

Draft Report

Targeted Surveys for Golden Sun Moth *Synemon plana* and Striped Legless Lizard *Delma impar*: Bacchus Marsh Development Project, Bacchus Marsh, Victoria

Prepared for

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SUMMARY

Introduction

Ecology and Heritage Partners was commissioned by Bacchus Marsh Developments Pty Ltd to undertake targeted surveys Golden Sun Moth *Synemon plana* and Striped Legless Lizard *Delma impar* at 16 properties that are within the proposed Bacchus Marsh Development Project, Bacchus Marsh, Victoria (the 'study area'). These targeted surveys were undertaken to establish the presence of Golden Sun Moth and Striped Legless Lizard on-site, and address any implications under Commonwealth environmental legislation.

Methods

Golden Sun Moth

Targeted Golden Sun Moth surveys were undertaken on four separate occasions (30 November, 12 and 15 December 2017 and 3 January 2018) during optimal conditions suitable for detecting species. The male generally flies between 11am and 2pm on calm, warm (over 20°C), sunny days, with the species emerging between October and January.

Surveys were carried out by qualified zoologists in areas where potentially suitable habitat for the species exists within the study area. The survey focused on areas of indigenous grassland, namely those areas dominated by Wallaby-grass *Rytidosperma* spp., Kangaroo-grass *Themeda triandra*, Spear-grass *Austrostipa* spp. as well as in areas of Chilean Needle-grass *Nassella* spp. which is a known food source for the species.

Transects were identified and walked and/or driven in any potential habitat present within the study area over a minimum of four separate days. Surveys were conducted in accordance with approved methodology identified within the Biodiversity Precinct Planning Kit and the *Significant impact guidelines for the critically endangered golden sun moth*.

Striped Legless Lizard

Targeted surveys were undertaken to investigate the quality and extent of Striped Legless Lizard habitat within the study area. The surveys were conducted in accordance with the *Environment Protection and Biodiversity Conservation Act 1999 Referral Guidelines for the Vulnerable Striped Legless Lizard, Delma impar*. Tiles were checked on six occasions throughout spring 2017 (28 September, 11 and 20 October, and 6, 17 and 24 November).

In accordance with the referral guidelines for Striped Legless Lizard, 17 tile grids were established within identified 'patches' of habitat, with each consisting of a grid of 5 x 10 terracotta roof tiles (measuring approximately 25 metres x 50 metres), which were checked on weather appropriate days, between 7am and 10am.

Results

Golden Sun Moth

Targeted surveys recorded significant numbers of Golden Sun Moth within the site during the four surveys, particularly on the first survey day, with the study area supporting suitable habitat characteristics. Targeted

surveys were only conducted in appropriate habitat (i.e. not in cropped areas, or areas dominated by the species non-preferred food plants).

In total, 58.725 hectares of confirmed habitat was recorded within the study area, with 41.542 hectares located in Properties 1-15, and a total of 17.183 hectares located in Property 16.

Striped Legless Lizard

Despite the presence of suitable habitat, 17 grids placed in areas representative of the best quality habitat, and targeted surveys undertaken at an appropriate time of year, no Striped Legless Lizards were detected within the study area during the six tile grid checks undertaken. The targeted survey recorded four reptile species: Bougainville's Skink *Lerista bougainvillii*, Delicate Skink *Lampropholis delicata*, Common Bluetongue Lizard *Tiliqua scincoides*, and Eastern Tiger Snake *Notechis scutatus*.

Based on targeted survey results, and the lack of records within the project locality, a population of Striped Legless Lizards are considered unlikely to be present in the study area, or if present, in very low numbers.

Legislative and Policy Implications

Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act - Commonwealth)

Based on the results of the targeted surveys, the proposed action is unlikely to have a significant impact on Striped Legless Lizard. However, in accordance with the EPBC Act-significant impact guidelines for Golden Sun Moth, any proposed subdivision and future development within Properties 1-15 is likely to have a significant impact on the Golden Sun Moth due to potential disturbance to 41.542 hectares of confirmed habitat.

In conjunction with the confirmed presence of one flora species (Spiny Rice-flower) and confirmed presence of one ecological community (Natural Temperate Grassland of the Victorian Volcanic Plain)) listed under the EPBC Act, it is recommended that a referral is prepared to allow the Commonwealth Environment Minister to assess impacts to matters of NES under the EPBC Act once a development plan for the Bacchus Marsh Development Project has been prepared.

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1 INTRODUCTION

1.1 Background

Ecology and Heritage Partners was commissioned by Bacchus Marsh Developments Pty Ltd to undertake targeted surveys at 16 properties that are within the proposed Bacchus Marsh Development Project, Bacchus Marsh, Victoria (the 'study area'). Targeted surveys were undertaken for the following nationally significant fauna species:

- Golden Sun Moth *Synemon plana*; and
- Striped Legless Lizard *Delma impar*.

Ecology and Heritage Partners Pty Ltd completed a detailed ecological assessment within the study area (Ecology and Heritage Partners 2017) and identified suitable habitat for both Golden Sun Moth and Striped Legless Lizard. Targeted surveys were recommended to determine the presence or absence of this species, and where possible to ascertain its distribution and abundance and the extent of the species habitat within the study area.

Targeted surveys were also undertaken for the nationally significant Spiny Rice-flower *Pimelea spinescens* subsp. *spinescens*, with the results of these surveys detailed in the ecological assessment report (Ecology and Heritage Partners 2017).

The following addresses any implications under Commonwealth environmental legislation associated with the proposed development should either of the nationally significant fauna species be identified within the study area.

