmental significance which would otherwise remain subject to ongoing threats.

Based on the approvals for 275 O'Herns Road Epping, the approval for 165 to 195 O'Herns Road Epping would expect to provide offsets for the identified impacts to MNES in-line with the Australian Governments environmental offsets policy (DSEWPaC 2012). While preferred offset options have been identified and the manner in which these offsets would be secured, managed and monitored has been defined in relatively specific terms, MAB Corporation prefers to operate in an approval process driven by outcomes. In that context the identified offset options could change, subject to the approval of the Australian Government Minister for the Environment, should better and/or more cost effective options become available to achieve the same outcome.

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Appendices

Appendix 1: EPBC Act Offsets Assessment Guide for NTGWV

Offsets Assessment Guide

For use in determining offsets under the Environment Protection and Biodiversity Conservation Act 1999
2 October 2012

This guide relies on Macros being enabled in your browser.

Matter of National Environmental Significance	
Name	NTGVVP
EPBC Act status	Critically Endangered
Annual probability of extinction Based on IUCN category definitions	6.8%

Key to Cell Colours
User input required
Drop-down list
Calculated output
Not applicable to attribute

Impact calculator						
Protected matter attributes	Attribute relevant to case?	Description	Quantum of impact		Units	Information source
<i>Ecological communities</i>						
Area of community	Yes	Site remnants HZ 3 & 4	Area	1,608	Hectares	site survey
			Quality	5	Scale 0-10	
			Total quantum of impact	0.80	Adjusted hectares	
<i>Threatened species habitat</i>						
Area of habitat	No		Area			
			Quality			
			Total quantum of impact	0.00		
<i>Threatened species</i>						
Protected matter attributes	Attribute relevant to case?	Description	Quantum of impact	Units	Information source	
Number of features e.g. Nest hollows, habitat trees	No					
Condition of habitat Change in habitat condition, but no change in extent	No					
Birth rate e.g. Change in nest success	No					
Mortality rate e.g. Change in number of road kills per year	No					
Number of individuals e.g. Individual plants/animals	No					

Offset calculator																					
Protected matter attributes	Attribute relevant to case?	Total quantum of impact	Units	Proposed offset	Time horizon (years)	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	Minimum (90%) direct offset requirement met?	Cost (\$ total)	Information source					
<i>Ecological Communities</i>																					
Area of community	Yes	0.80	Adjusted hectares	7	Risk-related time horizon (max. 20 years)	20	Start area (hectares)	7	Risk of loss (% without offset)	10%	Risk of loss (% with offset)	2%	0.56	80%	0.45	0.12	0.86	106.37%	Yes	\$242,500.00	previous transactions; estimate \$50,000 per hectare
					Future area without offset (adjusted hectares)	6.3	Future area with offset (adjusted hectares)	6.9	3.00	80%	2.40	1.24									
					Time until ecological benefit	10	Start quality (scale of 0-10)	6	Future quality without offset (scale of 0-10)	3	Future quality with offset (scale of 0-10)	6									
<i>Threatened species habitat</i>																					
Area of habitat	Yes		Adjusted hectares		Time over which loss is averted (max. 20 years)		Start area (hectares)		Risk of loss (% without offset)		Risk of loss (% with offset)		0.00		0.00	0.00	0.00	#DIV/0!	#DIV/0!		
					Future area without offset (adjusted hectares)	0.0	Future area with offset (adjusted hectares)	0.0	0.00		0.00	0.00									
					Time until ecological benefit		Start quality (scale of 0-10)		Future quality without offset (scale of 0-10)		Future quality with offset (scale of 0-10)										
<i>Threatened species</i>																					
Protected matter attributes	Attribute relevant to case?	Total quantum of impact	Units	Proposed offset	Time horizon (years)	Start value	Future value without offset	Future value with offset	Raw gain	Confidence in result (%)	Adjusted gain	Net present value	% of impact offset	Minimum (90%) direct offset requirement met?	Cost (\$ total)	Information source					
Number of features e.g. Nest hollows, habitat trees	No																				
Condition of habitat Change in habitat condition, but no change in extent	No																				
Birth rate e.g. Change in nest success	No																				
Mortality rate e.g. Change in number of road kills per year	No																				
Number of individuals e.g. Individual plants/animals	No																				

