

Sievers Lane, Glenhope:  
Targeted Golden Sun Moth survey

DRAFT REPORT

Prepared for Satterley Property Group

24 March 2020

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# 1. Introduction

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## 1.1 Project background

Biosis Pty Ltd was commissioned by Satterley Property Group (herein after referred to as 'Satterley') to undertake targeted surveys for the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) listed Golden Sun Moth *Synemon plana* (GSM) within a property that has been identified as one of the potential offset sites for GSM impacts associated with the Lindum Vale residential development at 1960 and 2040 Mickleham Road, Mickleham (Referral 2015/7516).

The study area is located at one of the potential offset sites for the development at Sievers Lane in Glenhope, which is approximately 40 kilometres south of Ballarat and 107 kilometres north of Melbourne central business district) (Figure 1). It encompasses 45.1 hectares of private land (Figure 1) and is currently zoned Farming Zone (FZ). A bushfire management overlay (BMO) and a salinity management overlay (SMO) cover the southern part of the site and an environmental significance overlay (ESO2) covers the entire site.

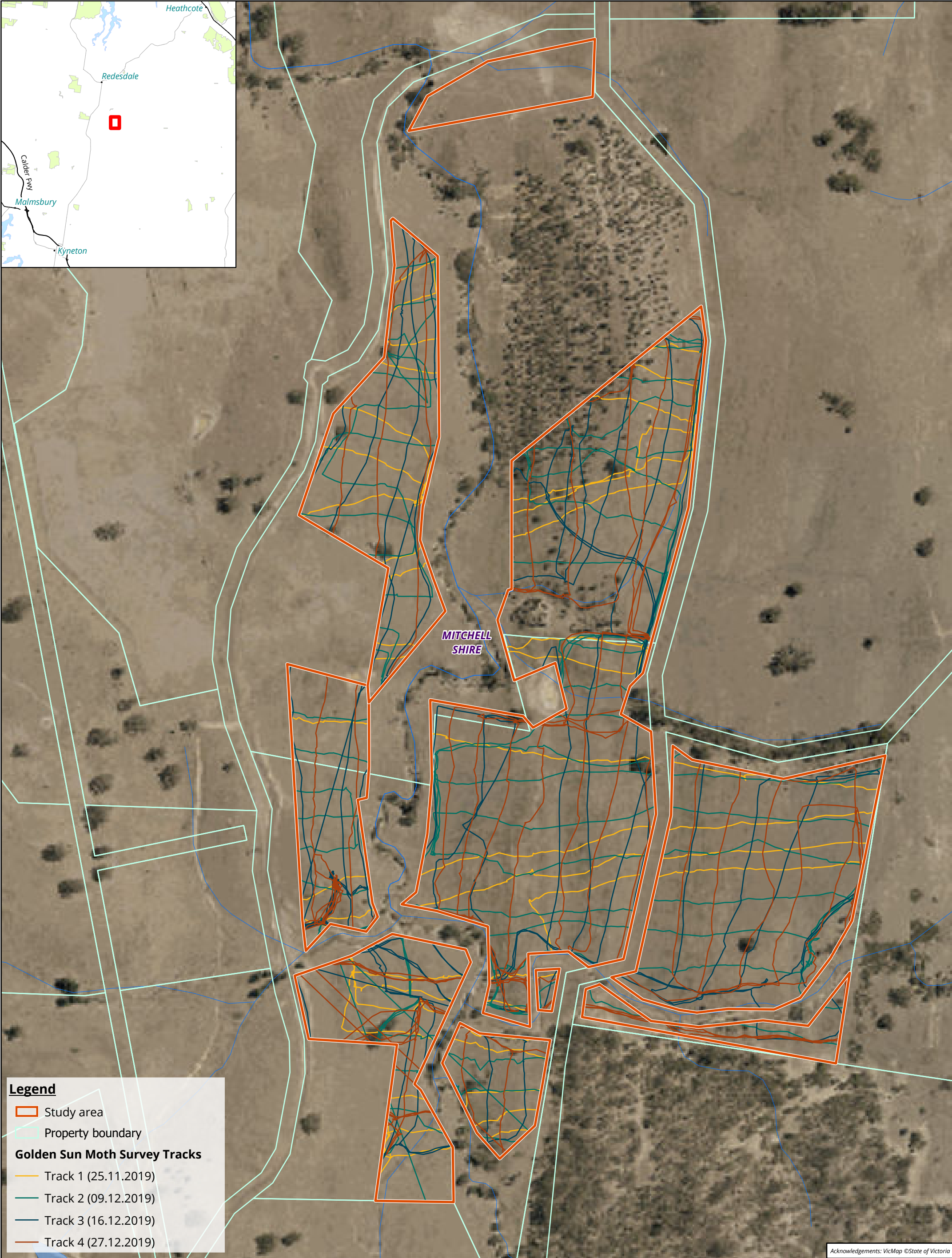
A previous biodiversity assessment identified potential GSM habitat on the subject land and recommended targeted surveys for this species (Biosis 2018).