1.2 Objectives

The objectives of the targeted surveys were to:

- Complete a desktop review and field survey to determine the presence or absence of the target flora and fauna species within the study area;
- Identify known and potential impacts on the target species associated with the proposed subdivision;
- Provide information in relation to relevant implications of Commonwealth and State environmental legislation and policy associated with the proposed activity; and,
- Provide advice on mitigation measures.

1.3 Study Area

The study area covers approximately 430 hectares, and is comprised of 16 properties bound by Gisborne Road to the west, and Bences Road to the east (Table 1) approximately 50 kilometres north-west of

Melbourne's CBD (Figure 1). It should be noted that Property 16 is ultimately proposed to be secured and managed as an offset site, and will not be subject to any proposed development.

Remnant native vegetation in the study area is representative of four EVCs: *Low Rainfall* Plains Grassland (EVC 132_63), Grassy Woodland (EVC 175), Rocky Chenopod Woodland (EVC 64) and Plains Grassy Wetland (EVC 125) (Figure 2). Some remnants of Plains Grassland meet the thresholds that define the nationally significant *Natural Temperate Grasslands of the Victorian Volcanic Plain* (NTGVVP) ecological community (Ecology and Heritage Partners 2017)..

Properties that were considered to support suitable habitat for either Golden Sun Moth or Striped Legless Lizard, and were subject to targeted surveys are indicated in Table 1.

Table 1. Properties within the study area

Property Number *	Address	Title details	Potential Habitat
1	2621 Gisborne Road	Proposed lots 1 and 2 on PS724534Y	SLL
2	Gisborne Road	Lot 1 PS124024	SLL; GSM
3	146 Bences Road	PS124024	-
4	2677 Gisborne Road	Lot 1 TP578035R	SLL; GSM
5	Gisborne Road	Lots 1,2,3&4 TP567257J	SLL; GSM
6	Buckleys Road	Lot 1 on TP958042C	SLL; GSM
7	268 Bences Road	Lot 1 PS125141	SLL
8	139 O'Connell Road	Lots 1&2 TP408175C	SLL
9	332 Bences Road	Lot 2 PS125141	SLL; GSM
10	372 Bences Road	Lot 2 PS432900C	SLL; GSM
11	376 Bences Road	Lot 2 PS411883S	SLL; GSM
12	Lerderderg Park Road	Lot 1 TP97760S	SLL; GSM
13	Lerderderg Park Road	Lot 1 TP111405 (part)	SLL; GSM
14	345 Bences Road	Lot 2 PS139808	SLL
15	295 Bences Road	Lot 1 LP139808	SLL; GSM
16*	289 Bences Road	Allot E, Sec 18\PP3095	SLL; GSM

Note. See Figure 2 for location of properties within the study area. * Property 16 is not proposed for development, and is proposed to be secured and protected as an offset site; GSM – Golden Sun Moth habitat, SLL – Striped Legless Lizard habitat.

According to the Department of Environment, Land, Water and Planning (DELWP) Native Vegetation Information Management (NVIM) Tool (DELWP 2018a), the study area occurs within the Victorian Volcanic Plain, Central Victorian Uplands bioregions. It is located within the jurisdiction of the Port Phillip and Western Port Catchment Management Authority (CMA) and the Moorabool Shire Council municipality.

1.4 Targeted Species

1.4.1 Golden Sun Moth

The Golden Sun Moth is listed as Critically Endangered under the Commonwealth EPBC Act, Threatened under the FFG Act and Critically Endangered on the Advisory List for Threatened Invertebrate Fauna in Victoria (DSE 2009; Plate 1).

The Golden Sun Moth typically occurs in native grassland and grassy woodland habitats dominated by greater than 40% cover of Wallaby-grass *Rytidosperma* spp. (DSE 2004), but may also inhabit areas dominated by Kangaroo Grass *Themeda triandra* (Endersby and Koehler 2006) and introduced grassland dominated by Chilean Needle-grass *Nassella neesiana* and other introduced species (A. Organ pers. obs.). Male flight is typically low, to about one metre above the ground, fast and can be prolonged, but they are generally not recorded flying more than 100 metres from suitable habitat (Clarke and O'Dwyer 1999). The male of this species generally flies between 11am and 3pm on calm, warm (over 20°C), sunny days.

Prior to European settlement, the Golden Sun Moth was widespread and relatively continuous throughout its range, inhabiting grassy open woodlands and grassland, although it now mainly inhabits small isolated sites (DSE 2004). The species is threatened by habitat loss, disturbance and fragmentation due to agricultural expansion and urbanisation. Many populations are isolated and fragmented, impeding the ability of the relatively immobile females to recolonise areas, thereby reducing the likelihood of genetic exchange (DSE 2004). Such populations are therefore vulnerable as there is little likelihood of recolonisation in the event of a local extinction.

The study area supports large expanses of the species preferred habitat (i.e. native and introduced grasslands) throughout the study area. The species' preferred host plants (i.e. Wallaby-grasses *Rytidosperma* spp., Spear-grasses *Austrostipa* spp., and Kangaroo Grass *Themeda triandra*) are scattered throughout much of the site, and occur in highest densities within patches of Plains Grassland (EVC 132). In addition to this, there are scattered infestations throughout the site of the Weed of National Significance, Chilean Needle-grass *Nassella neesiana*, which is known to also provide suitable habitat for the threatened Golden Sun Moth.