Summary							
Protected matter attributes	Quantum of impact	Net present value of offset	% of impact offset	Direct offset adequate?	Cost (\$)		
					Direct offset (\$)	Other compensatory measures (\$)	Total (\$)
Birth rate	0				\$0.00		\$0.00
Mortality rate	0				\$0.00		\$0.00
Number of individuals	0				\$0.00		\$0.00
Number of features	0				\$0.00		\$0.00
Condition of habitat	0				\$0.00		\$0.00
Area of habitat	0	0.00	#DIV/0!	#DIV/0!	\$0.00	#DIV/0!	#DIV/0!
Area of community	0.804	0.86	106.37%	Yes	\$242,500.00	N/A	\$242,500.00
					\$242,500.00	#DIV/0!	#DIV/0!

Appendix 2: EPBC Act Offsets Assessment Guide for Matted Flax-lily

Offsets Assessment Guide

For use in determining offsets under the Environment Protection and Biodiversity Conservation Act 1999
2 October 2012

This guide relies on Macros being enabled in your browser.

Matter of National Environmental Significance	
Name	Matted Flax-lily
EPBC Act status	Endangered
Annual probability of extinction Based on IUCN category definitions	1.2%

Key to Cell Colours
User input required
Drop-down list
Calculated output
Not applicable to attribute

Impact calculator						
Protected matter attributes	Attribute relevant to case?	Description	Quantum of impact	Units	Information source	
<i>Ecological communities</i>						
Area of community	No		Area			
			Quality			
			Total quantum of impact	0.00		
<i>Threatened species habitat</i>						
Area of habitat	Yes	MFL habitat	Area	9.89	Hectares	Habitat assessment
			Quality	4	Scale 0-10	
			Total quantum of impact	3.96	Adjusted hectares	
<i>Threatened species</i>						
Birth rate e.g. Change in nest success	No					
Mortality rate e.g. Change in number of road kills per year	No					
Number of individuals e.g. Individual plants/animals	Yes	Matted Flax-lily	18	Count	targeted survey	

Offset calculator																													
Protected matter attributes	Attribute relevant to case?	Total quantum of impact	Units	Proposed offset	Time horizon (years)	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	Minimum (90%) direct offset requirement met?	Cost (\$ total)	Information source													
<i>Ecological Communities</i>																													
Area of community	No				Risk-related time horizon (max. 20 years)	Start area (hectares)	Risk of loss (% without offset)	Risk of loss (% with offset)																					
					Future area without offset (adjusted hectares)	0.0	Future area with offset (adjusted hectares)	0.0																					
					Time until ecological benefit	Start quality (scale of 0-10)	Future quality without offset (scale of 0-10)	Future quality with offset (scale of 0-10)																					
<i>Threatened species habitat</i>																													
Area of habitat	Yes	3.96	Adjusted hectares	16.8	Time over which loss is averted (max. 20 years)	20	Start area (hectares)	16.8	Risk of loss (% without offset)	20%	Risk of loss (% with offset)	2%	Raw gain	3.02	Confidence in result (%)	80%	Adjusted gain	2.42	Net present value	1.91	% of impact offset	4.01	101.27%	Minimum (90%) direct offset requirement met?	Yes	Cost (\$ total)		Information source	
					Future area without offset (adjusted hectares)	13.4	Future area with offset (adjusted hectares)	16.5																					
					Time until ecological benefit	10	Start quality (scale of 0-10)	6	Future quality without offset (scale of 0-10)	3	Future quality with offset (scale of 0-10)	6	Raw gain	3.00	Confidence in result (%)	80%	Adjusted gain	2.40	Net present value	2.13									
<i>Threatened species</i>																													
Birth rate e.g. Change in nest success	No																												
Mortality rate e.g. Change in number of road kills per year	No																												
Number of individuals e.g. Individual plants/animals	Yes	18	Count	60	20	60	45	75	30	80%	24.00	18.91	105.03%	Yes															

