



235 Muncktons Lane, Glenaroua: Targeted Golden Sun Moth survey

Final Report

Prepared for Satterley Property Group

24 March 2020

Biosis offices

NEW SOUTH WALES

Albury

Phone: (02) 6069 9200
Email: albury@biosis.com.au

Newcastle

Phone: (02) 4911 4040
Email: newcastle@biosis.com.au

Sydney

Phone: (02) 9101 8700
Email: sydney@biosis.com.au

Western Sydney

Phone: (02) 9101 8700
Email: westernsydneyoffice@biosis.com.au

Wollongong

Phone: (02) 4201 1090
Email: wollongong@biosis.com.au

VICTORIA

Ballarat

Phone: (03) 5304 4250
Email: ballarat@biosis.com.au

Melbourne (Head Office)

Phone: (03) 8686 4800
Email: melbourne@biosis.com.au

Wangaratta

Phone: (03) 5718 6900
Email: wangaratta@biosis.com.au

Document information

Report to: Satterley Property Group

Prepared by: Matt Jones

Biosis project no.: 31287

File name: 31287.GSM.Glenaroua.DFT01.20200122.docx

Citation: Biosis 2020. 235 Muncktons Lane, Glenaroua: Targeted Golden Sun Moth Survey. Report for Satterley Property Group. Authors: Jones M, Biosis Pty Ltd, Melbourne. Project no 31287.

Document control

Version	Internal reviewer	Date issued
Draft version 01	SGM	24/03/2020
Final version 01	SGM	26/03/2020

Acknowledgements

Biosis acknowledges the contribution of the following people and organisations in undertaking this study:

- Satterley Property Group: Andrew Jones
- Department of Environment, Land, Water and Planning for access to the Victorian Biodiversity Atlas and Native Vegetation Information Tools

Biosis staff involved in this project were:

- Erin Baldwin Caitlin Potts, Samantha Barron & Jack Fursdon (assistance in the field)
- Jason Prasad and Lachlan Milne (mapping)

© Biosis Pty Ltd

This document is and shall remain the property of Biosis Pty Ltd. The document may only be used for the purposes for which it was commissioned and in accordance with the Terms of the Engagement for the commission. Unauthorised use of this document in any form whatsoever is prohibited.

Disclaimer:

Biosis Pty Ltd has completed this assessment in accordance with the relevant federal, state and local legislation and current industry best practice. The company accepts no liability for any damages or loss incurred as a result of reliance placed upon the report content or for any purpose other than that for which it was intended.

Contents

1. Introduction	1
1.1 Project background	1
1.2 Objectives	1
2. Methods	3
2.1 Golden Sun Moth survey.....	3
2.2 Weather Conditions	3
2.3 Permits	3
2.4 Qualifications	4
3. Results and Discussion	6

Tables

Table 1 Golden Sun Moth survey details	7
--	---

Figures

Figure 1 Location of the study area, Victoria, and GSM survey effort	2
Figure 2 GSM survey records.....	5

1. Introduction

1.1 Project background

Biosis Pty Ltd was commissioned by Satterley Property Group to undertake targeted survey for the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) listed Golden Sun Moth (GSM) *Synemon plana*. A property at Glenaroua has been identified as one of the potential offset sites for impacts to GSM associated with the Lindum Vale residential development at 1960 and 2040 Mickleham Road, Mickleham.

The study area is located at one of the offset sites for the development at 235 Muncktons Lane, Glenaroua approximately 12 kilometres north-west of Broadford and approximately 75 kilometres north of the Melbourne central business district (Figure 1). It encompasses 121.1 hectares of private land (Figure 1). It is currently zoned within the Farming Zone, has a bushfire management overlay (BMO) and an erosion management overlay (EMO).