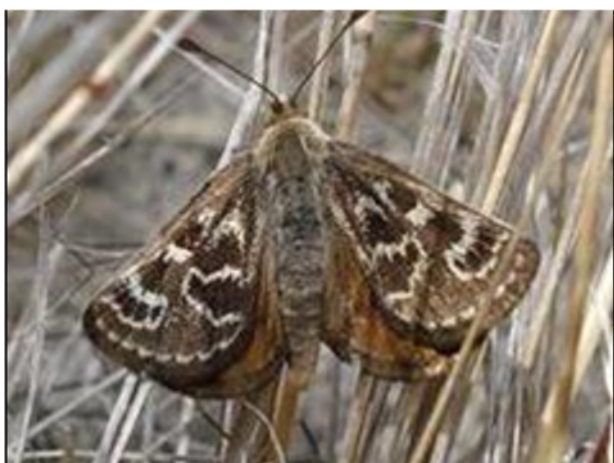


Plate 1. Golden Sun Moth (Ecology and Heritage Partners Pty Ltd)



Plate 2. Striped Legless Lizard (Ecology and Heritage Partners Pty Ltd).

1.4.2 Striped Legless Lizard

The Striped Legless Lizard is listed as Endangered in Victoria and Vulnerable nationally under the Commonwealth EPBC Act (DSE 2013; Plate 2). The species is also listed as a threatened taxon under the Victorian FFG Act. An FFG Act Action Statement (Webster *et al.* 2003) and a National Recovery Plan 1999-2003 (Smith and Robertson 1999) have been developed for the species. A National Recovery Team also exists for this species. Overall the species is of national conservation significance, and is also protected under the Victorian *Wildlife Act 1975*.

The Striped Legless Lizard is restricted to the lowland tussock grassland habitats (Coulson 1990) in temperate south-eastern Australia where the species has a limited and patchy distribution. Since European settlement the distribution of Striped Legless Lizard is believed to have declined and the species is known to have disappeared from many sites. It has been estimated that 95% of Victoria's native lowland grasslands have been grossly altered since European settlement. The major type of grassland known to support Striped Legless Lizard is the Western (Basalt) Plains Grassland community, and the majority of sites in Victoria occur on cracking clay soils with at least some surface rock which provides shelter (Cogger. 1996; Coulson 1995).

A small percentage of the original habitat for Striped Legless Lizard now exists, and therefore this species is thought to probably occur in small, isolated populations because remaining habitat is very limited in area and severely fragmented (Webster *et al.* 2003).

Suitable habitat for Striped Legless Lizard is present in areas of native and introduced grassland throughout the study area, predominantly outside of areas that have been subject to ground disturbance as a result of cropping activities. Dominant exotic species within suitable habitat that may be used by Striped Legless Lizard include Chilean Needle-grass and Serrated Tussock *Nassella trichotoma*.

2 METHODS

2.1 Nomenclature

The names of vertebrate fauna follow the Victorian Biodiversity Atlas (VBA) (DELWP 2018b). Common and scientific names of vascular plants follow both the VBA (DELWP 2018b) as well as the Census of Vascular Plants of Victoria (Walsh and Stajsic 2007). Vegetation community names follow DELWP's EVC benchmarks (DELWP 2018c).

2.2 Targeted Fauna Surveys

2.2.1 Striped Legless Lizard

The survey involved the deployment of artificial refuge structures through the establishment of tile grids in areas of potential habitat within the study area (Figure 3). The intention of establishing a grid of roof tiles is that individuals will use the artificial habitat for shelter, and to assist in thermoregulation.

Artificial refuges provide areas for zoologists to focus search attempts in which tiles are lifted to check for the presence of lizards. The adopted methodology is widely accepted as the primary survey technique for this species, particularly in areas supporting surface rock cover (DSEWPac 2011a, 2011b).

Seventeen rectangular grids of terracotta roof tiles, 5 x 10 tiles (25 metres x 50 metres), were established in identified patches of suitable habitat (i.e. areas supporting a combination of preferred habitat features, including tussock-forming grasses, surface rocks and cracking soils) (Figure 3). Surveys were undertaken in accordance with the *Survey Guidelines for Australia's Threatened Reptiles* (DSEWPac 2011b) and included:

- 850 grooved terracotta roof tiles (17 grids arranged in 5 x 10 rectangular grids) were placed in areas of suitable habitat within the study area (Figure 3). Tiles were laid in areas that have the highest likelihood of supporting Striped Legless Lizard;
- Tile grids were laid on 3 and 4 August 2017;
- Tiles were checked during cool weather conditions (i.e. less than 20 degrees Celsius where possible) between 7.00am and 10.00am; and
- Tile grids were checked on six occasions between 28 September and 24 November 2017.

2.2.2 Golden Sun Moth

Areas of suitable habitat were traversed by qualified zoologists over four separate days during the known flight season (i.e. November to early January). In particular, surveys focussed on areas supporting suitable host plants including native Wallaby Grass and the noxious weed Chilean Needle Grass. Surveys were undertaken at a time which is considered suitable for detecting the Golden Sun Moth (i.e. when adult males are flying), and when the species was observed flying at known reference site (Avalon, Epping, Bacchus Marsh).