Summary							
Protected matter attributes	Quantum of impact	Net present value of offset	% of impact offset	Direct offset adequate?	Cost (\$)		
					Direct offset (\$)	Other compensatory measures (\$)	Total (\$)
Birth rate	0				\$0.00		\$0.00
Mortality rate	0				\$0.00		\$0.00
Number of individuals	18	18.91	105.03%	Yes	\$0.00	N/A	\$0.00
Number of features	0				\$0.00		\$0.00
Condition of habitat	0				\$0.00		\$0.00
Area of habitat	3.956	4.01	101.27%	Yes	\$0.00	N/A	\$0.00
Area of community	0				\$0.00		\$0.00
					\$0.00	\$0.00	\$0.00

Appendix 3: EPBC Act Offsets Assessment Guide for Golden Sun Moth

Offsets Assessment Guide

For use in determining offsets under the Environment Protection and Biodiversity Conservation Act 1999
2 October 2012

This guide relies on Macros being enabled in your browser.

Matter of National Environmental Significance	
Name	Golden Sun Moth
EPBC Act status	Critically Endangered
Annual probability of extinction Based on IUCN category definitions	6.8%

Key to Cell Colours
User input required
Drop-down list
Calculated output
Not applicable to attribute

Impact calculator						
Protected matter attributes	Attribute relevant to case?	Description	Quantum of impact		Units	Information source
<i>Ecological communities</i>						
Area of community	No		Area			
			Quality			
			Total quantum of impact	0.00		
<i>Threatened species habitat</i>						
Area of habitat	Yes	Habitat defined by Biosis 2017	Area	20.53	Hectares	Site survey
			Quality	6	Scale 0-10	
			Total quantum of impact	12.32	Adjusted hectares	
Protected matter attributes	Attribute relevant to case?	Description	Quantum of impact		Units	Information source
Number of features e.g. Nest hollows, habitat trees	No					
Condition of habitat Change in habitat condition, but no change in extent	No					
<i>Threatened species</i>						
Birth rate e.g. Change in nest success	No					
Mortality rate e.g. Change in number of road kills per year	No					
Number of individuals e.g. Individual plants/animals	No					

Offset calculator																					
Protected matter attributes	Attribute relevant to case?	Total quantum of impact	Units	Proposed offset	Time horizon (years)	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	Minimum (90%) direct offset requirement met?	Cost (\$ total)	Information source					
<i>Ecological Communities</i>																					
Area of community	Yes		Adjusted hectares		Risk-related time horizon (max. 20 years)	Start area (hectares)	Risk of loss (%) without offset	Risk of loss (%) with offset	0.00		0.00	0.00	#DIV/0!	#DIV/0!							
					Future area without offset (adjusted hectares)	0.0	Future area with offset (adjusted hectares)	0.0													
					Time until ecological benefit	Start quality (scale of 0-10)	Future quality without offset (scale of 0-10)	Future quality with offset (scale of 0-10)	0.00	0.00	0.00										
<i>Threatened species habitat</i>																					
Area of habitat	Yes	12.32	Adjusted hectares	98.3	Time over which loss is averted (max. 20 years)	20	Start area (hectares)	98.3	Risk of loss (%) without offset	10%	Risk of loss (%) with offset	1%	8.85	80%	7.08	1.90	12.33	100.07%	Yes	\$1,290,000.00	past transactions. Estimate of \$15,000 per hectare
					Future area without offset (adjusted hectares)	88.5	Future area with offset (adjusted hectares)	97.3													
					Time until ecological benefit	10	Start quality (scale of 0-10)	6	Future quality without offset (scale of 0-10)	4	Future quality with offset (scale of 0-10)	7	3.00	80%	2.40	1.24					
Protected matter attributes	Attribute relevant to case?	Total quantum of impact	Units	Proposed offset	Time horizon (years)	Start value	Future value without offset	Future value with offset	Raw gain	Confidence in result (%)	Adjusted gain	Net present value	% of impact offset	Minimum (90%) direct offset requirement met?	Cost (\$ total)	Information source					
Number of features e.g. Nest hollows, habitat trees	No																				
Condition of habitat Change in habitat condition, but no change in extent	No																				
<i>Threatened species</i>																					
Birth rate e.g. Change in nest success	No																				
Mortality rate e.g. Change in number of road kills per year	No																				
Number of individuals e.g. Individual plants/animals	No																				