This report presents the results of targeted surveys for GSM during the 2019-2020 survey season. The survey was conducted to confirm the suitability of the property as a potential offset site for EPBC Act offset requirements associated with GSM. The findings of this assessment will be used to inform the development of the Sievers Lane, Glenhope: Golden Sun Moth Offset Management Plan (Biosis 2020) for Satterley.

## 1.2 Objectives

The objectives of the GSM surveys are to:

- Determine the presence/absence of GSM in the study area
- Record the location and number of any GSM recorded
- Provide a summary of all GSM observations within the study area
- Present the results of the survey program, weather conditions on survey days, survey methods and habitat characteristics of the study area
- To inform the development of the Sievers Lane, Glenhope: Golden Sun Moth Offset Management Plan (Biosis 2020) for Satterley.



**Figure 1 Golden Sun Moth survey effort, 2019/2020 survey season, Sievers Lane, Glenhope, Victoria**



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## 2. Methods

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### 2.1 Golden Sun Moth survey

Targeted surveys were undertaken during the 2019 flight season for GSM. As the timing of the flight season varies annually and geographically, commencement of the flight season needed to be determined before surveys could be undertaken.

#### 1.1.1 Determining flight season commencement

The best indicator of the key survey period for GSM is the presence of flying males at known local sites. Pre-season checks were undertaken by Biosis and other ecological consultants at various known sites (reference sites) around Melbourne from late October, to collaboratively determine the commencement of the GSM flight season for 2019. GSM began being reliably recorded flying at a known reference site (Broadmeadow Valley park) from 20 November 2019.

#### 1.1.2 Targeted surveys

Surveys were undertaken in accordance with the *Significant Impact Guidelines for the Critically Endangered Golden Sun Moth* (DEWHA 2009).

Areas identified as potential GSM habitat in the subject area were surveyed. Survey was undertaken on 25 November, and 9, 16 and 27 December 2019. The surveys were spaced approximately one week apart to allow for variations in emergence patterns. Surveys took place when conditions were suitable for male flight (generally >20°C, bright, clear days, full sun, absence of rain and wind other than a light breeze) between 10:00 hrs and 15:00 hrs (see Table 1 for weather data for days on which survey was undertaken).

The site was surveyed systematically by a qualified and experienced observer walking the site in a series of transects spaced approximately 50 metres apart. Tracks were recorded using a Garmin GPS or ArcGIS Runtime SDK Tracker App on mobile or tablet devices (Figure 1).

A site condition assessment was undertaken on 16 August 2018 by Stephen Mueck (accredited DELWP vegetation quality assessor HH173 – current until 19/4/2020), to quantify the extent and condition of GSM habitat on the site (Biosis 2018).

### 2.2 Weather Conditions

Weather conditions, including temperature, humidity and wind speed were measured on site using a Kestrel Weather Meter (Model 4000). Weather data collected on site is provided in Table 1.

### 2.3 Permits

Biosis undertakes flora and fauna assessments under the following permits and approvals:

- Research Permit/Management Authorisation and Permit to Take Protected Flora & Protected Fish issued by DELWP under the *Wildlife Act 1975*, *Flora and Fauna Guarantee Act 1988* and *National Parks Act 1975* (Permit number 10008711).
- Approvals 30.17 and 19.18 from the Wildlife and Small Institutions Animal Ethics Committee.

All GSM records will be submitted to DELWP for incorporation into the Victorian Biodiversity Atlas, in accordance with permit conditions.