Targeted surveys for Golden Sun Moth were undertaken at the study area on four separate occasions on 30 November, 12 and 15 December 2017 and 3 January 2018. Survey procedures were in accordance with the

Significant impact guidelines for the critically endangered golden sun moth (DEWHA 2009), with the following tasks undertaken:

- A habitat assessment was completed detailing information on habitat quality, biomass levels, presence of weeds and floristic diversity (Ecology and Heritage Partners 2017);
- Surveys were conducted by ecologists experienced in the detection and identification of Golden Sun Moth;
- The study area was surveyed on four separate occasions, with at least one week between surveys where possible;
- Surveys took place during the species' flight season (generally described as late October to early January). Moths were confirmed flying at known, nearby reference sites prior to undertaking each survey;
- Surveys were undertaken during weather conditions suitable for detecting the species (i.e. between 10am and 3pm on warm (over 20°C by 10am) days with minimal cloud cover and still conditions); and
- Surveys were conducted by qualified zoologists walking (or driving, where access was permitted) 10 to 50 meter wide parallel transects across all areas of suitable habitat.

2.3 Assessment Qualifications and Limitations

Data and information held within the ecological databases and mapping programs reviewed as part of the desktop assessment are unlikely to represent all flora and fauna observations that have occurred within, and surrounding, the study area. Therefore, it is important to acknowledge that the number of documented records for the target species within and surrounding the study area is not necessarily a reflection of population size or density. Furthermore, a documented record may indicate a species' presence in an area at a given point in time, but it generally does not offer information about how a species is making use of an area (e.g. foraging, dispersing, reintroducing, etc.). This can be important information when determining the potential impact of a proposed action on a threatened species.

Field assessments were undertaken during optimal seasons for the identification of the targeted flora and fauna species. Mowing and slashing of the study area was halted prior commencement of all targeted surveys, allowing native vegetation to recover, and habitat quality to improve.

Based on available information, the Golden Sun Moth flight season commenced at a majority of sites in early-mid November 2017, with moths known to be flying in early-January 2018.

It is considered that the survey effort, timing and results presented meet the objectives of the surveys and provide sufficient information to support the approvals processes.

All fieldwork was carried out under the appropriate licences, including a Research Permit (10006893) and Scientific Procedures Fieldwork Licence (SPFL 410) issued by DELWP under the Victorian *Wildlife Act 1975*, and an Animal Research permit issued by the Wildlife and Small Institutions Animal Ethics Committee (22.13).

3 RESULTS

3.1 Targeted Fauna Survey

3.1.1 Golden Sun Moth

The VBA contains over 300 records of the Golden Sun Moth within 10 kilometres of the study area (DELWP 2018b), most of which were recorded by Ecology and Heritage Partners at a nearby property in 2013 (Ecology and Heritage Partners 2013). This site was also used as a reference site prior to undertaking targeted surveys within the study area.

Targeted surveys recorded significant numbers of Golden Sun Moth within the site during the four surveys, particularly on the first survey day (Table 2), with the study area supporting suitable habitat characteristics. Due to the initial survey observing multiple hundreds of Golden Sun Moth within some properties, these properties were omitted from further assessment during subsequent surveys (Figure 4). Targeted surveys were only conducted in appropriate habitat (i.e. not in cropped areas, or areas dominated by the species non-preferred food plants).

In total, 58.725 hectares of confirmed habitat was recorded within the study area, with 41.542 hectares located in Properties 1-15, and a total of 17.183 hectares located in Property 16 (Figure 4; Table 3).

Table 2 Golden Sun Moth survey results¹

Date	Survey times	Temperature (°C)	Wind (km/hr) Direction	Cloud cover (%)	Days since rain	Properties Surveyed	No. GSM
30/11/2017	10:00 – 15:00	34 - 39	31 N	60	2+	All	>200
12/12/2017	12:00 – 17:00	24 – 27	14 SW	5	2+	2*, 5, 6-13, 15	2
18/12/2017	10:00 – 17:00	22 –	11 SE	30	2+	2*, 5, 6-13, 15	0
04/01/2018	11:00 – 15:00	20 – 21	26 SSE	40	2+	2*, 5, 6-13, 15	0

* surveyed area was outside, directly adjacent to property 2.

Table 3. Area of Confirmed Golden Sun Moth habitat

Confirmed GSM Habitat	Property 1-15	Property 16	Total
Area (hectares)	41.542	17.183	58.725

¹ Bureau of Meteorology (BOM) weather for Melbourne Airport, Victoria (Station 086282 – Dec 2017/Jan 2018), Australian Government, ACT.

3.1.2 Striped Legless Lizard

The VBA does not contain records of Striped Legless Lizard within 10 kilometres of the study area (DELWP 201b8b), although there is an unverified record located immediately south of the Werribee River, approximately three kilometres south of the site (ALA 2018).

Despite the presence of suitable habitat, 17 grids placed in areas representative of the best quality habitat (Figure 3; Plate 3), and targeted surveys undertaken at an appropriate time of year, no Striped Legless Lizards were detected within the study area during the six tile grid checks undertaken. The targeted survey recorded an additional four reptile species: Bougainville's Skink *Lerista bougainvillii*, Delicate Skink *Lampropholis delicata* (Plate 4), Common Bluetongue Lizard *Tiliqua scincoides*, and Eastern Tiger Snake *Notechis scutatus*. A summary of the survey results is provided in Table 4.

Based on targeted survey results, and the lack of records within the project locality, a population of Striped Legless Lizards are considered unlikely to be present in the study area, or if present, in very low numbers.



Plate 3. Tile grid setup within the study area (Ecology and Heritage Partners Pty Ltd 04/08/2017).



Plate 4. Delicate Skink *Lampropholis delicata* (Ecology and Heritage Partners Pty Ltd 25/10/2017).