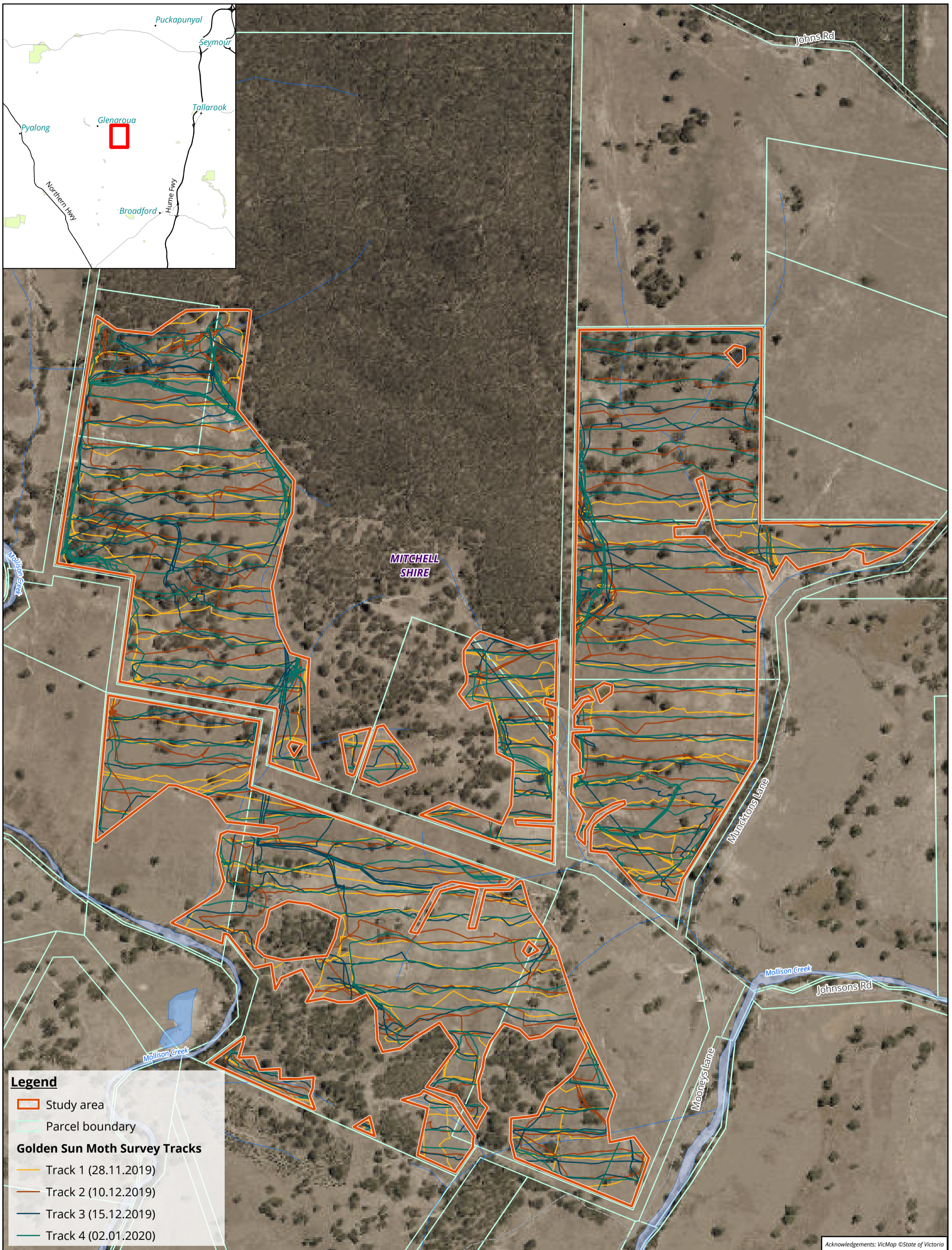
Previous biodiversity assessments identified potential Golden Sun Moth habitat on the subject land and recommended targeted surveys for this species (Biosis 2018, 2020).

This report presents the results of targeted survey 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 235 Muncktons Lane, Glenaroua: Golden Sun Moth Offset Management Plan (Biosis 2020) for Satterley.

1.2 Objectives

The objectives of the Golden Sun Moth survey 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 235 Muncktons Lane, Glenaroua: Golden Sun Moth Offset Management Plan (Biosis 2020) for Satterley.



Legend

- ▭ Study area
- ▭ Parcel boundary

Golden Sun Moth Survey Tracks

- ▬ Track 1 (28.11.2019)
- ▬ Track 2 (10.12.2019)
- ▬ Track 3 (15.12.2019)
- ▬ Track 4 (02.01.2020)

Figure 1 Golden Sun Moth survey effort, 2019/2020 survey season, Glenaroua



Acknowledgements: VicMap ©State of Victoria

0 100 200 300 400
Metres
Scale 1:7,000 @A3
Coordinate system: GDA 1994 VICGRID94

Layout: 31287_F1_GSM_Tracks_Glenaroua
Matter: 31287, Date: 11/03/2020 2:20 PM
Checked by: MJ, Drawn by: JSP, Last edited by: jprasad
Location: Q:\Vic Data\NATS\GSM\GSM_Biosis_DataMgt\GSM_Biosis_DataMgt.aprx

2. Methods

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 a survey 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 determine the commencement of the GSM flight season for 2019-20. GSM began being reliably recorded flying at nearby reference sites (Wallan) from 20 November 2019.