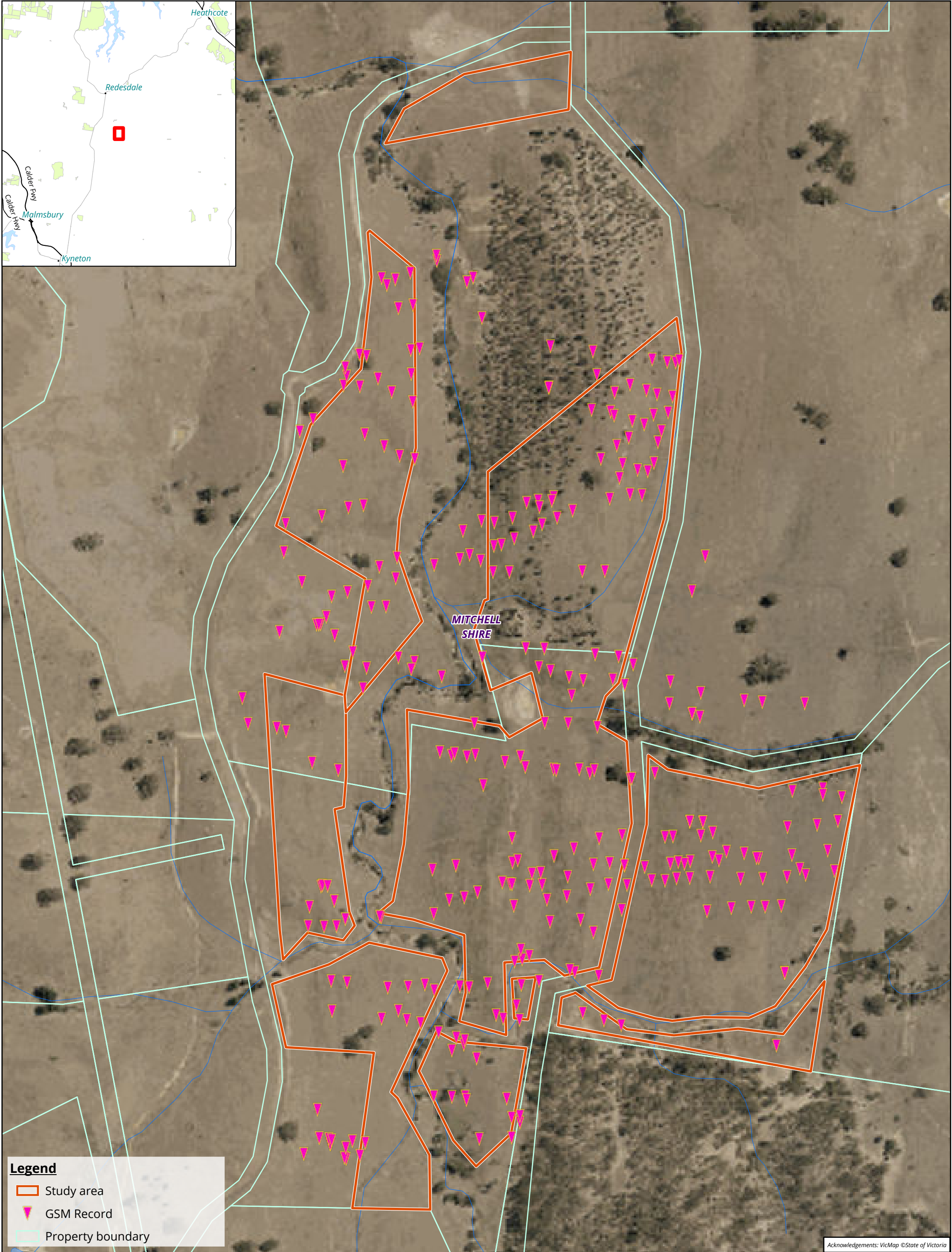
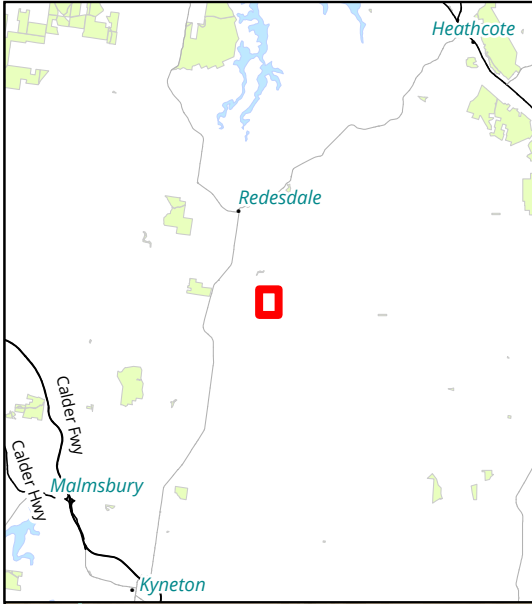


## 2.4 Qualifications

The difficulty in determining presence/absence of GSM within a given area is well documented, and it is known that emergence patterns in this species can vary markedly within and between seasons (Gibson & New 2007).