Table 4. Summary of Striped Legless Lizard survey results

Check/ Date	Weather Conditions *				SLL	Bougainville's Skink	Delicate Skink	Common Blue-tongue	Eastern Tiger Snake	Unidentified skink
	Temp (°C)	Relative Humidity (%)	Above Tile Temp C°	Under Tile Temp C°						
1 - 28/09/17	14	73	11.9	9.9	-	TG9 x 1	-	-	-	TG1 x 1 TG6 x 1 TG9 x 1
2 - 11/10/17	17.1	35	14.6	13.5	-	TG 16 x 1	TG9 x 2	-	-	TG14 x 1
3 - 20/10/17	12	66	12.7	11.4	-	TG16 x 2 TG1 x 1	-	-	-	TG9 x 1

Check/ Date	Weather Conditions *				SLL	Bougainville's Skink	Delicate Skink	Common Blue-tongue	Eastern Tiger Snake	Unidentified skink
	Temp (°C)	Relative Humidity (%)	Above Tile Temp C°	Under Tile Temp C°						
4 - 6/11/17	10.7	75	11.1	9.8	-	TG17 x 3 TG3 x 1 TG7 x 1	-	TG14 x 1	TG8 x 1	-
5 - 17/11/17	18	88	23.3	21.0	-	TG16 x 1	-	-	-	-
6 - 24/11/17	19	69	18.9	19.8	-	TG9 x 2 TG16 x 1	-	-	-	-

Note: * Beginning of tile check; SLL – Striped Legless Lizard; TG = Tile Grid

4 LEGISLATIVE IMPLICATIONS

The implications of the project with regards to relevant environmental legislation and policy relating to targeted fauna is outlined below.

4.1 *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth)

The EPBC Act establishes a Commonwealth process for the assessment of proposed actions (i.e. project, development, undertaking, activity, or series of activities) that are likely to have a significant impact on matters of national environmental significance (NES), or on Commonwealth land. An action, unless otherwise exempt, requires approval from the Commonwealth Environment Minister if it is considered likely to have an impact on any matters of National Environmental Significance (NES).

For species listed under the EPBC Act, a 'significant impact' is defined as an impact which is important, notable, or of consequence, having regard to its context or intensity (DoE 2013). Whether or not an action is likely to have a significant impact depends upon the sensitivity, value, and quality of the environment which is affected, and upon the intensity, duration, magnitude and geographic extent of the impacts. Importantly, for a 'significant impact' to be 'likely', it is not necessary for a significant impact to have a greater than 50% chance of happening; it is sufficient if a significant impact on the environment is a real or not remote chance or possibility (DoE 2013).

4.1.1 Implications

Striped Legless Lizard

In accordance with the EPBC Act referral guidelines for Striped Legless Lizard (DSEWPac 2011b), any proposed subdivision and future development is not likely to have a significant impact to Striped Legless Lizard and associated habitat, as no Striped Legless Lizard were found on site. As such, there is a low likelihood that the species occurs within the study area, or will be significantly impacted by the proposed action.

Golden Sun Moth

In accordance with the EPBC Act-significant impact guidelines for Golden Sun Moth (DEWHA 2009), any proposed subdivision and future development within Properties 1-15 is likely to have a significant impact on the Golden Sun Moth due to potential disturbance to 41.542 hectares of confirmed habitat.

Summary

There is confirmed habitat for one fauna species (Golden Sun Moth), confirmed presence of one flora species (Spiny Rice-flower) and confirmed presence of one ecological community (Natural Temperate Grassland of the Victorian Volcanic Plain) listed under the EPBC Act. Once a development plan for the Bacchus Marsh Development Project has been prepared, it is recommended that a referral is prepared to allow the Commonwealth Environment Minister to assess impacts to matters of NES under the EPBC Act.