1.1.2 Targeted survey

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 Biosis (2020) were surveyed. Surveys were undertaken on 28 November, 10 and 15 December 2019 and 2 January 2020. 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.

General habitat characteristics of the study area were recorded during GSM survey.

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 survey to the greatest extent possible, surveys were undertaken on days within the confirmed flight season and on days when GSM were observed flying at reference sites around Melbourne. For further information regarding the limitations associated with GSM surveys see Gibson and New (2007).

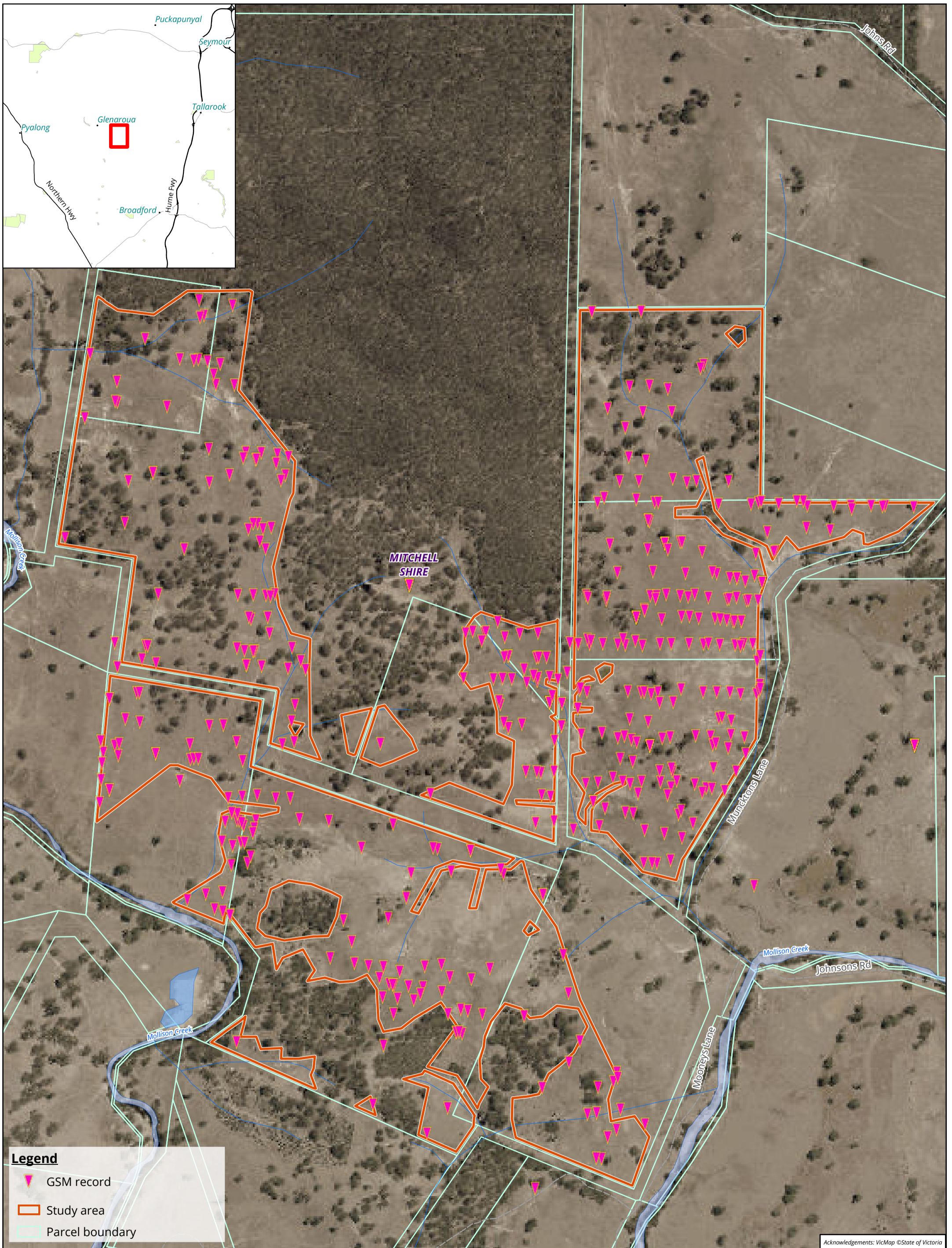


Figure 2 Golden Sun Moth (GSM) survey records, 2019/2020 survey season, Glenaroua