However, to account for the difficulties associated with GSM surveys to the greatest extent possible, surveys were undertaken on days within the confirmed flight season and on days when GSM were observed flying at the site. For further information regarding the limitations associated with GSM surveys see Gibson and New (2007).

The current GSM assessment was conducted in season, which is an optimal time for surveys. The targeted surveys undertaken were sufficient to assess the current status of the species within the subject area. All surveys were conducted at the appropriate time and during suitable conditions when GSM were flying at the site.

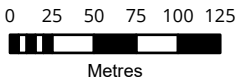


**Legend**

- Study area
- GSM Record
- Property boundary

Acknowledgements: VicMap ©State of Victoria

**Figure 2 Golden Sun Moth (GSM) survey records, 2019/2020 survey season, Sievers Lane, Glenhope, Victoria**



Scale 1:4,500 @A3  
Coordinate system: GDA 1994 VICGRID94

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### 3. Results and Discussion

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The site supports grazed grassland comprising native and introduced grass species, some of which are known or suspected GSM larval food plants. While some areas of groundcover vegetation observed would satisfy the Victorian definition of native vegetation, the site was generally dominated by introduced annual and perennial grasses such as Brown-top Bent *Agrostis capillaris*, Oats *Avena* spp., Bromes *Bromus* spp., Fescue *Vulpia* spp., Rye-grass *Lolium* spp., and Toowoomba Canary-grass *Phalaris aquatica*. However, native grasses were also locally common and included known GSM food plants such as Spear-grasses *Austrostipa* spp. and Wallaby-grasses *Rytidosperma* spp.

GSM were observed during three out of the four surveys undertaken as part of this assessment. A total of 617 GSM were recorded over four survey days (470, 136, 11, 0) (Table 1, Figure 2). This provides a density of 13.68 animals observed per hectare over four surveys, according to an agreed protocol with the Department of Agriculture, Water and the Environment (DAWE).

The survey results indicate the presence of a widespread and significant population of the species. The surveys were undertaken at appropriate times and during suitable conditions and on days when GSM were flying at other sites around Melbourne and Geelong. Therefore, no further survey or assessment is required for this species.

The results of this assessment will be used to inform the GSM Offset Management Plan and confirm the suitability of the property at Sievers Lane Glenhope as one of the potential offset sites for EPBC Act offset requirements to manage GSM impacts associated with the Lindum Vale development

**Table 1 GSM survey details**

Date	Time Start	Time Finish	Observer initials	Godlen Sun Moth observed on site?	Number of moths observed	Temp (°C)	Cloud cover (%)	Wind direction	Average wind speed (km/hr)	Ground conditions	Humidity (%)	Reference site
<b>25/11/2019</b>	10:44	13:39	KMC, ERB	Yes	470	23.3 - 27.9	20 - 100	N - NW	9 - 11	Dry	27 - 15	Known from site
<b>9/12/2019</b>	10:44	14:02	ERB, JF, ED	Yes	136	28.8 - 36.7	10 - 15	NW - N	12 - 5.5	Dry	22 - 18	Known from site
<b>16/12/2019</b>	10:21	12:28	ERB, MLH, ROB, FB	Yes	11	23.6 - 26.5	0	S	2.5 - 2	Dry	41.6 - 34.4	Known from site
<b>27/12/2019</b>	10:29	12:56	JF, FB, LW	No	0	27.3 - 35	0	N - NE	10 - 7	Dry	33.4 - 25.3	Known from site

## References

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Gibson L & New TR 2007. 'Problems in studying populations of the golden sun-moth, *Synemon plana* (Lepidoptera: Castniidae), in south-eastern Australia', *Journal of Insect Conservation*, 11, 3: 309–313