4.2 Other Legislation

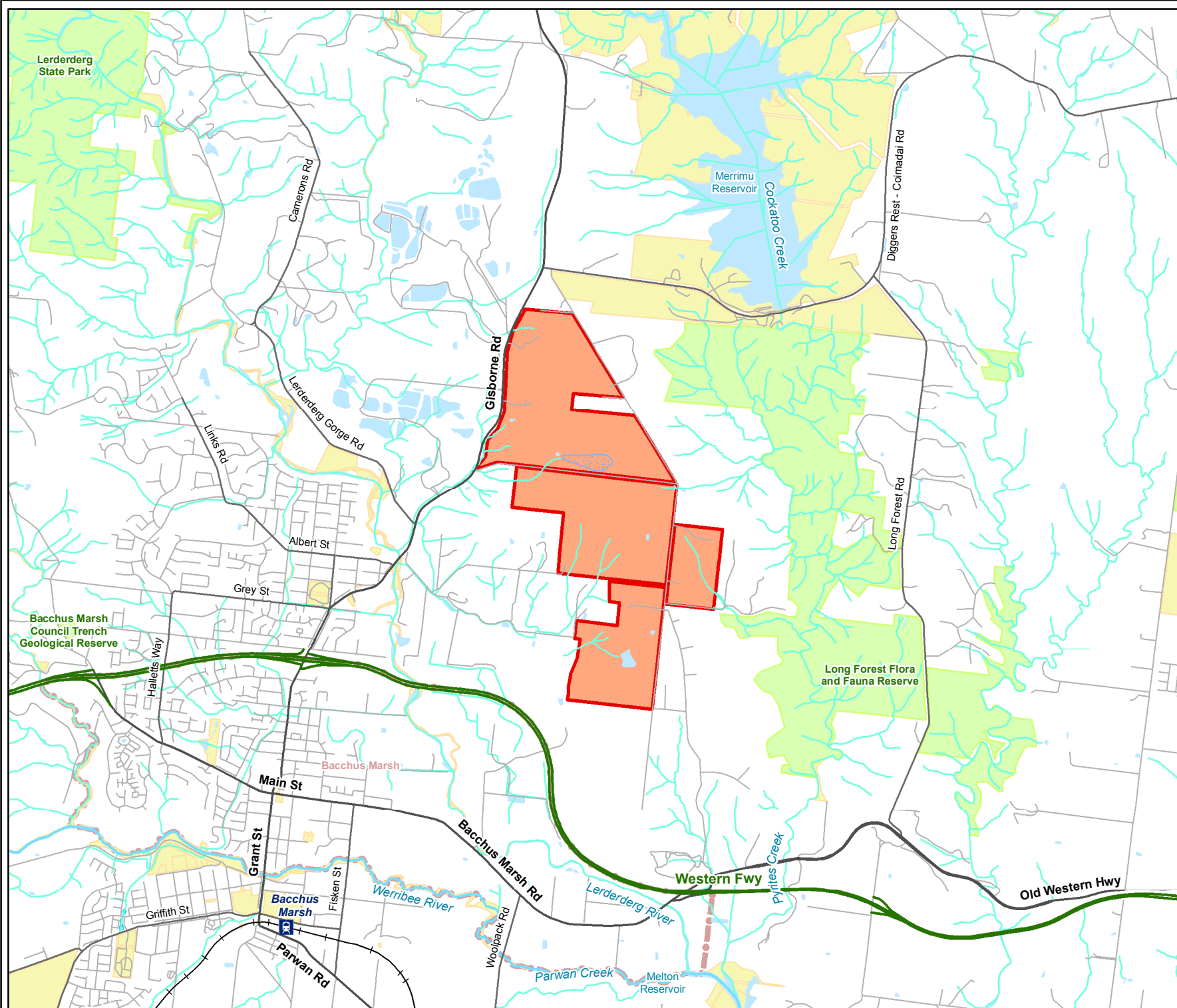
Implications relating to other relevant legislation and policy were identified within the Biodiversity Assessment report (Ecology and Heritage Partners 2018) and include:

- *Flora and Fauna Guarantee Act 1988;*
- *Planning and Environment Act 1987;*
- *Wildlife Act 1975* and *Wildlife Regulations 2013;* and,
- *Catchment and Land Protection Act 1994.*

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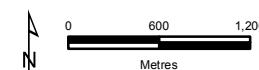
Legend

- Study Area
- Railway
- Freeway
- Major Road
- Collector Road
- Minor Road
- Minor Watercourse
- Major Watercourse
- Permanent Waterbody
- Land Subject to Inundation
- Wetland/Swamp
- Parks and Reserves
- Crown Land
- Localities



Figure 1

Location of the study area
*Targeted Fauna Surveys for
 15 properties at Bences Road,
 Bacchus Marsh*




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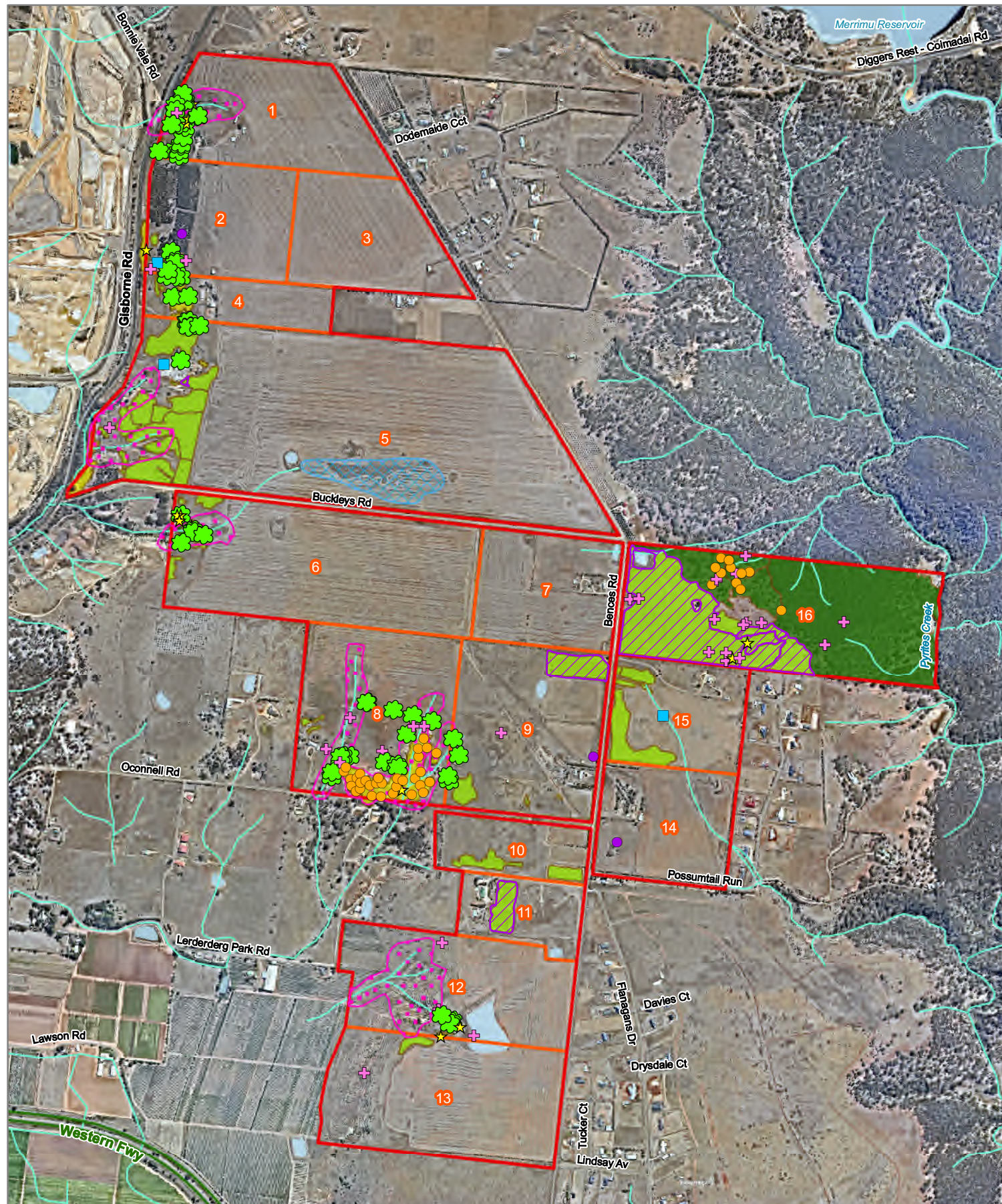