0 100 200 300 400
 Metres
 Scale 1:7,000 @A3
 Coordinate system: GDA 1994 VICGRID94
 Layout: 31287_F2_GSM_Records_Glenaroua
 Matter: 31287, Date: 11/03/2020 1:54 PM
 Checked by: MJ, Drawn by: JSP, Last edited by: jprasad
 Location: Q:\Vic Data\NATS\GSM\GSM_Biosis_DataMgt\GSM_Biosis_DataMgt.aprx

3. Results and Discussion

DELWP mapping of ecological vegetation classes (EVCs) indicates the pre-1750 vegetation of the site consisted of Grassy Woodland (EVC 175) with some smaller areas identified as Heathy Dry Forest (EVC 20). The property drains from west to east and is dissected by three headwater sub-catchments and includes about six small farm dams.

A habitat condition assessment was undertaken on 31 October 2019 (Biosis 2020b). An overview summary of the findings are presented here, focusing on species indicative of GSM habitat. The site supports a scattered cover of small patches of eucalypts and individual trees and an open shrub cover of scattered wattles *Acacia* species. The ground cover is typically grassy and mostly dominated by native grasses, some of which are known or suspected GSM food plants, such as Wallaby-grasses *Rytidosperma* spp., and Spear-grasses *Austrostipa* species.

The site supports an average cover of weeds estimated at between 20% and 30%, although the more elevated areas in the west support a cover of weeds approaching 50%. The weediest areas in the west have a relatively high cover (i.e. up to 50%) of Sheep Sorrel *Acetosella vulgaris*. This likely reflects the grazing history of the site with sheep tending to camp in these elevated sites. The site lacks Chilean Needle Grass *Nassella neessiana* and none of the weeds present are known food plants for the GSM.

GSM were observed during three out of the four surveys undertaken as part of this assessment. A total of 968 GSM were recorded over four survey days (704, 145, 119, 0) (Table 1, Figure 2). This provides a density of 7.99 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 Muncktons Lane, Glenaroua, as one of the potential offset sites for EPBC Act offset requirements to manage GSM impacts associated with the Lindum Vale development.

Table 1 Golden Sun Moth survey details

Date	Time Start	Time Finish	Observer initials	Golden Sun Moth observed on site?	Number of moths observed	Temp (on site °C)	Cloud cover (%)	Wind direction	Average wind speed (km/hr)	Ground conditions	Humidity (%)	Reference site
28/11/2019	10:56	14:51	MJ, ED, JF, FB, MH	Yes	704	21.6 - 32	5 - 0	N	1 - 5	Dry	43 - 10	Known from site
10/12/2019	11:45	14:16	ERB, JF, FB, DB, MF, FW	Yes	145	25.5 - 26.1	35 - 0	SSE	8.2 - 13.5	Dry	20 - 44.6	Known from site
15/12/2019	11:17	14:27	CEP, JF, DB, MF, ROB, DC	Yes	119	25 - 29	100	NW - W	2.4 - 8	Dry	34 - 25	Known from site
2/01/2020	10:18	12:19	MJ, JF, DB, WR, SMB, FB	No	0	25.5 - 29	0	SE - SSW	1.8 - 6.1	Dry	32.6 - 24.7	Known from site

References

Biosis 2018. *Offset Site Report: Muncktons Lane, Glenaroua: Golden Sun suitability*. Authors: Mueck, S. Biosis Pty Ltd. Project no. 28211.

Biosis 2020. *Offset Site Report: Condition of the Golden Sun Moth offset site, Muncktons Lane, Glenaroua, 3764*. Authors: Mueck, S. Biosis Pty Ltd. Project no. 29865.

DEWHA 2009. *Significant impact guidelines for the critically endangered golden sun moth (Synemon plana). Nationally threatened species and ecological communities EPBC Act policy statement 3.12*. Australian Government Department of the Environment, Water, Heritage, and the Arts. Canberra, ACT.

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.