Summary							
Protected matter attributes	Quantum of impact	Net present value of offset	% of impact offset	Direct offset adequate?	Cost (\$)		
					Direct offset (\$)	Other compensatory measures (\$)	Total (\$)
					Birth rate	0	
Mortality rate	0				\$0.00		\$0.00
Number of individuals	0				\$0.00		\$0.00
Number of features	0				\$0.00		\$0.00
Condition of habitat	0				\$0.00		\$0.00
Area of habitat	12,318	12.33	100.07%	Yes	\$1,290,000.00	N/A	\$1,290,000.00
Area of community	0	0.00	#DIV/0!	#DIV/0!	\$0.00	#DIV/0!	#DIV/0!
					\$1,290,000.00	#DIV/0!	#DIV/0!

Appendix 4: EPBC Act Compliance

Alliance Business Park Project Area

1. Project activities must be limited to the 'Study Area' as illustrated in Appendix 1

Compliant to the best of my knowledge and based on site inspections (i.e. none of the development has occurred outside the property known as 275 O'Herns Road).

Note the approval does not include the road reserve for O'Herns Road. None of the southern side of the road reserve is within the MSA.

Impact Limits

2. The person taking the action must ensure that project activities do not disturb more than 46 hectares of Golden Sun Moth habitat.

Compliant to the best of my knowledge and based on site inspections the project works have been contained within the project design submitted as part of the approval process. Therefore I have no reason to believe that this restriction has been exceeded.

3. The person taking the action must ensure that project activities do not disturb more than two endangered Matted Flax-lily.

Compliant. The 2 plants within the construction footprint were salvaged and no additional plants have been impacted.

4. The person taking the action must translocate the impacted Matted Flax-lily identified in condition 3. The translocation must be undertaken by a suitably qualified ecologist. The final translocation site must be selected in consultation with the Victorian Department of Sustainability and Environment.

Partially compliant. Plants have been salvaged and are being held in a native nursery. Discussions have been had with DELWP to identify an approved location for plants to be planted. Discussions have also been held with the City of Whittlesea to identify an acceptable reserve to take the plants. Details of planting are yet to be finalised.

5. The person taking the action must ensure that project activities do not disturb more than 1.09 hectares of the Natural Temperate Grassland of the Victorian Volcanic Plain ecological community.

Compliant. Only areas of NTGVVP identified within the construction footprint have been impacted. Areas of NTGVVP within the creek corridor were avoided in the design for the shared path.

Other MNES

6. Proposed activities must not impact on any matter of national environmental significance (MNES) other than those identified in proposed conditions 2 to 5 above. If at any time, the person taking the action becomes aware of a potential disturbance to MNES not identified above, activities in the affected area must stop immediately and the department must be contacted. The department may direct the person taking the action to prepare a species management plan that, at a minimum, quantifies the impact, specifies mitigation and avoidance measures as well as propose offsets to compensate for the impact. Work in that area cannot recommence until directed in writing by the department.

Compliant. No other MNES known.

7. Prior to the commencement of construction, a suitably qualified ecologist (the ecologist) must identify all areas of potential Striped Legless Lizard habitat within the Study Area. Before the commencement of any earthworks in areas the ecologist identifies as potential Striped-legless Lizard habitat, the ecologist must undertake targeted pre-clearance surveys for the Striped-legless Lizard in accordance with published species guidelines available at that time.

Compliant. Pre-clearance surveys completed and no animals detected.

8. If at any stage of development, the presence of Striped-legless Lizard is confirmed within the study area, the person taking the action must notify the department, in writing within five business days. Depending on the nature and extent of the population, the department may issue a 'stop-work' order for the affected area and request the submission of a species specific management plan that at a minimum quantifies the impact to the species, specifies avoidance, mitigation and translocation measures as well as commits to offsetting any unavoidable impact on the species. Activities in the affected area would not be able to recommence until directed in writing by the department.

Compliant. No evidence that SLL occur on site.

9. The person taking the action must implement the Growling Grass Frog Management Plan provided as a component of the preliminary documentation. The person taking the action must notify the department of all proposed changes and revisions. Depending on the nature and extent of changes, the department may request that the revised plan be submitted for re-approval.