Figure 2 Overview
Ecological features
Targeted Fauna
Surveys for 15
properties at Bences
Road,
Bacchus Marsh

Legend

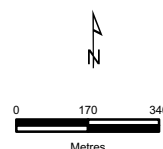
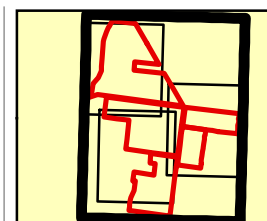
- Study Area
- Areas of erosion
- Scattered Tree
- LOT in Patch
- ★ VROT
- Planted tree
- + Noxious weed
- Waterbody

Ecological Vegetation Classes

- Grassy Woodland EVC 175
- Plains Grassland EVC 132
- Plains Grassy Wetland EVC 125
- Rocky Chenopod Woodland EVC 64
- Current Wetland

EPBC listed vegetation community

- Natural Temperate Grassland of the Victorian Volcanic Plain



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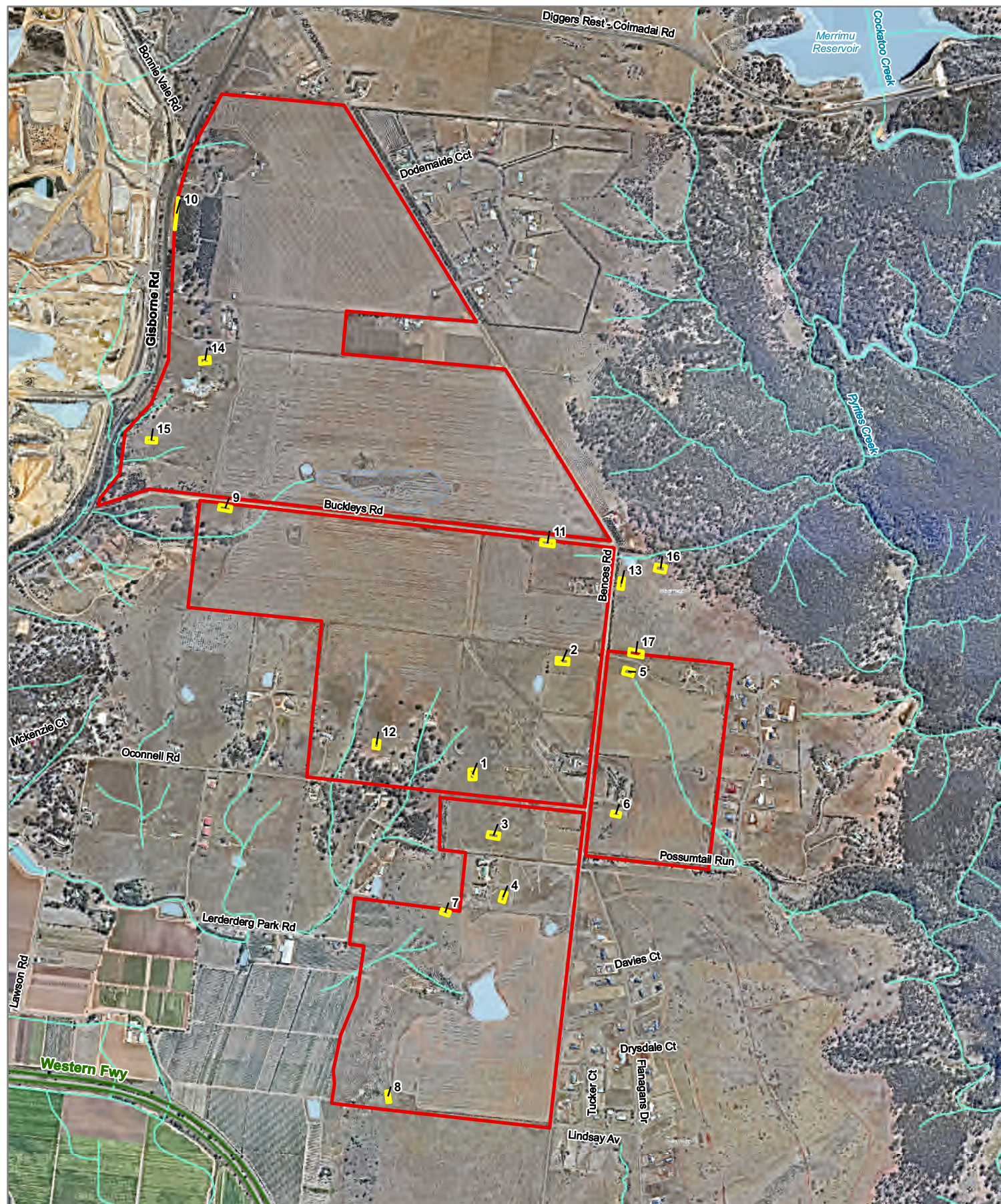
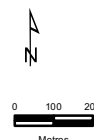
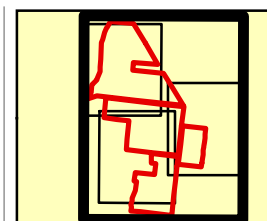