Partially Compliant. The Growling Grass Frog Management Plan (GGFMP) is identified as the Alliance Business Park 275 O'Herns Road Epping: Edgars Creek Management Plan.

Uncertain if any legal protective mechanism has been put in place.

The plan has not been subject to a formal review every 2 years since the start of the project but is considered to be still appropriate in its original form.

The site has been protected by temp fencing during construction and has been treated as a no go zone. Small intrusion at the proposed road crossing has appropriate sediment control infrastructure.

More permanent fencing / protection included in the landscape design plans.

Advice has been provided for the design of the proposed crossing.

Weed control works within the corridor have occurred. Biomass levels not monitored regularly but when observed have been suitable. Weed control works completed to date have been effective.

One monitoring exercise has occurred. Another would be appropriate and would be consistent with the requirements of the plan.

No ground cover revegetation works have been done although some tree planting has occurred.

10. To ensure that project activities do not have an unacceptable impact on the Growling Grass Frog, the person taking the action must implement all mitigation and avoidance measures identified in the Growling Grass Frog Conservation Management Plan described in the preliminary documentation.

Compliant. No unacceptable impacts to the creek corridor have been observed. No works for a creek crossing have occurred. No upgrade works for O'Herns Road have occurred although they are being planned by VicRoads. The corridor appears to retain its suitability as a movement corridor.

11. Prior to the commencement of works associated with any road crossing of Edgars Creek, the person taking the action must provide the department with detailed plans including maps and illustrations of all proposed culverts. All culverts must comply with best practice specifications for amphibian-friendly culverts in relevant literature from Australia and overseas. All culverts must be inspected regularly to ensure they are kept clear of debris and are in good working order. Every 24 months from the date of this approval, for a period of 10 years, the person taking the action must provide the department with a report on the condition of each culvert. The report must include the dates, times and findings of each inspection undertaken in the previous two years as well as documenting any recorded use of the culverts by Growling Grass Frog individuals.

Not applicable to date. Commencement of any works is not likely within the next 12 months.

12. At least two months prior to commencement of construction, the person taking the action must prepare and submit to the Minister for approval, an offset management plan. The offset management plan must be approved by the Minister and then implemented before commencement of construction. At a minimum, the plan must include:
 - a. commitments that the person taking the action will offset the impacts to the critically endangered Golden Sun Moth (*Synemon plana*) with the protection of at least 20 hectares of land at the Birregurra property and at least 160 hectares of land at the Ninyuenook Road property;
 - b. base line data and other supporting evidence that demonstrates both proposed offset sites contain a viable (breeding) Golden Sun Moth population;
 - c. detailed information about the Golden Sun Moth population at each proposed offset site;

- d. illustrations and maps that clearly define the location and boundaries of the offset sites. This must be accompanied with the offset attributes and a shape-file for each offset site;
- e. detailed information, including proposed commitments and timelines regarding management arrangements that will be undertaken at each offset site, as soon as it is purchased and then into the future to ensure the ongoing rehabilitation and improvement of each site. This should include all recommended habitat management measures identified in EPBC Act policy statements and papers;
- f. commitments that demonstrate how the offset sites will be protected in perpetuity (i.e. Trust for Nature covenant);
- g. information and commitments about monitoring and reporting on the improvements in habitat condition of the offset site and the status of the Golden Sun Moth population; and
- h. information that demonstrates the proposed offset sites are consistent with the principles of the EPBC Act Environmental Offsets Policy (October 2012).

(Note: A single offset plan may be provided for both properties on the basis that (b) to (h) above are discussed separately for each property.)

Compliant. Offset plans submitted and approved.

- 13. Within three months of every 24 month anniversary of the date of this approval, the person taking the action must submit to the Minister a report on the status and recovery of the Golden Sun Moth population at each offset site. This must include the results of targeted surveys conducted every second year, supported by an evidence based comparison of the population against base line data required by condition 12 b. This report must be provided to the Minister for the first ten years after commencement of construction.

Partially Compliant. Baseline information was available for the sites to be identified and accepted as offset sites. The offsets were purchased on the basis that the approved OMP was to be implemented by the land owner and that reports were to be provided as directed. MAB has not followed up on the fact that such monitoring reports have not been provided by the landowner. Trust for Nature have indicated the relevant monitoring events have occurred as prescribed (Chris Cook, Trust for Nature pers. comm.). However, the relevant offsets were paid for with landowner agreement to implement the plan and provide the reports as required. Offset monitoring reports are available and have been requested from TfN. Full compliance will therefore be achievable in the near future.

- 14. If either the Birregurra property or Ninyuenook Road property cannot be secured as an offset prior to the commencement of construction, or information in the offset management plan required by condition 12 fails to demonstrate that either site supports a viable population of Golden Sun Moth, the person taking the action must prepare a contingency offset plan. The contingency offset plan must:

- a. be developed in consultation with the department;

- b. specify commitments to secure the protection of alternative offset sites, with equivalent or better Golden Sun Moth habitat values to those of the Birregurra and Ninyuenook properties, to the satisfaction of the department;
- c. address (b) to (h) of condition 12 for each proposed offset site;
- d. specify commitments to deliver activities that implement priority recovery actions consistent with EPBC Act policy statements and papers, National Recovery Plans and as agreed with the relevant Recovery Planning Teams for the Golden Sun Moth;
- e. be consistent with the EPBC Act Environmental Offsets Policy (October 2012); and
- f. be approved by the Minister and then implemented prior to the commencement of construction.

Not Applicable as both offsets were secured prior to construction.

- 15. Within 5 days of the commencement of construction, the person taking the action must advise the department in writing of the actual date of commencement.

Compliant. Notification sent to DoEE by Michael Martin (MAB pers. comm.).

- 16. The person taking the action must maintain accurate records substantiating all activities associated with or relevant to the conditions of approval, including measures taken to implement management plans and make them available upon request to the Department. Such records may be subject to audit by the Department or an independent auditor in accordance with section 458 of the EPBC Act, or used to verify compliance with the conditions of approval. Summaries of audits will be posted on the Department's website. The results of audits may also be publicised through the general media.

Uncertain. While there are records of actions taken within the property how detailed these records are is not available to me.

- 17. Within three months of every 12 month anniversary of the commencement of construction, the person taking the action must publish a report on their website addressing compliance with each of the conditions of this approval, including implementation of any management plans as specified in the conditions. Documentary evidence providing proof of the date of publication and non-compliance with any of the conditions of this approval must be provided to the Department at the same time as the compliance report is published.

Partially Compliant. Monitoring reports for the external offset site at Birregurra are available on the Biosis website. Monitoring reports from the Ninyuenook offset site are available (TfN pers. comm.) and will be sent to me soon. We can then post these on a website.

- 18. Upon the direction of the Minister, the person taking the action must ensure that an independent audit of compliance with the conditions of approval is conducted and a report submitted to the Minister. The independent auditor must be approved by the Minister prior to the commencement of the audit. Audit criteria must be agreed to by the Minister and the audit report must address the criteria to the satisfaction of the Minister.

Not Applicable. No audit request has been received.

19. If the person taking the action wishes to carry out any activity otherwise than in accordance with management plans as specified in the conditions, the person taking the action must submit to the department for the Minister's written approval a revised version of that management plan. The varied activity shall not commence until the Minister has approved the varied management plan in writing. The Minister will not approve a varied management plan unless the revised management plan would result in an equivalent or improved environmental outcome over time. If the Minister approves the revised management plan, that management plan must be implemented in place of the management plan originally approved.

Not Applicable. No variations to the proposed activity have been proposed.

20. If the Minister believes that it is necessary or convenient for the better protection of listed threatened species and ecological communities, the Minister may request that the person taking the action make specified revisions to a management plan specified in the conditions and submit the revised management plan for the Minister's written approval. The person taking the action must comply with any such request. The revised approved management plan must be implemented. Unless the Minister has approved the revised management plan then the person taking the action must continue to implement the management plan originally approved, as specified in the conditions.

Not Applicable. No revisions to any management plan have been requested.

21. Unless otherwise agreed to in writing by the Minister, the person taking the action must provide a copy of each approved management plan, report, strategy, agreement referred to in these conditions of approval to members of the public upon request. Copies must be provided within a reasonable time of the request.

Not Applicable. No copies of any management plan have been requested by the public.