Figure 3 Overview
Striped Legless Lizard
Targeted Survey
 Targeted Fauna Surveys for
 15 properties at Bences
 Road,
 Bacchus Marsh

Legend

- Study Area
- Tile Grid



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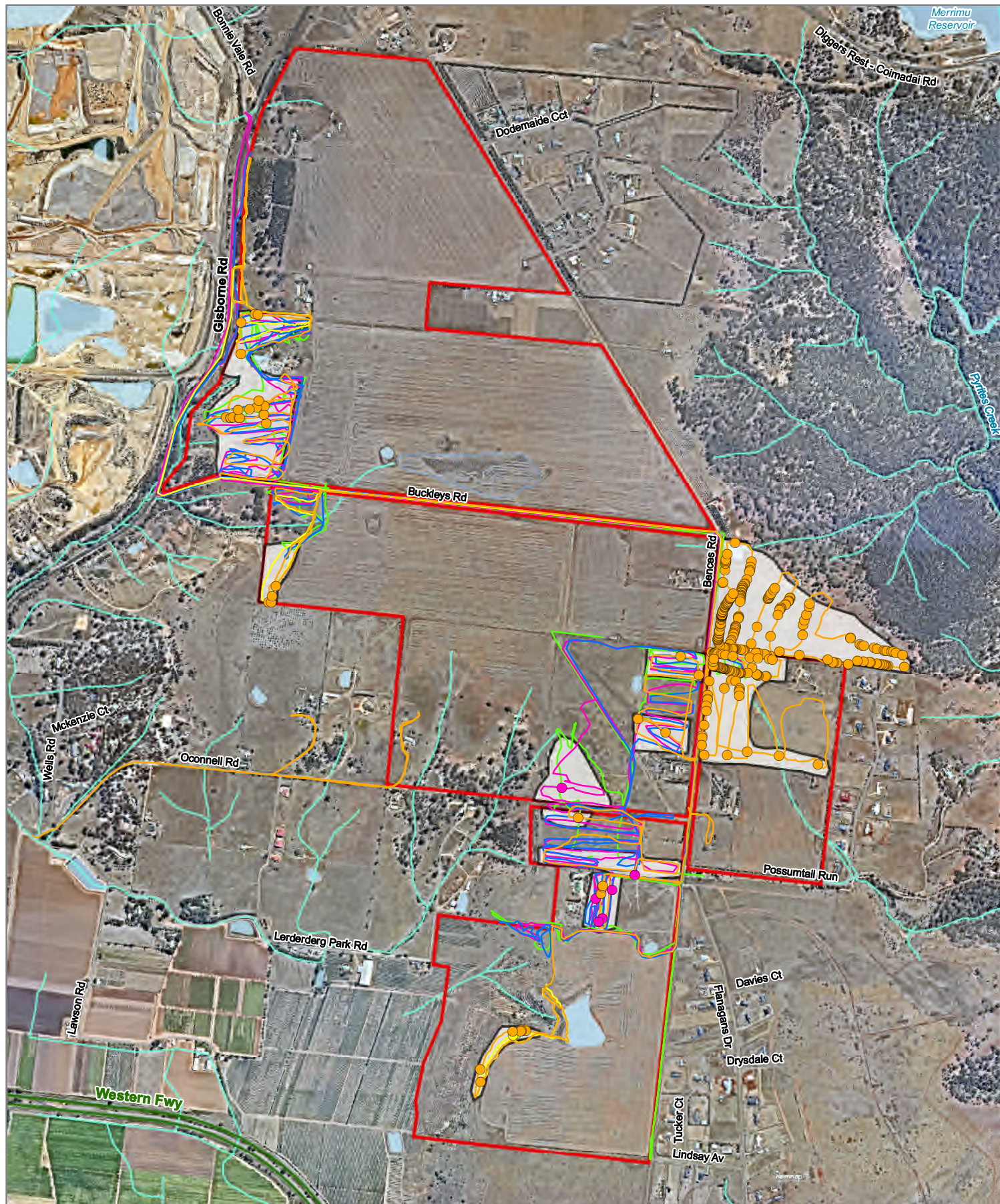


Figure 4
Golden Sun Moth
Survey Results
Bacchus Marsh
Development Project

Legend

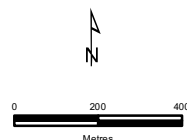
- Study Area
- GSM Suitable Habitat

GSM Records:

- 30/11/17 (a)
- 30/11/17 (b)
- 12/12/17

Survey GPS Tracks:

- 30/11/17 (a)
- 30/11/17 (b)
- 12/12/17
- 18/12/17
- 04/01/18



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9198_Fig04_GSM_SurvResults 20/02/2018 Iroy